

CLEMENT JONQUET

PHD IN INFORMATICS
ASSISTANT PROFESSOR, UNIVERSITY OF MONTPELLIER

CONTACT & PROFESSIONAL SITUATION

Born May 26, 1980, Nîmes (Gard), France, married, 2 children, French nationality.



University of Montpellier – LIRMM
161 rue Ada, 34095 Montpellier Cedex 5 – France
TEL: (+33/0) 467 41 97 43



SKYPE: clementpro – Email: jonquet@lirmm.fr – Twitter: [@jonquet_lirmm](https://twitter.com/jonquet_lirmm)
Web : www.lirmm.fr/~jonquet – ORCID: <http://orcid.org/0000-0002-2404-1582>
Public profiles: [Google Scholar](#), [Microsoft](#), [ResearchGate](#), [DBLP](#), [HAL](#), [PubMed](#), [CiteSeer](#).

CV STRENGTHS

- **Multidisciplinary research activities** (Ontologies, Semantic Web, Ontology repositories, Biomedical Informatics, Semantic annotation, Text mining, Service-oriented computing, Web Science, Agents).
- Experience in applied research (biomedicine, agronomy), software engineering & transfer skills.
- Collaborative work experience, **project funded research** (EU, ANR, NIH), management skills (project leading, outsourcing, supervision).
- Principal investigator of ANR JCJC (Young researcher program) SIFR project (2013-2017), Co-PI ANR PractiKPharma project (2016-2019), recipient of **H2020 Marie Skłodowska-Curie grant** (2016-2019), PI ANR D2KAB (2019-2023).
- **9 years of lecturing** Informatics/Computer Science to different student grades. (Co)supervision of 12+ MSc. Students & 3 PhD.
- Mobility: **3-year postdoc and later 3-year visiting scholar at Stanford University.**

CONTENTS

Clement Jonquet	1
List of Publications	11
Detailed Research activity	20
(French) Details des activités d'enseignement	26

WORK EXPERIENCE



- **Since Sept. 2010: Assistant Professor, University of Montpellier, France.**
Researcher in the Laboratory of Informatics, Robotics, and Microelectronics of Montpellier ([LIRMM](#)) and teacher at [Polytech Montpellier](#) Engineering School.
- **2015-2018: Visiting scholar, Stanford University, USA**
Center for Biomedical Informatics Research ([BMIR](#)). Working with Pr. M. A. Musen & the [NCBO](#).
- **2007-2010: Postdoctoral scholar, Stanford University, USA**
Center for Biomedical Informatics Research ([BMIR](#)). Working within Pr. M. A. Musen's group.
- **2006-2007: Lecturer, University Montpellier 3, France (humanities and social sciences) (~ French ATER).**
Researcher at LIRMM.
- **2003-2006: French government PhD grant & young lecturer at University Montpellier 2 (sciences and techniques) (~ French 'allocataire MENRT' & 'moniteur CIES').**
PhD achieved at LIRMM and supervised by Pr. Stefano A. Cerri.

EDUCATION



- 2006: **PhD in Informatics/Computer Science** (First class with distinction) – UM2
- 2003: MSc in Computer Science (2.1 honours) – UM2 (~ French DEA & Maîtrise)
- 2001: BSc in Computer Science (2.2 honours) – UM2 (~ French Licence & DEUG)
- 1998: High School Diploma specialized in Maths (2.2 honours) – Uzès (Gard) (~ French Bac. S)

RESEARCH ACTIVITY

RESEARCH PROJECTS

- 2019-2023: **Principal investigator** of the Data to Knowledge in Agronomy and Biodiversity ([D2KAB project](#)) – ANR, 12-partner, 30-person project on semantics and linked data in agronomy & biodiversity.
- 2017-2019: [VisaTM](#) project. Text & Data mining infrastructure for French scientists. BSN-10 head by C. Nédellec, INRA, Jouy-en-Josas.
- 2015-2023: **Coordinator** of the [AgroPortal project](#), a vocabulary and ontology repository for agronomy, food, plant sciences and biodiversity, partially supported by ANR (SIFR, IBC, Labex NUMEV, Labex Agro, D2KAB) and EU-MSCA SIFRm.
- 2016-2019: **Co-principal investigator** of the [PractriKPharma project](#) (Practice-based evidences for actioning Knowledge in Pharmacogenomics) – ANR head by A. Coulet, INRIA, Nancy.
- 2013-2019: **Principal investigator** of the Semantic Indexing of French Biomedical Data Resources ([SIFR project](#)) – ANR Young Researcher & EU-MSCA. Building ontology-based services to leverage biomedical ontologies and terminologies in indexing, mining and retrieval of French biomedical data. Also supported by Univ. of Montpellier & CNRS, France-Stanford and Eiffel programs.
- 2012-2018: Institut de Biologie Computationnelle ([IBC](#)), axe 5 (workflow & data integration) – ANR Inv. d'Avenir BioInfo. Development and use cases for AgroPortal & AgroLD.
- 2011-2013: CR2i DiagnosTIC-Santé project (Centre de Recherche et d'Innovation Industrielle) – Inv. d'Avenir PFMI. Member of the metadata repository group (multi-omics platform development).
- 2007-2010: **National Center for Biomedical Ontology** ([NCBO](#)) – Part of the National Centers for Biomedical Computing supported by the NIH Roadmap; provider of the NCBO BioPortal.
- 2003-2007: European Learning Grid Infrastructure (ELeGI) – IST IP EU (FP6).
- 2003-2004: Learning Grid of Excellence Working Group (LeGE-WG) – IST STREP EU (FP6).

TEAMS & RESEARCH GROUPS

- Since 2018: Member of the [LIRMM's Fado team](#) (Fuzziness, Alignments, Data & Ontologies).
- 2018-2019: Associated member (INRIA delegation) of [INRIA Sophia-Antipolis's Wimmics team](#) headed by F. Gandon (social & formal semantics on the Web, linked data).
- 2015-2018: Member of Musen's lab and until 2017 of Dumontier's lab at Stanford [BMIR](#) (medical informatics, knowledge representation and semantic Web (Protégé & BioPortal)).
- 2010-2018: Member of the [LIRMM's Smile team](#) (multi-agent systems, Web science, service-oriented computing, ontologies, serious games, simulation).
- 2007-2010: Member of Musen's lab and the NCBO team at Stanford [BMIR](#) (medical informatics, knowledge representation and semantic Web (Protégé & BioPortal)).
- March 2006: Associated member (internship) of the Open University's [KMI](#) group.
- 2003-2007: Member of the LIRMM's Kayou team (multi-agent systems, constraints, Web, Grid, service-oriented computing, ontologies, collaborative learning).

RESEARCH TOPICS

Ontologies & vocabularies, Ontology repositories, Ontology-based services, Semantic Web, Semantic annotation, Biomedical Informatics, Ontology alignment, Metadata, Linked Open Data, Knowledge representation, Data integration, Information Retrieval, Text mining, Service-oriented computing, Web Science, Distributed systems, Multi-Agents Systems, Web 2.0. Applications to biomedicine/health and agronomy/food/plant/biodiversity.

FUNDED GRANTS (AS LEADER)

I obtained approximatively 2M€ of research funding over the last 10 years:

- 2019: CNRS LIA Joint Montpellier-Stanford Laboratory. 4 years
- 2019: ANR collaborative project [D2KAB](#). 4 years (950K€, grant ANR-18-CE23-???)
- 2018: H2020 OpenMinTed call for tender (Visa™). 3 months (15K€).
- 2018: EUDAT Semantic Working group. 3 months (6K€).
- 2017: [Interlabex call](#). 1.5 year postdoc for Lingua/AgroPortal (90K€, grant ANR-10-LABX-0001-01).
- 2017: BSN-10 program. Visa™ project. 2 years (15K€).
- 2016: ANR [IBC of Montpellier](#) 20 months postdoc (100K€, grant ANR-11-BINF-0002).
- 2016: ANR MRSEI e-TERA, 1.5 year (5K€, led by INRA).
- 2016: EU H2020-MSCA-IF-2015 recipient. 3 years (265K€, grant #701771).
- 2015: ANR collaborative project PractiKPharma. 3.5 years (137K€, grant ANR-15-CE23-0028).
- 2014: [Labex NUMEV Calls](#). 1 year postdoc for AgroPortal (46K€, grant ANR-10-LABX-20).
- 2014: ANR [IBC of Montpellier](#) Young researcher grant (10K€, grant ANR-11-BINF-0002).
- 2014: French CNRS, [support for mounting H2020 project](#) (3K€).
- 2012: [ANR JCJC 2012](#) SIFR project grant (277K€, grant ANR-12-JS02-01001).
- 2012: UM2 Scientific Council PhD student grant (90K€).
- 2012 French GDR STIC-Santé collaborative actions (1K€).
- 2011: CNRS PICS program – international collaboration grant (18K€).



CURRENT RESEARCH ACTIVITY

I am interested in the convergence of French and English medical informatics ontology-based methods and tools in collaboration with Stanford [BMIR](#). Especially in the use of ontologies and terminologies for knowledge extraction from text data e.g., French biomedical data or clinical notes. I develop and maintain an expertise on the BioPortal technology originally developed at Stanford with the vision to standardize **ontology repositories and ontology-based services** and promote data interoperability and FAIR ontologies. I am also interested in generalizing my work on **semantic indexing and data annotation** to other domain such as agronomy or biodiversity. I investigate new methods and knowledge engineering approaches in the context of designing a vocabulary and **ontology repository** for agronomy and related domains ([AgroPortal project](#)) as well as a semantic annotation workflow for French biomedical text data ([SIFR project](#)) used on real clinical data ([PractiKPharma project](#)). I am also interested in using ontologies for linked open data, automatic terminology extraction, text mining and natural language processing, ontology alignment, semantic similarity and graph-based approach for knowledge representation and collaborative learning. The **Semantic Web** in general.

PAST RESEARCH ACTIVITY

- *NCBO project & postdoctoral research:* Within NCBO I worked on semantic annotation of biomedical data with biomedical ontologies. I actively contributed to the [NCBO BioPortal](#) web application well used in the biomedical community. I designed an **ontology-based annotation workflow**. This workflow embeds different components (e.g., concept recognition tool, semantic expansion algorithms) in order to leverage the knowledge represented in ontologies and **facilitate biomedical data integration**. Based on this workflow, I conceptualized, designed, developed and experiment three research applications: (i) the [NCBO Annotator](#), an ontology-based web service that can be used by the life sciences community to tag their data automatically with ontology concepts; (ii) the [NCBO Resource Index](#), a database of open biomedical resources annotated and indexed with ontology concepts (20+ resources and 200+ ontologies at that time) which can be used to search and integrate data; (iii) the [NCBO Recommender](#), a service which informs the user of the most appropriate ontologies relevant for their given dataset.
- *Doctoral research:* Situated at the **crossing of three important domains**: service-oriented computing (web service, components, business process, etc.), multi-agent systems (modeling, interaction, architecture) and Grid (resources sharing, Grid service, Grid computing). I proposed in my thesis a new vision for the concept of “service”, called **dynamic service generation**. This vision, based on interactions between agents (human or artificial) and relying of a Grid infrastructure, enabled dynamic construction of services based on the conversation between user & provider. Two important contributions were: (i) STROBE: an agent communication and representation model based on conversation contexts to enable interactive



specification of agent capabilities; (ii) Agent-Grid Integration Language (AGIL): a grid-multiagent integrated model formalized with a description language which leverages the stateful and dynamic aspect of Grid services.

- *ELeGI project research*: I worked on a collaborative environment constructed over a Grid infrastructure based shared desktops. We experiment the environment with a community of chemists tackling the problem of **collaborative construction of an ontology**.

LOCAL & NATIONAL COLLABORATION

- **LIRMM's collaboration**: (i) data and text mining "ADVANSE" team (P. Poncelet, S. Bringay); (ii) ontology alignment & linked data "FADO" team (Z. Bellahsene, K. Todorov, F. Scharffe); big data and scientific workflow "ZENITH" INRIA team (P. Valduriez).
- *Since 2018*: IRSTEA (V. Bellon-Maurel), partnership with ANR #DigitAg.
- *Since 2018*: CNRS-INIST (C. Francois), within Visa™ project and GDR SemanDiv.
- *Since 2017*: GDR SemanDiv (E. Garnier)
- *Since 2016*: PractiKPharma consortium: HEGP Hospital (B. Rance & A. Burgun), CHU St Etienne (C. Bousquet), LORIA (A. Coulet).
- *Since 2016*: INRA Scientific and Technical Information department (S. Aubin, O. Hologne, E. Dzalé), on AgroPortal, Visa™, eRosa/eTera and LOVINra projects.
- *Since 2015*: INRA (P. Neveu, P. Buche, C. Pichot, C. Nédellec, C. Pommier), on AgroPortal use cases.
- *Since 2014*: UMR DIADE, IRD (P. Larmande) on AgroLD (agronomic linked data) and AgroPortal.
- *Since 2014*: INSERM LIMICS (J. Charlet), related to French biomedical ontologies.
- *Since 2014*: Bioversity International (E. Arnaud) on AgroPortal use case.
- *Since 2011*: UMR TETIS (M. Teisseire, M. Roche, P. Lemoisson), biomedical terminology extraction and ViewpointS project.
- *2012-2014*: CISMef CHU Rouen (S. Darmoni), related to French biomedical ontologies.
- Current or past industrial collaborations: Sanofi (T. Pages), Ontologos (C. Million), Logixys (P. Dugénie), Mondeca (F. Amardeilh), eScience Data Factory (Y. Le Franc).
- *Others*: In the context of French STIC Santé working group. In the past as a member of the French [MFI working group](#) (Formal Model of Interaction).

INTERNATIONAL COLLABORATION

- *Since 2017*: RDA [Vocabulary and Semantic Services Interest Group](#). Co-leader of the 'ontology metadata' task group.
- *2017-2019*: [eRosa](#) (e-infrastructure Roadmap for Open Science in Agriculture) project community with INRA, WUR, AgroKnow and FAO.
- *Since 2016*: GACS project working group (J. Keyser, FAO & GODAN), design of the Global Agricultural Concept Scheme.
- *Since 2016*: [AgBioData](#) (agricultural databases (mostly in the US)).
- *Since 2016*: Godan Action and Food Agriculture Organization of the UN (V. Pesce), [Agrisemantics Map of Data Standards](#).
- *Since 2016*: Indian Statistical Institute (B. Dutta), on ontology metadata.
- *Since 2016*: RDA [Agrisemantics](#) working group.
- *Since 2015*: RDA [Wheat Data Interoperability](#) working group, as a use case for AgroPortal.
- *2015-2016*: Stanford BMIR (M. Dumontier).
- *Since 2011*: Stanford BMIR (M. Musen), with the Protégé & NCBO groups.
- *2007-2010*: [NCBO collaborators](#) and community: Univ. of Colorado School of Medicine (L. Hunter), Univ. of California San Francisco (I. Sim), Medical College of Wisconsin (S. Twigger), Wright State Univ. (A. Sheth), Goal: leverage NCBO solutions within biomedical sciences scenarios.
- *2004-2006*: A. Krief's lab, Notre Dame de la Paix Univ., Namur, Belgium. collaborative construction of ontology for chemistry.

- 2003-2006: Knowledge Media Institute (KMI), Open Univ., Milton Keynes, UK (E. Motta, J. Domingue, M. Eisenstadt). Goal: using agent approach for Grid services and collaboration.

AWARDS & DISTINCTIONS

- Keynote speaker at 4th *Symposium on Information Management and Big Data* ([SIMBig 2017](#)).
- Shared best paper award at 6th *French Ontology Conference* ([JFO 2016](#)).
- Recipient of the EU Marie Skłodowska-Curie Action (GF-IF) program (2016-2019).
- 1st Prize at the 2nd BD2K & 4th [Network of BioThings Hackathon](#) (Stanford, 2015)
- Holder of French ministry distinction, *Prime d'Excellence Scientifique* ([PES](#)) since 2013.
- Recipient of the French National Research Agency (ANR) Young Researcher program, 2012.
- Honorable mention award at 3rd *ACM International Conference on Web Science* ([WebSci 2011](#)).
- Selected in [Pr. Russ Altman's 2011 Year in Review](#) for journal article about biomedical ontology recommendation. *AMIA Translational Bioinformatics Summit* (AMIA-TBI 2011).
- [Semantic Web Challenge](#) 2010 winner (with the NCBO team) at 9th *International Semantic Web Conference* ([ISWC 2010](#)) with the NCBO Resource Index.



SOFTWARE DEVELOPMENT & TECHNOLOGY

- Since 2013, all development projects are maintained on GitHub:
 - <https://github.com/sifrproject>
 - <https://github.com/agroportal>
 - <https://github.com/practikpharma>
- 2013-2018: Within the *SIFR* & *AgroPortal* projects:
 - Design of YAM-BIO a tool for ontology alignment with background knowledge resources (A. Annane's PhD project).
 - Design, development & maintenance of the SIFR BioPortal (<http://bioportal.lirmm.fr>) (French medical terminologies) & AgroPortal (<http://agroportal.lirmm.fr>) projects.
 - Design & development of the SIFR/French Annotator and the NCBO Annotator+ both included within the SIFR BioPortal.
 - Design of Viewpoints, a graph-based system for collaborative knowledge representation and learning (G. Surroca's PhD project).
 - Design of BioTex a tool for automatic extraction of biomedical terms from text (J. Lossio's PhD project).
 - Design & development (in collaboration with LGI2P) of a semantic distance Web service.
- *BioPortal* (<http://bioportal.bioontology.org/>), a web repository of biomedical ontologies developed by NCBO. I actively contributed to the evolution and design to the core NCBO BioPortal services and participate in the support to the community.
- *NCBO Annotator, Resource Index* & *Recommender* (BioPortal URL + [/annotator](#), [/resources](#), [/recommender](#)). I was the main researcher (along with N. Shah, PhD, MD) and architect of these 3 services (prototyping, testing, evaluation, QA and deployment). I supervised 3 part time software developers working on these projects during 2 years.
- *STROBE model*, prototype implementation of the multi-agent model designed during my PhD project.
- Experimentation with the [Grid Shared Desktop](#) developed within the EleGI project.

SUPERVISION OF RESEARCH ACTIVITIES

- 2018-2020: Supervision of E. Abrahao (postdoc AgroPortal/Lingua) with K. Todorov & P. Neveu.
- 2017: Co-supervision of S. Zevio (MSc student, U. Montpellier) with S. Bringay & A. Tchechmedjiev.
- 2017: Supervision of C. Goehrs (MD & MSc. Student, U. of Bordeaux).
- 2016-2017: Supervision of A. Abdaoui (postdoc PractiKPharma).
- 2016-2018: Co-supervision of A. Tchechmedjiev (postdoc PractiKPharma) with S. Bringay.
- 2016: Co-supervision of S. Eholié (MSc student, U. of Nantes) with S. Bringay & M-D. Tapi-Nzali.
- 2015-2018: **Co-supervision of A. Annane, PhD candidate**, (cotutelle, Eiffel fellow) with Z. Bellashene & F. Azouaou (ESI Algeria) on ontology alignment (SIFR & PractiKPharma).



- 2015: Co-supervision of C. El Ghandour & M. Serhani (MSc students, U. Montpellier) with J.-A. Lossio on prototyping BioTex in SIFR BioPortal.
- 2015-2018: Supervision & management of A. Toulet (research engineer, AgroPortal project).
- 2015-2017: Supervision & management of V. Emonet (research engineer, SIFR project).
- 2015: Supervision of J. Diener (research engineer, IBC project) with P. Larmande.
- 2014: Co-supervision of P. Burc and O. Duploux (MSc students, U. Montpellier) with S. Harrispe (LGI2P, Nimes) on semantic distances.
- 2014: Co-supervision of L-H. Méric (eng. student, IMT St Etienne) with P. Lemoisson and G. Surroca.
- 2014: Supervision of S. Melzi (MSc student, U. Montpellier).
- 2014: Co-supervision of A. Dia (MSc student, U. G. Berger, Senegal) with P. Lemoisson and G. Surroca.
- 2013: Co-supervision of K. Cauchois (MSc. student, U. Rouen) with S. Darmoni (CHU Rouen) on exporting HeTOP's content to OWL.
- 2013-2017: **Co-supervision of G. Surroca, PhD candidate**, with P. Lemoisson and S.A. Cerri, on graph-based social/semantic data knowledge representation with Viewpoints.
- 2013: Supervision of K. Bouarech, (MSc student, U. Montpellier).
- 2012-2015: **Co-supervision J-A. Lossio-Ventura, PhD candidate**, with M. Roche and M. Teisseire on biomedical terminology extraction (SIFR project).
- 2010: Co-supervision of R. Castro & B. Paiva (MSc students, U. Montpellier), with S.A. Cerri (collaboration Stanford-LIRMM) on semantic distances and web service composition.
- 2010: Supervision of T. Tenneti (MSc student, Stanford) on concept recognition.
- 2009: Co-supervision of A. Ghazvinian (MSc student, Stanford) with N. Noy on ontology alignment.
- 2009: Co-supervision of G. Parai (MSc student, Stanford) with N. Shah on lexicon building.
- 2009: Co-supervision of N. Bhatia (MSc student, Stanford) with N. Shah on concept recognition.
- 2006: Co-supervision of F. Duvert (MSc students, U. Montpellier), with S.A. Cerri agent-grid ontology.
- 2005: Co-supervision of a 3-student-group (BSc. students, U. Montpellier) with R. Colleta on web service and constraint programming.
- 2005: Co-supervision of a 3-student-group (BSc. students, U. Montpellier) with S.A. Cerri on STROBE and MadKit.

PROFESIONNAL RESPONSABILITIES

MISSIONS & EXPERTISE

- **Project proposal reviewing** for French ANR (*3) and US NIH (*1).
- 2013: **French-US bioinformatics collaboration committee** member, supervised by A. Viari (INRIA) for the Ministries of Higher Education & Research and Foreign Affairs.
- 2011-2015: Member of the expert pool of the French Ministry of Higher Education & Research for evaluating research & development tax credit (French CIR and JEI).
- Article reviewing activity for 12 international journals, 19 international workshops or conferences & 8 national workshops or conferences. Detailed hereafter.

OTHER RESPONSIBILITIES

- 2012-2015: Member of UM2 council for Information and Communication Technologies in Education (TICE). Representative for Polytech Montpellier.
- 2012-2015: Head of [Polytech Montpellier iPad for students project](#). I 'lead' a group of 70 teachers interested in pedagogical innovations using ICT and iPad, in and out of the classroom.
- 2012-2015: Responsible of the last year of the "Informatics & Gestion" curriculum at Polytech Montpellier Engineering School (eq. Master degree).
- 2004-2005: Elected representative of computer science PhD students at LIRMM. Interesting activity to understand the organization and operation of a research lab.

PROGRAM CHAIRING AND ORGANIZATION

- Co-chair of *Semantics for Food, Agriculture, Environment and Nutrition* workshop ([SemFAEN 2018](#)) at Semantics 2018, Sept. 2018, Vienna, Austria.
- Co-session chair *Semantics for biodiversity and ecosystem research* at [ICEI 2018](#).
- Co-program chair and organization committee of 2nd *International Workshop on Semantics for Biodiversity* ([S4BIODIV 2017](#)) at ISWC 2017, Nov. 2017, Vienna, Austria. ~30 participants.
- Organization of the [AgroHackathon](#) series (in June 2016 and July 2017). ~15-30 participants.
- Participation to the organization (with S. Bringay) of 27^{èmes} *Journées francophones d'Ingénierie des Connaissances* ([IC 2016](#)), June 2016, Montpellier, France, ~100 participants.
- Co-program chair (with D. Cassagne) of the “return of experience” track of the *French ICT in Education Conference* ([TICE 2014](#)), Nov. 2014, Beziers, France. ~100 participants.
- Local chair (with F. Scharffe) of 10th *Extended Semantic Web Conference* ([ESWC 2013](#)), May 26-30 2013, Montpellier, France. ~350 participants.
- Co-program chair and organization committee of 1st *International Workshop on Semantics for Biodiversity* ([S4BIODIV 2013](#)) at ESWC 2013, May 2013, Montpellier, France. ~40 participants
- 2010-2013: Organizer of the group of interest [Web Science Montpellier](#) Meetup and organization of 1st [Web Science Montpellier](#) Meetup workshop, in Montpellier, France, May 13th 2011. 25 participants.
- Participation to the organization of local workshops (OTM 2006 & ALCAA 2004).



ARTICLE REVIEWING

[Data Intelligence](#) (open access), [Semantic Web Journal](#) (IOS Press), [Applied Ontology](#) (IOS Press), [Bioinformatics](#) (Oxford Journals), [BMC Bioinformatics](#) (BioMed Central), Journal of [Web Semantics](#) (Elsevier), [Knowledge-Based Systems](#) (Elsevier), Journal of [Biomedical Informatics](#) (Elsevier), Journal of [Biomedical Semantics](#) (BioMed Central), [IMIA Year Book](#) (Schattauer), French [Technique et Science Informatique](#) (Hermès), French [Revue d'Epidémiologie et de Santé Publique](#) (Elsevier), [Service Oriented Computing and Applications](#) journal (Springer), Grid Computing and Multi-Agent Systems journal (Serials Publications)

INTERNATIONAL PROGRAM COMITTEES

- 21st, 27th-28th Int. World Wide Web Conference ([WWW 2018-2019](#), [WWW 2012](#)(Demo track))
- 16th-17th Int. Semantic Web Conference ([ISWC 2017-2018](#)).
- 14th, 16th European Semantic Web Conference ([ESWC 2017, 2019](#)).
- European Federation for Information Technology in Agriculture, Food & Environment ([EFITA 2017](#)).
- 1st Language, Data and Knowledge conference ([LDK 2017](#))
- 1st-5th Int. Symposium on Information Management & Big Data ([SIMBig 2014-2018](#)).
- 11th-18th BioOntologies SIG ([BioOntologies 2009-2017](#)).
- 8th-11th Semantic Web Applications and Tools for Life Sciences ([SWAT4LS 2015-2016-2018](#)).
- 11th & 12th African Research in Computer Science and Applied Mathematics ([CARI 2014-2016](#))
- 1st-2nd Int. Workshop on Semantics for Biodiversity ([S4BIODIV 2013, 2017](#)).
- 1st Computational Semantics in Clinical Text ([CSCT 2013](#)) workshop
- 4th Int. Conference on Web Science ([WebSci 2012](#)).
- 1st & 2nd Int. Workshop on Web Science & Information Exchange in Medical Web ([MedEx 2010-2011](#)).
- 9th, 11th & 13th Int. Conference on Intelligent Tutoring ([ITS 2008, ITS 2014, ITS 2012](#)).
- 4th & 5th Int. KES Symposium on Agents & MAS Technologies & Applications ([AMSTA 2010-2011](#)).
- Workshop on Ontology Repositories for the Web ([SERES 2010](#)).
- 1st Int. Workshop on User-generated Services ([UGS 2009](#)).
- Workshop Extending Database Technology for Life Sciences workshop ([EDTLS 2009](#)).
- Int. Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering ([SOCASE 2009](#)).

NATIONAL PROGRAM COMITTEES

- Atelier *Web des données* ([AWD 2019](#)).
- Workshop Knowledge Engineering & Health ([IA & Santé 2018](#), [SIIM 2015 & 2017](#), [ICSanté 2012-2016](#)).
- Workshop sources & data integration in agriculture, food, environment ontologies ([IN-OVIVE 2017](#))
- 6^{èmes} *Journées francophones sur les Ontologies* ([JFO 2016](#)).
- 24^{èmes}-29^{èmes} *Journées francophones d'Ingénierie des Connaissances* ([IC 2013-2018](#)).
- 1^{er} Atelier *Ontologies et Jeux de Données pour évaluer le web sémantique* ([OJD 2012](#)).

- 1^{er}-3^{èmes} Atelier *Quantité et Robustesse pour le Web de données* ([QetR 2011-2013](#)).
- 1^{er} Atelier *Extraction des Connaissances et Contextualisation* ([ExCoco 2011](#)).
- 7^{ème} Colloque *Agents Logiciels, Coopération, Apprentissage, Activité* (ALCAA 2004).

DETAILED SEMINARS & INVITED PRESENTATIONS

 **17 presentations on [SlideShare](#), (cumulating ~9400 views).**

- LIRMM Scientific Day, December 2018 (invited by P. Poignet).
- RDA France 1st National Day, JNSO 2018, December 2019 (invited by F. Genova).
- INRIA's Wimmics Seminar, November 2018 (invited by F. Gandon).
- PhenoHarmonIS workshop, May 2018 (invited by E. Arnaud).
- RDA 11th Plenary, IGAD pre-meeting, March 2018 (invited by I. Subirats).
- EUDAT Conference Semantic Working Group, January 2018 (invited by Y. Le Franc).
- Keynote INIST 'Ingénierie des Connaissances' Series, December 2017 (invited by C. Francois).
- IC-Foods Conference, November 2018 and 2017 (invited by M. Lange).
- Keynote at SIMBig 2017, September 2017 (invited by J-A. Lossio).
- GDR SemanDiv, July 2017 (invited by E. Garnier).
- French Minister – DSSIS (réunion serveurs multi-terminologiques), June 2017 (invited by B. Séroussi).
- BMIR Research in progress colloquium, Mai 2016 (invited by M. Musen).
- Protégé group meeting, Stanford Univ., April 2016 (invited by T. Tudorache).
- Dumontier's lab group meeting, Stanford Univ., January & November. 2016 (invited by M. Dumontier).
- Keynote at the French RISE 2015 workshop, Rennes, France, June 2015 (invited by C. Roussey).
- Protégé group meeting, Stanford Univ., April 2015 (invited by T. Tudorache).
- Forum TIC's, Mons, Belgium. April 2015 (invited by B. Champagne).
- LGI2P Science & Society seminar, Nimes, France. March 2015 (invited by S. Harispe).
- CENTAL team at UC Louvain, Belgium, Dec. 2014 (invited by C. Fairon).
- Réseau IN-OVIVE, INRA, Montpellier, Oct. 2014 (invited by P. Neveu).
- IBC Scientific day, Montpellier, May 2014 (invited by O. Gascuel).
- SPIM team at INSERM Paris, June 2011 (invited by M-C. Jaulent).
- LIM team at Rennes Univ., April 2011 (invited by O. Dameron).
- CISMef team at Rouen School of Medicine, March 2011 (invited by S. J. Darmoni).
- Research seminar on ICT & Health, LIRMM, Montpellier, February 2011.
- EXMO team at INRIA Grenoble, France, March 2010 (invited by J. Euzenat).
- Smile team at LIRMM, UM2, France, February 2009 (invited by S. A. Cerri).
- EDELWEISS team at INRIA Sophia, France, January 2009 (invited by F. Gandon).
- Talk at the NCBO Developer Conference, Stanford Univ., USA, Dec. 2007.
- Intelligent Interactive Distributed Syst. group, Vrije Univ., Amsterdam (invited by F. Brazier). May 2007.
- LIRMM's Informatics department day, UM2, France. July 2005.
- Protégé group meeting, Stanford Univ., CA, USA (invited by M. Crubezy). June 2005.
- E-LeGI WP6 (Work Package 6) seminar, LIRMM, UM2, France. June 2004.
- Computer Science PhD students seminar, LIRMM, UM2, France. January 2004.
- Talk within the GT MFI (Groupe de Travail Modèles Formels de l'Interaction) working group, LIP6, Université Paris 6, France. December 2003.
- Social Informatics seminar, LIRMM, UM2, France. June 2003.

PUBLICATIONS ANALYSIS

ACCESS & CITATIONS

My complete list of publications is described below or [online](#) or in the [HAL database](#). I try to publish in open access journals (gold open access), but when not the case, a **PDF is always available** for every document (green open access) on HAL. Other incomplete listings include: [Google Scholar](#), [Microsoft Academic](#), [ResearchGate](#), [DBLP](#), [PubMed](#), [CiteSeer](#).

The first author is the “main” author. The last author is generally the supervisor. All publications (84) or communications (26) have been peer-reviewed (if not explicitly mentioned), including:

- **23 journal** (6 as first author, 5 as second author, 3 as last author), 21 international conference, 15 workshop, 20 national (French) and 2 dissertations.

- 60 are international publications; most have been written in a collaborative context; more than 2/3 have been written by person(s) under my (co)supervision.

Overall my publications cumulate ~**2265 citations** as of Google Scholar (December 2018); including 772 for publications as first author.

PUBLICATION CONTEXT AND DOMAINS

- **Biomedical Informatics:** 1 recent article in *Journal of Biomedical Informatics* (Elsevier, IF 3.23), 4 articles in *BMC Bioinformatics* (IF 3.45, CORE A) **cumulating 255 citations**, 1 in *Nucleic Acids Research* (Oxford, IF 10.16) with **764 citations**, 2 application notes in *Bioinformatics* (Oxford, IF 7.31), 2 articles (one with **253 citations**) at *AMIA Symposiums* which is one of the best place to publish in this field. 2 articles (one with **82 citations**) in *BMC Biomedical Semantics* (IF 2.41).
- **Semantic Web:** 2 articles & 3 posters/demos (all cumulating **158 citations**) in *International Semantic Web Conference (CORE A)*, the main conference in the domain. Plus, the 1st prize at the 2010 Semantic Web Challenge and a corresponding publication (**111 citations**) in *Journal of Web Semantics* (Elsevier, IF 2.76). One awarded paper at Web Science Conference.
- **NLP, text mining & information retrieval:** 4 conferences or workshop articles related to text mining and language in biomedicine (LREC'16, *PolTAL'14*, *IDEAS'14*, *JADT'14*, *LBM'13*). One article in *Information Retrieval* (Springer, IF 0.80) and in *Knowledge Discovery in Bioinformatics* (IGI Global) both cumulating **53 citations**.
- **Agronomy:** multiple poster-demos and workshop papers recently published in this new field of application. One article as 1st author in *Computers and Electronics in Agriculture* (Elsevier, IF 2.5). Two group articles in prestigious journals: *Database* (Oxford Academic, IF 3.98) and *PLoS One* (PLoS, 2.7).
- **Distributed systems:** 1 article in the reference journal for the topic of agent-grid integration, *Multiagent and Grid systems* (IOS Press, CORE B) as well as 1 article in the *Int. Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering*. Plus 1 article in *Applied Artificial Intelligence* (Taylor & Francis, IF 0.65, CORE B) with **24 citations**.
- **French conferences:** Such as Journées francophones d'Ingénierie des Connaissances, or d'Informatique médicale or du Traitement Automatique des Langues Naturelles, or sur les Systèmes Multi-Agents », or des Ontologies or de Recherche d'Information et Applications. 9 French publications (over 20) are direct French versions of English papers; others are usually preliminary work.

SUMMARY OF TEACHING ACTIVITIES

- **9 years of various academic teaching** (~1400h ~TD) to different kind of students of mixed levels. Described in specific section.
- Teacher at [Polytech Montpellier Engineering School](#). My teaching activities were paused from 2015 to 2019 during my mobility and the return phase of my H2020 MSCA project.
- 2012-2015: [Polytech Montpellier iPad for students](#) project. I run a working group of 70 teachers interested in pedagogical innovation using ICT and iPad, in and out of the classroom.
- Preparation of lectures/tutorials/technical work, evaluation tasks (exam, corrections, jury), projects and internships management, administrative responsibilities. Some classes in English from 2010 to 2012.
- 2012: One full series of 8 lectures given to Polytech students available on video on [iTunesU: Internet Application and Interoperability](#) (AIOP).
- *Lectures:* [Structure and Interpretation of Computer Programs](#), introduction to algorithmic and programming with Scheme/Maple, [French Informatics and Internet Certificate](#) (Open/MS Office, e-learning platforms, etc.), Internet languages (HTML, Java/Javascript, PHP, etc.), [Computer Architecture](#) (representation, CPU/Memory, MIPS language), Algorithmic & Programming (ADA, basic algorithmics, data structures), [Internet Application and Interoperability](#) (Web application architectures, Web technologies, XML, Web services, J2EE, .NET), [Semantic Web](#) (Ontologies 101, technologies & languages, applications).
- *Internship supervision:* technical BSc. (mathematics & computer science), MSc students in computer science.

TECHNICAL SKILLS

- Programming languages: functional/applicative (Lisp, Scheme) or object-oriented (Java) or imperative (Ada, Maple). Some knowledge of MIPS assembler.

- Java & JEE framework technologies (JDBC, Spring, Eclipse).
- Service Oriented Architectures and Web applications. Web services in SOAP/WSDL (Axis) & REST (RestLet).
- Biomedical terminologies and ontologies (SNOMEDCT, MeSH, UMLS, OBO) as well as Semantic Web technologies (RDF/OWL/SKOS/SPARQL).
- Database systems (SQL), good experience with MySQL/JDBC and information system modeling language (UML, BPMN).
- Web languages & technologies (XML, HTML, Javascript, CSS, PHP/MySQL, JSON).
- Distant learning / e-learning platforms e.g., WebCT, Claroline, Moodle.
- MadKit multi-agent platform (developed within the SMILE team at LIRMM).

PERSONNAL TOPICS

- Experiences in several associations (student, sportive, social ones). Summer jobs from 1996 to 2002 in agriculture and wineries.
- Music, travelling (several trips in Europe, America, South America and Asia.), reading (novel and press).
- Rock climbing (indoor/outdoor) and other outdoor sports (mountaineering, ice-climbing, hiking, etc.).

LANGUAGES

- French: Mother tongue.
- English: Very good (school & working knowledge), lived 6 years the USA.
- Spanish: A few skills (learnt at school).
- Strong international orientation of work (publications & thesis manuscript written in English, international PhD defense jury, international postdoc).

REFEREES

- Pr. Stefano A. Cerri, University of Montpellier – LIRMM – cerri@lirmm.fr
- Pr. Mark A. Musen, Stanford University – BMIR – musen@stanford.edu
- Pr. Nigam H. Shah, Stanford University – BMIR – nigam@stanford.edu
- Pr. Michael N. Huhns, University of South Carolina – CIT – huhns@sc.edu

LIST OF PUBLICATIONS

Journal	[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23]	23
International Conference	[24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44]	21
Serie	[45]	1
Workshop	[46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60]	15
National (French) Conf.	[61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80]	20
Editor	[81, 82]	2
Dissertation	[83, 84]	2
Poster & Demonstration	[85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110]	26
Reports	[111, 112, 113, 114, 115, 116]	6

JOURNAL

- [1] Pierre Monnin, Joël Legrand, Graziella Husson, Patrice Ringot, Andon Tchechmedjiev, **Clement Jonquet**, Amedeo Napoli, and Adrien Coulet. PGxO and PGxLOD: a reconciliation of pharmacogenomic knowledge of various provenances, enabling further comparison. *BMC Bioinformatics*, IN PRESS, 2019.
- [2] Andon Tchechmedjiev, Amine Abdaoui, Vincent Emonet, Stella Zevio, and **Clement Jonquet**. SIFR Annotator: Ontology-Based Semantic Annotation of French Biomedical Text and Clinical Notes. *BMC Bioinformatics*, 19:405–431, December 2018.
- [3] Aravind Venkatesan, Gildas Tagny, Nordine El Hassouni, Imene Chentli, Valentin Guignon, **Clement Jonquet**, Manuel Ruiz, and Pierre Larmande. Agronomic Linked Data: a knowledge system to enable integrative biology in Agronomy. *PLoS One*, 13(11):e0198270, November 2018.
- [4] Lisa Harper, Jacqueline Campbell, Ethalinda KS Cannon, Sook Jung, Dorrie Main, Monica Poelchau, Ramona Walls, Carson Andorf, Elizabeth Arnaud, Tanya Berardini, Clayton Birkett, Steve Cannon, James Carson, Bradford Condon, Laurel Cooper, Nathan Dunn, Chris Elisk, Andrew Farmer, Stephen Ficklin, David Grant, Emily Grau, Nic Herndon, Zhi-Liang Hu, Jodi Humann, Pankaj Jaiswal, **Clement Jonquet**, Marie-Angélique Laporte, Pierre Larmande, Gerard Lazo, Fiona McCarthy, Naama Menda, Christopher Mungall, Monica Munoz-Torres, Sushma Naithani, Rex Nelson, Daureen Neddill, Carissa Park, James Reecy, Leonore Reiser, Lacey-Anne Sanderson, Taner Sen, Margaret Staton, Sabarinath Subramaniam, Marcela Karey Tello-Ruiz, Victor Unda, Deepak Unni, Liya Wang, Doreen Ware, Jill Wegrzyn, Jason Williams, and Margaret Woodhouse. AgBioData Consortium Recommendations for Sustainable Genomics and Genetics Databases for Agriculture. *Database*, page bay088, September 2018.
- [5] **Clement Jonquet**, Anne Toulet, Biswanath Dutta, and Vincent Emonet. Harnessing the power of unified metadata in an ontology repository: the case of AgroPortal. *Data Semantics*, pages 1–31, August 2018.
- [6] Amina Annane, Zohra Bellahsene, Faïçal Azouaou, and **Clement Jonquet**. Building an effective and efficient background knowledge resource to enhance ontology matching. *Web Semantics*, 51:51–68, August 2018.
- [7] Juan Antonio Lossio-Ventura, Jiang Bian, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. A novel framework for biomedical entity sense induction. *Biomedical Informatics*, 84:31–41, August 2018.
- [8] Andon Tchechmedjiev, Amine Abdaoui, Vincent Emonet, Soumia Melzi, Jitendra Jonnagaddala, and **Clement Jonquet**. Enhanced Functionalities for Annotating and Indexing Clinical Text with the NCBO Annotator+. *Bioinformatics*, page 3, January 2018.
- [9] Esther Dzale-Yeumo, Michael Alaux, Elizabeth Arnaud, Sophie Aubin, Ute Baumann, Patrice Buche, Laurel Cooper, Robert P. Davey, Richard A. Fulss, **Clement Jonquet**, Marie-Angélique Laporte, Pierre Larmande, Cyril Pommier, Vassilis Protonotarios, Carmen Reverte, Rosemary Shrestha, Imma Subirats, Aravind Venkatesan, Alex Whan, and Hadi Quesneville. Developing data interoperability through standards: a wheat community use case. *F1000 Research*, 6(1843), December 2017.
- [10] **Clement Jonquet**, Anne Toulet, Elizabeth Arnaud, Sophie Aubin, Esther Dzale-Yeumo, Vincent Emonet, John Graybeal, Marie-Angélique Laporte, Mark A. Musen, Valeria Pesce, and Pierre Larmande. AgroPortal: a

- vocabulary and ontology repository for agronomy. *Computers and Electronics in Agriculture*, 144:126–143, January 2018.
- [11] Philippe Lemoisson, Guillaume Surroca, **Clement Jonquet**, and Stefano A. Cerri. ViewpointS: capturing formal data and informal contributions into an adaptive knowledge graph. *Knowledge and Learning*, 12(2):119–145, May 2018.
- [12] Marcos Martinez-Romero, **Clement Jonquet**, Martin J. O'Connor, John Graybeal, Alejandro Pazos, and Mark A. Musen. NCBO Ontology Recommender 2.0: An Enhanced Approach for Biomedical Ontology Recommendation. *Biomedical Semantics*, 8(21), June 2017.
- [13] Juan-Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Biomedical term extraction: overview and a new methodology. *Information Retrieval, Special issue on Medical Information Retrieval*, 19(1):59–99, August 2015.
- [14] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Towards a mixed approach to extract biomedical terms from text corpus. *Knowledge Discovery in Bioinformatics*, 4(1):15, 2014.
- [15] **Clement Jonquet**, Paea LePendou, Sean Falconer, Adrien Coulet, Natalya F. Noy, Mark A. Musen, and Nigam H. Shah. NCBO Resource Index: Ontology-Based Search and Mining of Biomedical Resources. *Web Semantics*, 9(3):316–324, September 2011. 1st prize of Semantic Web Challenge at the 9th International Semantic Web Conference, ISWC'10, Shanghai, China.
- [16] Christophe Roeder, **Clement Jonquet**, Nigam H. Shah, William A. Baumgartner Jr, and Lawrence Hunter. A UIMA Wrapper for the NCBO Annotator. *Bioinformatics*, 26(14):1800–1801, May 2010.
- [17] **Clement Jonquet**, Mark A. Musen, and Nigam H. Shah. Building a Biomedical Ontology Recommender Web Service. *Biomedical Semantics*, 1(S1), June 2010. Selected in Pr. R. Altman's 2011 Year in Review at AMIA TBI.
- [18] Nigam H. Shah, Nipun Bhatia, **Clement Jonquet**, Daniel L. Rubin, Annie P. Chiang, and Mark A. Musen. Comparison of concept recognizers for building the Open Biomedical Annotator. *BMC Bioinformatics*, 10(9:S14), September 2009.
- [19] Natalya F. Noy, Nigam H. Shah, Patricia L. Whetzel, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Daniel L. Rubin, Margaret-Anne Storey, Christopher G. Chute, and Mark A. Musen. BioPortal: ontologies and integrated data resources at the click of a mouse. *Nucleic Acids Research*, 37(web server):170–173, May 2009.
- [20] Nigam H. Shah, **Clement Jonquet**, Annie P. Chiang, Atul J. Butte, Rong Chen, and Mark A. Musen. Ontology-driven Indexing of Public Datasets for Translational Bioinformatics. *BMC Bioinformatics*, 10(2:S1), February 2009.
- [21] **Clement Jonquet**, Pascal Dugenie, and Stefano A. Cerri. Agent-Grid Integration Language. *Multiagent and Grid Systems*, 4(2):167–211, 2008.
- [22] Pascal Dugénie, Philippe Lemoisson, **Clement Jonquet**, and Monica Crubézy. The Grid Shared Desktop: a bootstrapping environment for collaboration. *Advanced Technology for Learning, Special issue on Collaborative Learning*, 3(4):241–249, 2006.
- [23] **Clement Jonquet** and Stefano A. Cerri. The STROBE model: Dynamic Service Generation on the Grid. *Applied Artificial Intelligence, Special issue on Learning Grid Services*, 19(9-10):967–1013, October-November 2005.

INTERNATIONAL CONFERENCE

- [24] Biswanath Dutta, Anne Toulet, Vincent Emonet, and **Clement Jonquet**. New Generation Metadata vocabulary for Ontology Description and Publication. In E. Garoufallou, S. Virkus, R. Siatri, and D. Koutsomiha, editors, *11th Metadata and Semantics Research Conference, MTSR'17*, volume 755 of *Communications in Computer and Information Science*, pages 173–185, Tallinn, Estonia, November 2017. Springer.
- [25] Philippe Lemoisson, Guillaume Surroca, **Clement Jonquet**, and Stefano A. Cerri. ViewpointS: When Social Ranking Meets the Semantic Web. In V. Rus and Z. Markov, editors, *30th International Florida Artificial Intelligence Research Society Conference, FLAIRS'17*, pages 329–334, Marco Island, FL, USA, May 2017. AAAI Press.
- [26] Solène Eholié, Mike-Donald Tapi-Nzali, Sandra Bringay, and **Clement Jonquet**. MuEVo, a breast cancer Consumer Health Vocabulary built out of web forums. In A. Paschke, A. Burger, A. Splendiani, M.S. Marshall, and P. Romano, editors, *9th International Semantic Web Applications and Tools for Life Sciences, SWAT4LS'16*, page 10, Amsterdam, The Netherlands, December 2016.
- [27] Amina Annane, Zohra Bellahsene, Faical Azouaou, and **Clement Jonquet**. Selection and Combination of Heterogeneous BK to Enhance Biomedical Ontology Matching. In E. Blomqvist, P. Ciancarini, F. Poggi, and

- F. Vitali, editors, *20th International Conference on Knowledge Engineering and Knowledge Management, EKAW'16*, volume 10024 of *Lecture Notes in Artificial Intelligence*, pages 19–33, Bologna, Italy, November 2016. Springer.
- [28] Guillaume Surroca, Philippe Lemoisson, **Clement Jonquet**, and Stefano A. Cerri. Subjective and generic distance in ViewpointS: an experiment on WordNet. In *6th International Conference on Web Intelligence, Mining and Semantics, WIMS'16*, number 11, page 6, Nimes, France, June 2016. ACM.
- [29] Amina Annane, Vincent Emonet, Faical Azouaou, and **Clement Jonquet**. Multilingual Mapping Reconciliation between English-French Biomedical Ontologies. In *6th International Conference on Web Intelligence, Mining and Semantics, WIMS'16*, number 13, page 12, Nimes, France, June 2016. ACM.
- [30] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Automatic Biomedical Term Polysemy Detection. In *10th International Conference on Language Resources and Evaluation, LREC'16*, pages 23–28, Portoroz, Slovenia, May 2016. European Language Resources Association.
- [31] Guillaume Surroca, Philippe Lemoisson, **Clement Jonquet**, and Stefano A. Cerri. Preference Dissemination by Sharing Viewpoints: Simulating Serendipity. In *7th International Conference on Knowledge Engineering and Ontology Development KEOD'15*, volume 2, pages 402–409, Lisbon, Portugal, November 2015.
- [32] Soumia Melzi and **Clement Jonquet**. Scoring semantic annotations returned by the NCBO Annotator. In A. Paschke, A. Burger, P. Romano, M.S. Marshall, and A. Splendiani, editors, *7th International Semantic Web Applications and Tools for Life Sciences, SWAT4LS'14*, volume 1320 of *CEUR Workshop Proceedings*, page 15, Berlin, Germany, December 2014. CEUR-WS.org.
- [33] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Yet Another Ranking Function for Automatic Multi-word Term Extraction. In A. Przepiorkowski and M. Ogrodniczuk, editors, *9th International Conference on Natural Language Processing, PolTAL'14*, volume 8686 of *Lecture Notes in Artificial Intelligence*, pages 52–64, Warsaw, Poland, September 2014. Springer.
- [34] Julien Grosjean, Lina F. Soualmia, Khedidja Bouarech, **Clement Jonquet**, and Stefan J. Darmoni. An Approach to Compare Bio-Ontologies Portals. In C. Lovis, B. Séroussi, A. Hasman, L. Pape-Haugaard, O. Saka, and S.K. Andersen, editors, *26th International Conference of the European Federation for Medical Informatics, MIE'14*, volume 205 of *Studies in Health Technology and Informatics*, pages 1008–1012, Istanbul, Turkey, September 2014. IOS Press.
- [35] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Integration of Linguistic and Web Information to Improve Biomedical Terminology Extraction. In A-M. Almeida, J. Bernardino, and E. F. Gomes, editors, *18th International Database Engineering & Applications Symposium, IDEAS'14*, pages 265–269, Porto, Portugal, July 2014. ACM.
- [36] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Combining C-value and Keyword Extraction Methods for Biomedical Terms Extraction. In *5th International Symposium on Languages in Biology and Medicine, LBM'13*, pages 45–49, Tokyo, Japan, December 2013. Database Center for Life Science.
- [37] **Clement Jonquet**, Paea LePendu, Sean M. Falconer, Adrien Coulet, Natalya F. Noy, Mark A. Musen, and Nigam H. Shah. NCBO Resource Index: OntologyBased Search and Mining of Biomedical Resources. In C. Bizer and D. Maynard, editors, *Semantic Web Challenge, 9th International Semantic Web Conference, ISWC'10*, page 8, Shanghai, China, November 2010. 1st prize.
- [38] Paea LePendu, Natalya F. Noy, **Clement Jonquet**, Paul R. Alexander, Nigam H. Shah, and Mark A. Musen. Optimize First, Buy Later: Analyzing Metrics to Ramp-up Very Large Knowledge Bases. In P. F. Patel-Schneider, Y. Pan, P. Hitzler, P. Mika, L. Zhang, J. Z. Pan, I. Horrocks, and B. Glimm, editors, *9th International Semantic Web Conference, ISWC'10*, volume 6496 of *Lecture Notes in Computer Science*, pages 486–501, Shanghai, China, November 2010. Springer.
- [39] Gautam K. Parai, **Clement Jonquet**, Rong Xu, Mark A. Musen, and Nigam H. Shah. The Lexicon Builder Web service: Building Custom Lexicons from two hundred Biomedical Ontologies. In *American Medical Informatics Association Annual Symposium, AMLA'10*, Washington, DC, USA, November 2010.
- [40] Amir Ghazvinian, Natasha F. Noy, **Clement Jonquet**, Nigam H. Shah, and Mark A. Musen. What Four Million Mappings Can Tell You about Two Hundred Ontologies. In A. Bernstein, D. R. Karger, T. Heath, L. Feigenbaum, D. Maynard, E. Motta, and K. Thirunarayan, editors, *8th International Semantic Web Conference, ISWC'09*, volume 5823 of *Lecture Notes in Computer Science*, pages 229–242, Washington DC, USA, November 2009. Springer.

- [41] **Clement Jonquet**, Nigam H. Shah, and Mark A. Musen. The Open Biomedical Annotator. In *American Medical Informatics Association Symposium on Translational Bioinformatics, AMLA-TBI'09*, pages 56–60, San Francisco, CA, USA, March 2009.
- [42] **Clement Jonquet**, Mark A. Musen, and Nigam H. Shah. A System for Ontology-Based Annotation of Biomedical Data. In A. Bairoch, S. Cohen-Boulakia, and C. Froidevaux, editors, *International Workshop on Data Integration in the Life Sciences, DILS'08*, volume 5109 of *Lecture Notes in Bioinformatics*, pages 144–152, Evry, France, June 2008. Springer.
- [43] Stefano A. Cerri, Monica Crubézy, Pascal Dugénie, **Clement Jonquet**, and Phillippe Lemoisson. The Grid Shared Desktop for CSCL. In P. Cunningham and M. Cunningham, editors, *eChallenges 2006 Conference*, volume 3 of *Information and Communication Technologies and the Knowledge Economy*, pages 1493–1499, Barcelona, Spain, October 2006. IOS Press.
- [44] **Clement Jonquet** and Stefano A. Cerri. i-dialogue: modeling agent conversation by streams and lazy evaluation. In *International Lisp Conference, ILC'05*, pages 219–228, Stanford University, CA, USA, June 2005.

SERIE

- [45] **Clement Jonquet**, Marc Eisenstadt, and Stefano A. Cerri. Learning agents and Enhanced Presence for generation of services on the Grid. In P. Ritrovato, C. Allison, S.A. Cerri, T. Dimitrakos, M. Gaeta, and S. Salerno, editors, *Towards the Learning GRID: advances in Human Learning Services*, volume 127 of *Frontiers in Artificial Intelligence and Applications*, pages 203–213. IOS Press, November 2005.

WORKSHOP

- [46] Andon Tchechmedjiev and **Clement Jonquet**. Enrichment of French Biomedical Ontologies with UMLS Concepts and Semantic Types for Biomedical Named Entity Recognition Through Ontological Semantic Annotation. In *Workshop on Language, Ontology, Terminology and Knowledge Structures, LOTKS'17*, number W17-7007, page 8, Montpellier, France, September 2017. ACL.
- [47] **Clement Jonquet**. Challenges for ontology repositories and applications to biomedicine & agronomy. In J.L. Lossio-Ventura and H. Alatrística-Salas, editors, *4th Annual International Symposium on Information Management and Big Data, SIMBig'17*, volume 2029 of *CEUR Workshop Proceedings*, pages 25–37, Lima, Peru, September 2017. Keynote Speaker Paper.
- [48] Andon Tchechmedjiev, Amine Abdaoui, Vincent Emonet, and **Clement Jonquet**. ICD10 Coding of Death Certificates with the NCBO and SIFR Annotator(s) at CLEF eHealth 2017 Task 1. In *Working Notes of CLEF eHealth Evaluation Lab*, volume 1866 of *CEUR Workshop Proceedings*, page 16, Dublin, Ireland, September 2017.
- [49] Pierre Monnin, **Clement Jonquet**, Joel Legrand, Amedeo Napoli, and Adrien Coulet. PGxO: A very lite ontology to reconcile pharmacogenomic knowledge units. In *Network Tools and Applications in Biology Workshop, NETTAB'17*, Preprints, page 4, Palermo, Italy, October 2017. PeerJ. Peer reviewed by NETTAB'17 PC.
- [50] **Clement Jonquet**, Anne Toulet, and Vincent Emonet. Two years after: a review of vocabularies and ontologies in AgroPortal. In *International Workshop on sources and data integration in agriculture, food and environment using ontologies, IN-OVIVE'17*, page 13, Montpellier, France, July 2017. EFITA.
- [51] **Clement Jonquet**, Vincent Emonet, and Mark A. Musen. Roadmap for a multilingual BioPortal. In J. Gracia, J.P. McCrae, and G. Vulcu, editors, *4th Workshop on the Multilingual Semantic Web, MSW4'15*, volume 1532 of *CEUR Workshop Proceedings*, pages 15–26, Portoroz, Slovenia, June 2015.
- [52] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. SIFR project: The Semantic Indexing of French Biomedical Data Resources. In J.A. Lossio-Ventura and H. Alatrística-Salas, editors, *1st International Symposium on Information Management and Big Data, SIMBig'14*, volume 1318 of *CEUR Workshop Proceedings*, pages 58–61, Cusco, Peru, September 2014.
- [53] Julien Grosjean, Lina F. Soualmia, Khedidja Bouarech, **Clement Jonquet**, and Stefan J. Darmoni. Comparing BioPortal and HeTOP: towards a unique biomedical ontology portal? In *2nd International Work-Conference on Bioinformatics and Biomedical Engineering, IWBBIO'14*, page 11, Granada, Spain, April 2014.
- [54] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Biomedical Terminology Extraction: A new combination of Statistical and Web Mining Approaches. In E. Nee, J.-M. Daube, M. Valette, and S. Fleury, editors, *12th International Workshop on Statistical Analysis of Textual Data, JADT'14*, pages 421–432, Paris, France, June 2014.
- [55] **Clement Jonquet**, Nigam H. Shah, and Mark A. Musen. Prototyping a Biomedical Ontology Recommender Service. In *Bio-Ontologies: Knowledge in Biology, SIG, ISMB-ECCB'09*, pages 65–68, Stockholm, Sweden, July 2009.

- [56] Pascal Dugénie, **Clement Jonquet**, and Stefano A. Cerri. The Principle of Immanence in GRID-Multiagent Integrated Systems. In R. Meersman, Z. Tari, and P. Herrero, editors, *4th International Workshop On Agents and Web Services Merging in Distributed Environments, AWeSOMe'08, OTM 2008 Workshops*, volume 5333 of *Lecture Notes in Computer Science*, pages 98–107, Monterrey, Mexico, November 2008. Springer.
- [57] **Clement Jonquet**, Pascal Dugénie, and Stefano A. Cerri. Service-Based Integration of Grid and Multi-Agent Systems Models. In R. Kowalczyk, M.N. Huhns, M. Klusch, Z. Maamar, and Q.B. Vo, editors, *International Workshop on Service-Oriented Computing: Agents, Semantics, and Engineering, SOCASE'08*, volume 5006 of *Lecture Notes in Computer Science*, pages 56–68, Estoril, Portugal, May 2008. Springer.
- [58] Frédéric Duvert, **Clement Jonquet**, Pascal Dugénie, and Stefano A. Cerri. AgentGrid Integration Ontology. In R. Meersman, Z. Tari, and P. Herrero, editors, *2nd International Workshop on Agents, Web Services and Ontologies Merging, AWeSOMe'06*, volume 4277 of *Lecture Notes in Computer Science*, pages 136–146, Montpellier, France, November 2006. Springer.
- [59] **Clement Jonquet** and Stefano A. Cerri. Agents Communicating for Dynamic Service Generation. In *1st International Workshop on Grid Learning Services, GLS'04*, pages 39–53, Maceio, Brazil, September 2004.
- [60] Stefano A. Cerri, Marc Eisenstadt, and **Clement Jonquet**. Dynamic Learning Agents and Enhanced Presence on the Grid. In *3rd International LeGE-WG Workshop: Grid Infrastructure to Support Future Technology Enhanced Learning*, Berlin, Germany, December 2003. Electronic Workshops in Computing.

NATIONAL (FRENCH) CONFERENCE

- [61] **Clement Jonquet**. Maitriser une technologie de gestion des ontologies et vocabulaires en France : défis et enjeux. In *SemWebPro Conference*, page 2, Paris, France, November 2018.
- [62] Fabienne Kettani, Stéphane Schneider, Sophie Aubin, Robert Bossy, Claire François, **Clement Jonquet**, Andon Tchechmedjiev, Anne Toulet, and Claire Nédellec. Projet VisaTM : Pinterconnexion OpenMinTeD – AgroPortal – ISTE^X, un exemple de service de Text et Data Mining pour les scientifiques français. In Sylvie Rawnez, editor, *29^{èmes} Journées Francophones d'Ingénierie des Connaissances, IC'18, Poster Session*, pages 247–249, Nancy, France, July 2018.
- [63] Amine Abdaoui, Andon Tchechmedjiev, William Digan, Sandra Bringay, and **Clement Jonquet**. French ConText: Détecter la négation, la temporalité et le sujet dans les textes cliniques Français. In *4^{ème} Symposium sur l'Ingénierie de l'Information Médicale, SIIM'17*, page 10, Toulouse, France, November 2017.
- [64] Anne Toulet, Vincent Emonet, and **Clement Jonquet**. Modèle de métadonnées dans un portail d'ontologies. In G. Diallo and O. Kazar, editors, *6^{èmes} Journées Francophones sur les Ontologies, JFO'16*, Bordeaux, France, October 2016. Best paper award.
- [65] **Clement Jonquet**, Amina Annane, Khedidja Bouarech, Vincent Emonet, and Soumia Melzi. SIFR BioPortal : Un portail ouvert et générique d'ontologies et de terminologies biomédicales françaises au service de l'annotation sémantique. In *16th Journées Francophones d'Informatique Médicale, JFIM'16*, page 16, Genève, Suisse, July 2016.
- [66] Solène Eholié, Mike Donald Tapi Nzali, Sandra Bringay, and **Clement Jonquet**. MuEVo, un vocabulaire multi-expertise (patient/médecin) dédié au cancer du sein. In *2^{ème} Atelier sur l'Intelligence Artificielle et la Santé*, page 7, Montpellier, France, June 2016.
- [67] Amina Annane, Vincent Emonet, Faical Azouaou, and **Clement Jonquet**. Réconciliation d'alignements multilingues dans BioPortal. In Nathalie Pernelle, editor, *27^{èmes} Journées Francophones d'Ingénierie des Connaissances, IC'16*, number 18, page 12, Montpellier, France, June 2016.
- [68] **Clement Jonquet**, Esther Dzalé-Yeumo, Elizabeth Arnaud, and Pierre Larmande. AgroPortal: a proposition for ontology-based services in the agronomic domain. In *3^{ème} atelier INtégration de sources/masses de données hétérogènes et Ontologies, dans le domaine des sciences du Vivant et de l'Environnement, IN-OVIVE'15*, page 5, Rennes, France, June 2015.
- [69] Guillaume Surroca, Philippe Lemoisson, **Clement Jonquet**, and Stefano A. Cerri. Diffusion de systèmes de préférences par confrontation de points de vue, vers une simulation de la Sérendipité. In *26^{èmes} Journées Francophones d'Ingénierie des Connaissances, IC'15*, page 12, Rennes, France, June 2015.
- [70] Juan-Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Prédiction de la polysémie pour un terme biomédical. In E. Gaussier, editor, *12^{ème} Conférence en Recherche d'Information et Applications, CORLA'15*, pages 437–452, March, Paris, France 2015.

- [71] **Clement Jonquet** and Mark A. Musen. Gestion du multilinguisme dans un portail d'ontologies : étude de cas pour le NCBO BioPortal. In C. Roche, R. Costa, and E. Coudyzer, editors, *Terminology & Ontology : Theories and applications Workshop, TOTh'14*, page 2, Brussels, Belgium, December 2014.
- [72] **Clement Jonquet**, Christophe Fiorio, Philippe Papet, Stéphanie Belin-Mejean, Claudine Pastor, and 'Cellule iPad des enseignants de Polytech Montpellier'. REX : Innovation pédagogique via l'utilisation de tablettes numériques à Polytech Montpellier. In D. Cassagne and C. Jonquet, editors, *9ème conférence des Technologies de l'Information et de la Communication pour l'Enseignement, TICE'14, Session Retour d'Expérience (REX)*, pages 97–106, Béziers, France, November 2014.
- [73] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. Extraction automatique de termes combinant différentes informations. In Brigitte Bigi, editor, *21ème Traitement Automatique des Langues Naturelles, TALN'14*, volume 2, pages 407–412, Marseille, France, July 2014.
- [74] Guillaume Surroca, Philippe Lemoisson, **Clement Jonquet**, and Stefano A. Cerri. Construction et évolution de connaissances par confrontation de points de vue : prototype pour la recherche d'information scientifique. In Catherine FaronZucker Catherine Roussey, editor, *25èmes Journées Francophones d'Ingénierie des Connaissances, IC'14*, page 12, Clermont-Ferrand, France, Mai 2014.
- [75] **Clement Jonquet**, Adrien Coulet, Nigam H. Shah, and Mark A. Musen. Indexation et intégration de ressources textuelles à l'aide d'ontologies : application au domaine biomédical. In S. Despres, editor, *21èmes Journées Francophones d'Ingénierie des Connaissances, IC'10*, pages 271–282, Nimes, France, June 2010.
- [76] **Clement Jonquet**, Nigam H. Shah, and Mark A. Musen. Un service Web pour l'annotation sémantique de données biomédicales avec des ontologies. In M. Fieschi, P. Staccini, O. Bouhaddou, and C. Lovis, editors, *13èmes Journées Francophones d'Informatique Médicale, JFIM'09*, volume 17 of *Informatique et Santé*, Nice, France, April 2009.
- [77] **Clement Jonquet**, Pascal Dugénie, and Stefano A. Cerri. Intégration orientée service des modèles Grid et Multi-Agents. In V. Chevrier and M-P. Huget, editors, *14èmes Journées Francophones sur les Systèmes Multi-Agents, JFSMA'06*, pages 271–274, Annecy, France, October 2006. Hermès.
- [78] **Clement Jonquet** and Stefano A. Cerri. Agents as Scheme Interpreters: Enabling Dynamic Specification by Communicating. In *14th Congrès Francophone AFRIF-AFLA de Reconnaissance des Formes et Intelligence Artificielle, RFLA'04*, volume 2, pages 779–788, Toulouse, France, January 2004.
- [79] **Clement Jonquet** and Stefano A. Cerri. Apprentissage issu de la communication pour des agents cognitifs. In J-P. Briot and K. Ghédira, editors, *11èmes Journées Francophones sur les Systèmes Multi-Agents, JFSMA'03*, pages 83–87, Hammamet, Tunisia, November 2003. Hermès.
- [80] **Clement Jonquet** and Stefano A. Cerri. Cognitive Agents Learning by Communicating. In *Colloque Agents Logiciels, Coopération, Apprentissage et Activité Humaine, ALCAA'03*, pages 29–39, Bayonne, France, September 2003.

EDITOR

- [81] Alsayed Algergawy, Naouel Karam, Friederike Klan, and **Clement Jonquet**, editors. *Proceedings of the 2nd International Workshop on Semantics for Biodiversity, S4BioDiv'17*, volume 1933 of *CEUR Workshop Proceedings*, Vienna, Austria, October 2017.
- [82] Pierre Larmande, Elizabeth Arnaud, Isabelle Mougenot, **Clement Jonquet**, Thérèse Libourel, and Manuel Ruiz, editors. *Proceedings of the 1st International Workshop on Semantics for Biodiversity, S4BioDiv'13*, Montpellier, France, May 2013.

DISSERTATION

- [83] **Clement Jonquet**. *Dynamic Service Generation: Agent interactions for service exchange on the Grid*. PhD thesis, University Montpellier 2, Montpellier, France, November 2006.
- [84] **Clement Jonquet**. Communication agent et interprétation Scheme pour l'apprentissage au méta-niveau. Master thesis, University Montpellier 2, Montpellier, France, June 2003.

POSTER & DEMONSTRATION

- [85] Nordine El Hassouni, Manuel Ruiz, Anne Toulet, **Clement Jonquet**, and Pierre Larmande. The Agronomic Linked Data (AgroLD) project. In *European conference dedicated to the future use of ICT in the agri-food sector, bioresource and biomass sector, EFITA'17, demonstration session*, page 257, Montpellier, France, July 2017.

- [86] **Clement Jonquet**, Anne Toulet, Vincent Emonet, and Pierre Larmande. AgroPortal: an ontology repository for agronomy. In *European conference dedicated to the future use of ICT in the agri-food sector, bioresource and biomass sector, EFFTA'17, demonstration session*, page 261, Montpellier, France, July 2017.
- [87] **Clement Jonquet**, Anne Toulet, Elizabeth Arnaud, Sophie Aubin, Esther Dzalé Yeumo, Vincent Emonet, Valeria Pesce, and Pierre Larmande. AgroPortal: an open repository of ontologies and vocabularies for agriculture and nutrition data. In Ben Schaap, editor, *GODAN Summit Open Data Research Symposium on Agriculture and Nutrition, GODAN'16*, New York, NY, USA, September 2016.
- [88] **Clement Jonquet**, Anne Toulet, Elizabeth Arnaud, Sophie Aubin, Esther DzaléYeumo, Vincent Emonet, John Graybeal, Mark A. Musen, Cyril Pommier, and Pierre Larmande. Reusing the NCBO BioPortal technology for agronomy to build AgroPortal. In P. Jaiswal and R. Hoehndorf, editors, *7th International Conference on Biomedical Ontologies, ICBO'16, Demo Session*, volume 1747 of *CEUR Workshop Proceedings*, page 3, Corvallis, Oregon, USA, August 2016.
- [89] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. A Way to Automatically Enrich Biomedical Ontologies. In *19th International Conference on Extending Database Technology, EDBT'16, Poster Session*, number 305, page 2, Bordeaux, France, March 2016. OpenProceedings.org.
- [90] **Clement Jonquet**, Esther Dzalé-Yeumo, Elizabeth Arnaud, Pierre Larmande, Anne Toulet, and Marie-Angélique Laporte. AgroPortal: A Proposition for Ontology-Based Services in the Agronomic Domain. In *23rd Plant & Animal Genome Conference, poster session*, page P0343, San Diego, USA, January 2016.
- [91] Soumia Melzi and **Clement Jonquet**. Representing NCBO Annotator results in standard RDF with the Annotation Ontology. In A. Paschke, A. Burger, P. Romano, M.S. Marshall, and A. Splendiani, editors, *7th International Semantic Web Applications and Tools for Life Sciences poster session, SWAT4LS'14*, volume 1320 of *CEUR Workshop Proceedings*, page 5, Berlin, Germany, December 2014. CEUR-WS.org.
- [92] Aravind Venkatesan, Pierre Larmande, **Clement Jonquet**, Manuel Ruiz, and Patrick Valduriez. Facilitating efficient knowledge management and discovery in the Agronomic Sciences. In *4th Plenary Meeting of the Research Data Alliance*, Amsterdam, The Netherlands, September 2014.
- [93] Juan Antonio Lossio-Ventura, **Clement Jonquet**, Mathieu Roche, and Maguelonne Teisseire. BIOTEX: A system for Biomedical Terminology Extraction, Ranking, and Validation. In M. Horridge, M. Rospocher, and J. Ossenbruggen, editors, *13th International Semantic Web Conference, Demonstration, ISWC'14*, volume 1272 of *CEUR Workshop Proceedings*, pages 157–160, Riva del Garda, Italy, October 2014.
- [94] **Clement Jonquet**, Christophe Fiorio, Philippe Papet, Stéphanie Belin-Mejean, and 'Cellule iPad des enseignants de Polytech Montpellier'. Scénarios pédagogiques numériques via l'utilisation de l'iPad par et pour les étudiants de Polytech Montpellier. In T. Karsenti, editor, *2ème Sommet iPad en éducation*, page 1, Montreal, Canada, May 2014. CRIFPE.
- [95] Emmanuel Castanier, **Clement Jonquet**, Soumia Melzi, Pierre Larmande, Manuel Ruiz, and Patrick Valduriez. Semantic Annotation Workflow using BioOntologies. In *Workshop on Crop Ontology and Phenotyping Data Interoperability*, Montpellier, France, April 2014. CGIAR.
- [96] **Clement Jonquet**. BioPortal : ontologies et ressources de données biomédicales à portée de main. In L. Tamine, S. Darmoni, and L. Soualmia, editors, *1ère édition du Symposium sur l'Ingénierie de l'Information Médicale, SIIM'11, Démos*, Toulouse, France, June 2011.
- [97] Patricia L. Whetzel, **Clement Jonquet**, Cherie H. Youn, Michael Dorf, Ray Ferguson, Mark A. Musen, and Nigam H. Shah. The NCBO Annotator: OntologyBased Annotation as a Web Service. In Barry Smith, editor, *International Conference on Biomedical Ontology, ICBO'11, Demonstration session*, pages 302– 303, Buffalo, NY, USA, July 2011.
- [98] Patricia L. Whetzel, Nigam H. Shah, Natasha F. Noy, **Clement Jonquet**, Cherie H. Youn, Paul R. Alexander, Michael Dorf, and Mark A. Musen. Ontology-based Tools to Enhance the Curation Workflow. In *4th International Biocuration Conference, Poster Session*, Tokyo, Japan, October 2010.
- [99] Patricia L. Whetzel, Nigam H. Shah, Natalya F. Noy, **Clement Jonquet**, Adrien Coulet, Cherie Youn, Michael Dorf, and Mark A. Musen. Ontology-based Web Services for Semantic Applications. In *Bio-Ontologies: Semantic Applications in Life Sciences, SIG, Poster session, ISMB'10*, Boston, MA, USA, July 2010.
- [100] Patricia L. Whetzel, Nigam H. Shah, Natalya F. Noy, **Clement Jonquet**, Adrien Coulet, Nicholas B. Griffith, Cherie H. Youn, Michael Dorf, and Mark A. Musen. Ontology Web Services for Semantic Applications. In *Pacific Symposium on Biocomputing, Poster presentations, PSB'10*, Hawaii, USA, January 2010.
- [101] Nigam H. Shah, Natasha F. Noy, **Clement Jonquet**, Adrien Coulet, Patricia L. Whetzel, Nicholas B. Griffith, Cherie H. Youn, Benjamin Dai, Michael Dorf, and Mark A. Musen. Ontology Services for Semantic

- Applications in Health and Life Sciences. In *American Medical Informatics Association Annual Symposium, Demonstrations, AMLA'09*, Washington DC, USA, November 2009.
- [102] **Clement Jonquet**, Nigam H. Shah, Cherie H. Youn, Chris Callendar, MargaretAnne Storey, and Mark A. Musen. NCBO Annotator: Semantic Annotation of Biomedical Data. In *8th International Semantic Web Conference, Poster and Demonstration Session, ISWC'09*, Washington DC, USA, November 2009.
- [103] Patricia L. Whetzel, Nigam H. Shah, Natalya F. Noy, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Cherie H. Youn, Chris Callendar, Adrien Coulet, Daniel L. Rubin, Barry Smith, Margaret-Anne Storey, Christopher G. Chute, and Mark A. Musen. BioPortal: Ontologies and Integrated Data Resources at the Click of the Mouse. In B. Smith, editor, *International Conference on Biomedical Ontology, ICBO'09*, page 197, Buffalo, NY, USA, July 2009.
- [104] Patricia L. Whetzel, Nigam H. Shah, Natalya F. Noy, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Cherie H. Youn, Adrien Coulet, Chris Callendar, Daniel L. Rubin, Barry Smith, Margaret-Anne Storey, Christopher G. Chute, and Mark A. Musen. BioPortal: Ontologies and Integrated Data Resources at the Click of a Mouse. In *Bio-Ontologies: Knowledge in Biology, SIG, Poster session, ISMBECCB'09*, Stockholm, Sweden, July 2009.
- [105] Patricia L. Whetzel, Natalya F. Noy, Nigam H. Shah, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Cherie H. Youn, Daniel L. Rubin, and Mark A. Musen. BioPortal: Ontologies and Integrated Data Resources at the Click of a Mouse. In *17th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB'09) and the 8th European Conference on Computational Biology (ECCB'09), Poster session*, Stockholm, Sweden, July 2009.
- [106] Patricia L. Whetzel, Natalya F. Noy, Nigam H. Shah, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Cherie H. Youn, Michael J. Montegut, Daniel L. Rubin, Margaret-Anne Storey, Chris G. Chute, and Mark A. Musen. BioPortal: A Web Repository for Biomedical Ontologies and Data Resources. In *3rd International Biocuration Conference, Poster presentations*, page 97, Berlin, Germany, April 2009.
- [107] Simon N. Twigger, Jennifer Smith, Rajni Nigam, **Clement Jonquet**, and Mark A. Musen. Billion Data Points Trapped in International Data Repository Daring rescue Planned! In *3rd International Biocuration Conference, Poster presentations*, page 34, Berlin, Germany, April 2009.
- [108] Patricia L. Whetzel, Natasha F. Noy, Nigam H. Shah, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Michael J. Montegut, Daniel L. Rubin, Cherie H. Youn, and Mark A. Musen. BioPortal: A Web Repository for Biomedical Ontologies and Ontology-indexed Data Resources. In *Pacific Symposium on Biocomputing, Poster presentations, PSB'09*, page 90, Hawaii, USA, January 2009.
- [109] Mark A. Musen, Nigam H. Shah, Natasha F. Noy, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, James Buntrock, **Clement Jonquet**, Michael Montegut, and Daniel L. Rubin. BioPortal: Ontologies and Data Resources with the Click of a Mouse. In *American Medical Informatics Association Annual Symposium, Demonstrations, AMLA'08*, pages 1223–1224, Washington DC, USA, November 2008.
- [110] Natalya F. Noy, Nigam H. Shah, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, **Clement Jonquet**, Michael Montegut, Daniel L. Rubin, Cherie Youn, and Mark A. Musen. BioPortal: A Web Repository for Biomedical Ontologies and Data Resources. In C. Bizer and A. Joshi, editors, *7th International Semantic Web Conference, Poster and Demonstration Session, ISWC'08*, volume 401 of *CEUR Workshop Proceedings*, Karlsruhe, Germany, October 2008. CEURWS.org.

REPORT

- [111] Valeria Pesce, Jeni Tennison, Lisette Mey, **Clement Jonquet**, Anne Toulet, Sophie Aubin, and Panagiotis Zervas. A Map of Agri-food Data Standards. F1000 Research Technical Report 7-177, Global Open Data for Agriculture and Nutrition (GODAN), February 2018. Not peer reviewed.
- [112] Amina Annane, Zohra Bellahsene, Faical Azouaou, and **Clement Jonquet**. YAM-BIO – Results for OAEI 2017. System paper, LIRMM, University of Montpellier, Montpellier, France, November 2017. Ontology Alignment Evaluation Initiative 2017 Campaign.
- [113] **Clement Jonquet**, Mark A. Musen, and Nigam H. Shah. Help will be provided for this task: Ontology-Based Annotator Web Service. Research report BMIR2008-1317, Stanford University, CA, USA, May 2008.
- [114] Nigam H. Shah, **Clement Jonquet**, and Mark A. Musen. Ontrez project report. Research report BMIR-2007-1289, Stanford University, CA, USA, November 2007.
- [115] **Clement Jonquet** and Stefano A. Cerri. Characterization of the Dynamic Service Generation concept. Research report 06007, University Montpellier 2, France, February 2006.

- [116] **Clement Jonquet**. A framework and ontology for Semantic Grid services: an integrated view of WSMF and WSRF. Unpublished draft research report, University Montpellier 2 and KMi, Open University, France, May 2005.

UNDER REVIEW OR IN PROGRESS

[CJ-UR1] Anne Toulet, Biswanath Dutta, **Clement Jonquet**, Assessing the Practice of Ontology Metadata: A Survey Result, *Non published Report*, Montpellier, France, June 2018.

[CJ-UR2] Amine Abdaoui, Andon Tchechmedjiev, William Digan, Sandra Bringay, **Clement Jonquet**, French ConText: a Publicly Accessible System for Detecting Negation, Temporality and Experiencer in French Clinical Notes, *Biomedical Informatics*, under review - JBI-18-620 - 2nd round, 2018.

[CJ-UR3] Amina Annane, Zohra Bellahsene, Faïçal Azouaou, **Clement Jonquet**, Using Background Knowledge to Enhance Ontology Matching: a Survey, *Semantic Web*, Rejected - 1525-2737, then 1662-2874, to be resubmitted, 2019.

DETAILED RESEARCH ACTIVITY

RESEARCH PROJECTS (2003-2019)

DATA TO KNOWLEDGE IN AGRONOMY AND BIODIVERSITY (D2KAB)

D2KAB's primary objective is to **create a framework to turn agronomy and biodiversity data into knowledge –semantically described, interoperable, actionable, open–** and investigate scientific methods and tools to exploit this knowledge for applications in science & agriculture. Agronomy/agriculture and biodiversity (ag & biodiv) face several major societal, economical, and environmental challenges, a semantic data science approach will help to address. We shall provide the means **–ontologies and linked open data– for ag & biodiv** to embrace the semantic Web to produce and exploit FAIR data. To do so, we will develop new original methods and algorithms in the following areas: data integration, text mining, semantic annotation, ontology alignment and linked data exploitation. D2KAB project, supported by French ANR, brings together a unique multidisciplinary consortium of 12 partners to achieve this objective: 2 informatics research units (LIRMM, I3S); 6 INRA/IRSTEA/IRD applied informatics research units (URGI, MaIAGE, IATE, DIST, TSCF, DIADE) specialized in agronomy or agriculture; 2 labs in biodiversity and ecosystem research (CEFE, URFM); 1 association of agriculture stakeholders (ACTA); and 1 partnership with Stanford BMIR department. Each of the project **driving scenarios (food packaging, agro-agri linked data, wheat phenotype, ecosystems & plant biogeography)** will have a significant impact and produce concrete outcomes for ag & biodiv scientific communities and socio-economic actors in agriculture.

As PI, my contributions will be to coordinate the project and monitor the results of each tasks. I am leading the coordination and dissemination work-packages as well as WP2 on Ontology-based services.

VISA FOR TEXT MINING (VISATM)

Developing and offering *Text and Data Mining* (TDM) services for scientists raises several legal, organizational and scientific questions. The VisaTM project of the French BSN (*Bibliothèque Scientifique Numérique* – recently renamed *Comité pour la Science Ouverte*) brings together three complementary research organizations **to profile an infrastructure for TDM services in France**: INRA, member of the H2020 text and data mining eInfrastructure project OpenMinTeD (<http://openminted.eu>), CNRS-INIST, host of the ISTE^X (www.istex.fr) platform and University of Montpellier (LIRMM) as leader of the AgroPortal project (<http://agroportal.lirmm.fr>). The project, divided into 3 work-packages (study, conception, scenarios), shall allow the development of mechanisms to provide data resources (text corpora) and semantic resources (ontologies/terminologies) to the OpenMinTed infrastructure. ISTE^X (scientific publications databases) and AgroPortal (agronomy related ontologies) are used as demonstrators.

My contributions, within the “Conception” work-package, are to enable the automatic consumption of terminologies and ontologies (from different ontology repositories) within the OpenMinTed platform.

AGROPORTAL

Many vocabularies and ontologies are produced to represent and annotate agronomic data. However, those ontologies are spread out, in different formats, of different size, with different structures and from overlapping domains. Therefore, there is need for a common platform to receive and host them, align them, and enabling their use in agro-informatics applications. By reusing the National Center for Biomedical Ontologies (NCBO) BioPortal technology, **we have designed AgroPortal, an ontology repository for agronomy and related domains**. We offer a portal that features ontology hosting, search, versioning, visualization, comment, and recommendation; enables semantic annotation; stores and exploits ontology alignments; and enables interoperation with the semantic web. We plan to turn that prototype into a real service to the community (<http://agroportal.lirmm.fr>). We first focused on five driving agronomic use cases that participated in the design and orientation of the project to anchor it in the community: RDA Wheat Data Interoperability WG, Crop Ontology project, INRA vocabularies, AgroLD and Agrisemantics Map of Agri-food data standards. **By specifically addressing the requirements of the agronomy community, AgroPortal has kindled an important interest both at the national and international levels**. The platform currently hosts 106 vocabularies with more than 2/3 of them not present in any similar ontology repository and 10 private ontologies. We have identified 80 other candidate ontologies that will be loaded in the future to complement this valuable resource. The project was originally supported by IBC & Labex NUMEV & Agro. It will now be supported by D2KAB project.

As coordinator, I have been the principal architect of the project and the supervisor of 4 persons (postdoc and engineer) involved in the development, maintenance, outreach and curation of the platform.

PRACTICE-BASED EVIDENCES FOR ACTIONING KNOWLEDGE IN PHARMACOGENOMICS (PRACTIKPHARMA)

Pharmacogenomics (PGx) studies how individual gene variations cause variability in drug responses. Knowledge in PGx is typically composed of units that have the form of ternary relationships *gene variant–drug–adverse event* –stating that an adverse event may occur for patients having the gene variant when being exposed to the drug– and can be formalized to different extents using biomedical ontologies. Most of the state-of-the-art knowledge in PGx is not yet validated, consequently not yet applicable to medicine. During the PractiKPharma project our objective is to **validate or moderate pharmacogenomics state-of-the-art knowledge on the basis of practice-based evidences**, i.e., knowledge extracted from Electronic Health Records (EHRs). To achieve our goal, we extract state-of-the-art knowledge from PGx databases (PharmGKB) and literature (PubMed), and we extract observational knowledge from clinical data; then we compare knowledge units extracted from these two origins, to confirm or moderate state-of-the-art knowledge, with the goal of enabling personalized medicine. PractiKPharma project, supported by French ANR, and head by A. Coulet, brings together two informatics labs: LORIA (Nancy) & LIRMM (Montpellier); and two hospitals: HEGP (Paris) and CHU St Etienne. At LIRMM, we are enhancing the SIFR annotation workflow to capture clinical narrative and semantically annotate French electronic health records.

My contributions were to drive and supervise LIRMM activities (3 persons) and participate into the research for PGx knowledge modelling and comparison. Our team main mission was to enhance the SIFR annotation workflow to capture clinical narrative and semantically annotate French electronic health records.

SEMANTIC INDEXING OF FRENCH BIOMEDICAL DATA RESOURCES (SIFR)

Biomedical data integration and semantic interoperability is necessary to enable **new scientific discoveries that could be made by merging different available data (i.e., translational research)**. A key aspect in addressing semantic interoperability for life sciences is the use of terminologies and ontologies as a common denominator to structure biomedical data and make them interoperable. The SIFR project, mainly funded by French ANR and H2020 MSCA program, **proposes to investigate the scientific and technical challenges in building ontology-based services to leverage biomedical ontologies and terminologies in indexing, mining and retrieval of French biomedical data**. SIFR builds an ontology-based indexing workflow (i.e., French Annotator) similar to what exists for English resources but dedicated and specialized for French. We are designing the SIFR Annotator (<http://biportal.lirmm.fr/annotator>) a web service for semantic annotation of French textual medical data. SIFR brings together several young researchers at LIRMM to achieve this objective: **Dr. Clement Jonquet**, accompanied by two young assistant professors, Dr. Sandra Bringay (text/data mining) and Dr. Mathieu Roche (NLP). Plus: (i)°**Stanford BMIR**, a worldwide leader providing (English-)ontology-based services to assist health professionals and researchers in the use of ontologies to design biomedical knowledge-based systems; (ii)°**CISMeF group**, which is the national leader to provide French health terminology-based services.

As PI, my contributions were to coordinate the project and monitor the results of each tasks (two PhDs, 1 engineer, multiple interns).

INSTITUT DE BIOLOGIE COMPUTATIONNELLE (IBC)

This project, supported by *Investissement d'Avenir* French ANR program, aims to develop innovative methods and software to analyze, integrate and contextualize **large-scale biological data in the fields of health, agronomy and environment**. Several branches of research are combined: algorithmics (combinatorial, numerical, highly parallel, stochastic), modeling (discrete, qualitative, quantitative, probabilistic), and data management and information retrieval (integration, workflows, cloud). **IBC's Axe 5**, headed by P. valduriez (INRIA) and P. Larmande (IRD), is interested in several topics related to scientific workflow (provenance, big data) as well as data integration (ontology-based approaches). In this work-package, we have kicked-off the AgroPortal (cf. above) and AgroLD platforms. The **Agronomic Linked Data knowledge base (AgroLD)** mainly developed by P. Larmande (IRD), is a knowledge system that exploits Semantic Web technology and relevant standard domain ontologies, to integrate –genomics, proteomics and phenomics– information on plant species widely studied by the agronomic research community. AgroLD is an RDF knowledge base of 40 M triples created by annotating 8 data sources with 8 ontologies. My contributions within IBC were the leadership on AgroPortal project and expertise in using ontologies for annotations in the AgroLD project.

CENTRE DE RECHERCHE ET D'INNOVATION INDUSTRIELLE (CR2I) DIAGNOSTIC-SANTE PROJECT

The CR2I was an *Investissement d'Avenir* French ANR program for industrial biomedical research. As member of the metadata repository group (multi-omics platform development), we were interested in offering a multi-omics repository for and defining standard vocabularies to represent such data. Headed originally by Sanofi and Dr. Magali Roux, the project has led to the Kyomed spinoff (www.kyomed.com). My contribution within the CR2I was bringing knowledge engineering and modeling expertise.

NATIONAL CENTER FOR BIOMEDICAL ONTOLOGY (NCBO)

[NCBO](http://www.ncbo.org) (part of NIH National Centers for Biomedical Computing Roadmap) is a consortium of leading biologists, clinicians, informaticians, and ontologists who develop innovative technology and services that allow scientists to create, disseminate, and manage biomedical information and knowledge in machine-processable form. The project vision is that all biomedical knowledge and data are disseminated on the Internet using principled ontologies, such that the knowledge and data are semantically interoperable and useful for furthering biomedical science and clinical care. Important members of NCBO consortium are Stanford University, Mayo Clinic, and University of Victoria. NCBO develops the BioPortal (<http://bioportal.bioontology.org>) platform. My contributions within NCBO are detailed hereafter.

EUROPEAN LEARNING GRID INFRASTRUCTURE (ELEGI)

The goal of the ELeGI project (www.elegi.org, IST Integrated Project EU – FP6) was to promote a shift from the traditional e-learning approach (content-centred) to an interaction based, collaborative and experimental one. This new paradigm focused on knowledge construction using experimental based and collaborative learning approaches in a contextualized, personalized and ubiquitous way to replace the current information transfer paradigm focused on content and on the key authoritative figure of the teacher who provides information. The project aimed to propose a grid service-oriented architecture to support this paradigm shift. Important members of ELeGI consortium were UM2, Open University, Universities of Southampton, Dundee, Pau, St Andrews, ATOS origin. Within the context of the ELeGI project we worked on a **collaborative environment constructed over a grid infrastructure called the Grid Shared Desktop (GSD)**. The GSD was a Web-accessible environment that provides members of a virtual community with a set of desktops supporting collaboration in both synchronous and asynchronous mode. It is a powerful interface relying on grid service architecture to communicate user representations and build collaborative knowledge. We evaluated the GSD with a community of chemists tackling the problem of **collaborative construction of an ontology** (using the ontology editor Protégé within the GSD). This work was done in collaboration with Dr. M. Crubezy (Stanford Medical Informatics, USA), Dr. C Laurencu (Institut Charles Gerhardt de Montpellier, France) and Pr. A. Krief (Laboratoire de Chimie Organique Synthèse, Faculté N.-D de la Paix, Belgium).

LEARNING GRID OF EXCELLENCE WORKING GROUP (LEGE-WG)

The project (IST STREP Project EU – FP6) aimed to facilitate the establishment of a “European Learning Grid Infrastructure” by supporting the systematic exchange of information and by creating opportunities for close collaboration between the different actors in the formative process. The project gave birth to the ELeGI project. My contribution within LeGE-WG took the form of collaboration with Pr. Marc Eisenstadt (Knowledge Media Institute, Open University, UK) and his group to propose a common vision based on learning agents (artificial) and enhanced presence (human) for dynamic services.

POSTDOCTORAL RESEARCH ACTIVITY (2007-2010)

As postdoctoral fellow at the **Stanford Center for Biomedical Informatics Research (BMIR)**, I was a member of Pr. M.A. Musen's group. BMIR concentrates on the study of components for building knowledge-based systems, controlled terminologies and ontologies, and technology for the Semantic Web. For 20 years, this laboratory proposed contributions to assist tasks in biomedicine. **BMIR still develops the Protégé ontology editor & API, which is the most used ontology editor today.** Within NCBO, we developed **BioPortal** (<http://bioportal.bioontology.org>) **the reference and most comprehensive Web repository for biomedical ontologies and terminologies.** This library contains a large collection of ontologies in biomedicine in different format (OBO, OWL etc.) such as Gene Ontology, NCI Thesaurus, ICD, FMA. Users can browse, search, and comment ontologies both online and via a Web services API. The goal of NCBO is to provide the biomedical community with a set of ontology-based services that can be used by scientists to integrate their data and enhance translational discoveries (biomedical data integration problem). In that context, I led conjunctly with Dr. Nigam H. Shah (PhD, MD) the semantic annotation of biomedical data activities of

the center. NCBO encourage biomedical researchers to annotate their data with biomedical ontology concepts for better data integration, search and discoveries. As main activity, **I designed, implemented and experimented an ontology-based annotation workflow to annotate text data with ontology concepts.** The workflow is based on syntactic concept recognition (using concept names and synonyms) and on a set of semantic expansion algorithms that leverage the semantics in ontologies (e.g., is_a relations, mappings, semantic distance) to create new annotations. The annotation workflow relies on BioPortal biomedical ontologies and generates annotations in several formats like XML and RDF/OWL. **We provide the workflow as a web service: the NCBO Annotator** (<http://bioportal.bioontology.org/annotator>) which is one of the most used service of the platform today. Internally, we have used the annotation workflow to index biomedical data resources with ontology concepts. The **NCBO Resource index** (<http://bioportal.bioontology.org/resources>) allows a user to search for biomedical data based on ontology concepts. The resource index is directly searchable in the BioPortal ontology repository: when a user browses a given concept, he has access (link) to the list of resource elements that have been annotated with this concept. We have processed the textual metadata of elements from 20+ biomedical resources (e.g., abstract of articles (PubMed), gene expression data sets (Array Express), clinical-trial reports (ClinicalTrials.gov)) and new ones are still incorporated. We also use the annotation workflow to implement the **NCBO Ontology Recommender service** (<http://bioportal.bioontology.org/recommender>) which informs the user of the most appropriate ontologies relevant for their given dataset using semantic annotations. This service has been evaluated very useful by the community.

Developing the annotation workflow allows me to be interested in several aspects related to ontologies and semantic web: (i) development and reuse of semantic distances (graph/path based, or information content based), (ii) development and management of ontology mappings, (iii) graph algorithms (e.g., traverse, paths between concepts) to deal with the is_a hierarchy structure, (iv) ontology and concept URIs to deal with ontology versioning and annotations maintenance.

SOFTWARE DEVELOPMENT

Within NCBO, I was involved in both the research and development activities. Being involved in all the stages of a development project from research to prototype and to production is a very good learning experience of software engineer practices (project management, code sharing, developer meetings, technical questions, budget). Furthermore, the NCBO project is driven by several “driving biological projects”. Being driven by those projects is a very interesting in terms of research, design and software development. It provides direct feedback and evaluation that are instantly re-injected in the design loop.

PHD THESIS RESEARCH ACTIVITY (2003-2006)

SUBJECT

My thesis project was about **dynamic service exchange modelling**. In a computing world where services become more and more important, the project tackled the hard question: how services can be dynamically and interactively constructed and exchanged in order to accurately identify and fit the user problem. The notion of service is now at the centre of distributed system development; it plays a key role in their implementation and success. New needs in service exchange scenarios are clearly highlighted (dynamicity, composition, conversation based, user-centred behaviour, customization, business processes, semantics, etc.) by the service-oriented computing community and are not addressed by current service oriented architectures (e.g., web services). The next generation of services will consist of dynamically generated services, i.e., **services constructed on the fly by the service provider according to the conversation it has with the service user**. In the thesis, I led a deep reflection about the notion of service. I explain that providing a service means to identify and offer a solution (among many possible ones) to the problem of another. A service is not just a pre-determined product. I introduce the concept of **dynamic service generation** as a different way to provide and use services in a computer-mediated context: services are dynamically constructed, provided and used by agents (human or artificial) within a community, by means of a conversation. In dynamic service generation, the user agent is not assumed to know exactly what the provider agent can offer him. He has to find out and construct step by step what he wants based on the service provider's reactions. The central idea is that a service is based on a conversation. Actually, dynamic service generation highlights the idea of processing something new instead of merely delivering something that already exists such as in the product approach. In everyday life, when somebody needs new clothes, buying *ready-to-wear clothes* is analogous to asking for a product, whereas *having clothes made by a tailor* is analogous to requiring a service to be generated.

METHODS

To address that big challenge we were interested in grid and multi-agent systems. Grid because this is the first distributed architecture (and infrastructure) really developed in a service-oriented perspective: grid services are compliant web services, based on the dynamic allocation of virtualized resources to an instantiated service. Grid services augment the basic notion of web service with two significant features: service state and service lifetime management. Whereas web services have instances that are stateless and persistent, grid service instances can be either stateful or stateless, and can be either transient or persistent. On the other hand, agents are said to be autonomous, intelligent and interactive entities that may use and provide services (in the sense of particular problem-solving capabilities). Actually, agents have many interesting characteristics for service exchange: they are reactive, efficient, adaptive, they know about themselves, they have a memory and a persistent state, they are able to have conversation, work collaboratively, negotiate, learn and reason to evolve, deal with semantics associated to concepts by processing ontologies, etc. As they are based on a conversation, a key identified aspect to dynamically generate services was the ability for services to have a state (grid) and then being able to intelligently and dynamically modify this state (agent).

CONTRIBUTIONS

I made three precise contributions: (i) **STROBE, a new agent representation and communication model**. STROBE is inspired by the three Scheme primitives STream, Object and Environment. STROBE agents are able to interpret communication messages and execute services in a given dynamic conversation context. These contexts are dedicated to a specific interlocutor (or group of interlocutors). These contexts take the form of several environments (with meta-programming techniques) in which agent capabilities and messages are interpreted. Thanks to those environments an agent has a part of its state that evolves according to the interactions it has with another agent. A STROBE agent develops a dedicated language for each of its interlocutors. This feature was exploited in the perspective of dynamic service generation. In the context of service exchange, this feature allows an agent to dynamically specify and execute a service. We illustrated such a scenario with a train ticket booking service agent. Having dedicated and dynamic conversation context is the key new aspect of the STROBE model. (ii) ***i-dialogue, a computational abstraction that models multi-agents conversations*** by means of fundamental constructs of applicative/functional languages (i.e., streams, lazy evaluation and higher-order functions). An *intertwined-dialogue* takes the form of a recursive function, producing and consuming streams of messages, run by each agent in a multi-agents (more than two) conversation. (iii) **AGIL, a service-oriented grid-agent integrated model** based on the representation of agent capabilities as grid services. Many works demonstrate the use of multi-agent techniques for grid (e.g., agent based resource management) or merging web/grid services standards with agents ones, but none of them propose a concrete integration of the two paradigms. AGIL is a new, concrete and formalized integration of the agent and grid paradigms. In this model, concepts of grid and multi-agent systems, relations between them and the rules are semantically described by a set-theory formalization and a common graphical description language, called **Agent-Grid Integration Language (AGIL)** – also formalized as an ontology. AGIL aggregates the thesis results together by formalizing agent interactions for service exchange on the grid. I demonstrate how such integration is a great feature for services. For example, I demonstrate the importance of the concept of state in service exchange (i.e., being able to have a state, being able to dedicate a part of this state to an interlocutor and being able to intelligently and dynamically modify this state). I highlight how stateful and dynamic grid services (by opposition to stateless web services) and agent dedicated conversation context are two complementary approaches to deal with dynamic generated services. This integration model was also inscribed in the perspective of dynamic service generation.

CONTEXT & DEFENCE JURY

My thesis research project (3 years) was also done at LIRMM supervised by Pr. Stefano A. Cerri. I had a French government MENRT grant. I wrote and defended (November 16, 2006) my thesis in English. My defense jury included 3 thesis reviewers and was composed of some of the best international scientists in these areas:

Michael N. Huhns,	Pr., University of South Carolina, USA	(rapporteur)
Luc Moreau,	Pr., University of Southampton, UK	(rapporteur)
Domenico Talia,	Pr., Università della Calabria, Italy	(rapporteur)
Amal El Fallah Seghrouchni	Pr., Université Paris 6, France	(examinateur)
Jacques Ferber,	Pr., Université Montpellier II, France	(examinateur)
Jean-Luc Koning,	Pr., Inst. Nat. Polytechnique de Grenoble, France	(examinateur)
Stefano A. Cerri,	Pr., Université Montpellier II, France	(directeur)

SOFTWARE DEVELOPMENT

The development project done in the context of my PhD had a proof-of-concept objective. The STROBE implementation project was done to demonstrate with some experiments some important features of the STROBE model. The two main experiments illustrate: (i) meta-level learning by communicating, where STROBE agents modify their interpreters while communicating and learn a new communicative acts by; ii) dynamic specification where STROBE agents specify by interactions a function that must be executed to accomplish a service (using non deterministic interpretation & constraints). I suggested in this project to embed in an agent architecture a “reflexive tower” such as the one available in functional/applicative languages (e.g., Scheme/LISP). Using reflective programming techniques to dynamically change the way an expression is evaluated is not an easy task. Doing it for agent architecture was new. A first partial implementation was done in Scheme (to implement the core of agent interpreters using reflective programming techniques). A second one, StrobeKit, was done in Scheme/Java within the [multi-agents platform MadKit](#) and the Kawa framework to connect Scheme and Java. The StrobeKit API enables a programmer to write agents that respect STROBE model's requirements concerning agent structure and agent interaction. Details on STROBE implementation can be found Appendix C of my PhD thesis.

MSC RESEARCH ACTIVITY (2003 AND BEFORE)

SUBJECT & CONTRIBUTIONS

We address the following problem: how can an agent change dynamically (i.e., at run time) its behaviour based on messages it receives during a conversation. We showed that **using meta-programming techniques (reflexivity/reification) in an agent architecture** an agent can actually dynamically modify the way it interprets messages and then adapt its behaviour. For instance, in applicative/functional programming languages, reflective programming allows an interpreter to be dynamically (i.e., during the evaluation process) changed in order to access and eventually modify the execution context (expression, environment, interpreter, continuation) of a procedure. Embedded into agents, such a feature enables them to dynamically learn at the *data*, *control* and *interpreter* levels enabling them to change the way they interpret messages in a conversation. We illustrate the model with an experiment where an agent (as a Scheme interpreter) learn dynamically a new performative (speech act for a message). This meta-level learning by communicating was envisaged as a great feature to go toward the *dynamic service generation* vision presented hereafter. This work lead to several publications. Also, as MSc. student at UM2, I worked with some fellows on different student “research” projects (usually a couple of months long): (i) Warbot (robot agents) contest with the **multi-agent platform MadKit** (advisor Pr. Jacques Ferber), (ii) coordination in **cellular automata** (advisor Dr. Philippe Reitz).

CONTEXT

My MSc research projects (6 months) was done at **Laboratory of Informatics, Robotics, and Microelectronics of Montpellier (LIRMM)**, University Montpellier 2 (UM2), within the Kayou team concerned with topics such as agents and multi-agent systems, constraints, machine learning, web, grid, service-oriented computing, ontologies, collaborative learning. I was supervised by Pr. Stefano A. Cerri. Mainly, this project initiated my PhD research project presented after. However, it allowed me to get interested in some interesting tools for the future such as for example applicative/functional programming languages (e.g., Scheme/Lisp).

(FRENCH) DETAILS DES ACTIVITES D'ENSEIGNEMENT

EXPERIENCE

- Depuis 2010 : **Maitre de Conférences à l'Ecole Polytechnique de Montpellier**, composante de l'Université de Montpellier (192h~TD par an). De 2010 à 2015, j'étais responsable de 2 modules en 3^{ème} et 5^{ème} année d'école d'ingénieur et je participais à d'autres enseignements. De 2012 à 2015, j'étais responsable de la 5^{ème} (et dernière) année de la filière « Informatique et Gestion ». J'encadre également des stages de fin d'études et de projets industriels. Mes activités d'enseignement ont été en pause de 2015 à 2019 pendant ma mobilité et la phase de retour de mon projet H2020 MSCA.
- 2012-2015 : Coordination de la **cellule des enseignants de Polytech** qui s'intéressent à l'innovation pédagogique à l'aide des tablettes numériques (iPad). Nous avons décrit, testé et réalisé plusieurs scénarios d'utilisation des iPads dans la classe. Je m'occupais également d'une partie de la logistique du projet (1000 iPads).
- 2006-2007 : **ATER (complet) à l'Université Montpellier 3**. Mon expérience d'enseignement (192h~TD) dans une université différente (arts, lettres, langues, sciences humaines et sociales) a été très enrichissante. Elle m'a permis d'intégrer une autre équipe d'enseignement et de cotoyer un autre public que celui de l'Université Montpellier 2 (sciences et techniques). J'y exerçais également des responsabilités communes et administratives.
- 2003-2006 : **Moniteur CIES à l'Université Montpellier 2**. Le monitorat fut ma première expérience d'enseignement. En 3 ans (64h~TD/an), elle m'a permis d'exercer à petite échelle beaucoup des tâches de l'enseignant : préparation des cours/TD/TP, participation à l'évaluation (rédaction des sujets, corrections, jury), encadrement de projet et de stage, tâches administratives etc. J'ai aussi suivi un ensemble de formations (expression, théâtre, préparation, projets, etc.) proposées par le Centre d'Initiation à l'Enseignement Supérieur (CIES) de Montpellier.

RÉCAPITULATIF

	Enseignement	Type	Heures (~TD)/an
(depuis 2013)	Web Sémantique	CM	6
(en 2011 seulement)	Algorithmique et programmation Ada/C	TD/TP	40
Maitre de Conférences Polytech Montpellier (depuis 2010)	Architecture des Ordinateurs	CM	18
		TD/TP	42
	Applications Internet et Interopérabilité	CM	18
		TD/TP	24
	Encadrement stage	-	30
	Encadrement PIFE	-	38
	Divers cours		4
Divers encadrement	-	10	
ATER Univ. Montpellier 3 (2006-2007)	C2i niveau débutant	CM/TD/TP	102
	C2i niveau avancé	CM/TD/TP	60
	Internet/Php/Javascript	CM/TD/TP	30
Moniteur CIES Univ. Montpellier 2 (2003-2006)	Programmation/Scheme/évaluation	TD	100
		TP	40
	Programmation/Algorithmique/Maple	TD	24
		TP	20

	Divers cours	CM	9
	Encadrement	-	15
	TOTAL :		192*7 ans ~ 1400h (~TD)

ENSEIGNEMENTS EFFECTUÉS

- 2013-2015 : **Module « Web Sémantique »**

Public : Ecole d'ingénieur « Informatique et Gestion », 5^{ème} année.

Contribution : Cours inspiré de 2 tutoriaux (N. Noy & F. Gandon) et d'un listing d'applications du web sémantique. Gestion complète du module.

Objectifs : Le cours a pour objectif une introduction aux principes et technologies du web sémantique.

URL : <http://mon.univ-montp2.fr/claroline/course/index.php?cid=P1S904>

- 2010-2015 : **Module « Applications Internet et Interopérabilité »**

Public : Ecole d'ingénieur « Informatique et Gestion », 5^{ème} année.

Contribution : Cours effectué en anglais (3 ans). ~300 transparents de cours. Gestion complète du module et des interventions extérieures sur J2EE et .NET.

Objectifs : Le cours a pour objectif la compréhension des architectures d'application Web. Une approche historique est suivie pour faire une revue des différents principes et modèles. Les technologies des applications Web et d'interopérabilité sont également présentées e.g., XML, J2EE, .NET, Web services, etc.

[Série de cours sur iTunes.](#)

URL : <http://mon.univ-montp2.fr/claroline/course/index.php?cid=P1S911>

- 2010-2015 : **Module « Architecture des Ordinateurs »**

Public : Ecole d'ingénieur « Informatique et Gestion », 3^{ème} année.

Objectifs : Le cours a pour objectif la compréhension de l'architecture des ordinateurs afin d'acquérir les connaissances de base utiles à la compréhension des autres disciplines de l'informatique. L'accent est notamment mis sur les principes de codage des données et des instructions et sur le fonctionnement de la mémoire et de l'unité centrale de traitement.

Contribution : ~240 transparents de cours et 3 feuilles de TD. Gestion complète du module.

URL : <http://mon.univ-montp2.fr/claroline/course/index.php?cid=M513>

- 2011 : **Module « Algorithmique et programmation »**

Public : Ecole d'ingénieur « Informatique et Gestion », 3^{ème} année.

Contribution : Intervention en TD/TP.

Objectifs : Compréhension des algorithmes comme une description précise et rigoureuse d'une suite d'opérations permettant d'obtenir, en un nombre fini d'étapes, la solution d'un problème. Type abstrait de données. Structure de données. La partie programmation aborde dans un premier temps le langage Ada puis le langage C.

URL : <http://mon.univ-montp2.fr/claroline/course/index.php?cid=PIG51P1S511>

Responsable : Christophe Fiorio – fiorio@lirmm.fr

- 2003&2004 : **Module « Introduction à la programmation avec Scheme »**

Public : 2^{ème} année Deug MIAS (Mathématique, Informatique et Applications aux Sciences)

Objectifs : Ce module vise à introduire aux étudiants les concepts de base de l'abstraction procédurale, l'abstraction de données et des mécanismes d'évaluation (substitution, environnement, etc.) à l'aide d'un langage de programmation fonctionnel/applicatif, Scheme.

Contribution : Pour ce module, j'ai réalisé conjointement avec un collègue moniteur un ensemble de 8 nouvelles feuilles de TD et 6 nouvelles feuilles de TP ainsi que des encadrements de projets. Je me suis également occupé de l'organisation générale du module (équipe, réunions, réservation des salles, etc.).

Responsable : Stefano A. Cerri – cerri@lirmm.fr

■ 2005 : **Module « Introduction à l'algorithmique et à la programmation (Mapple) »**

Public : 1^{ère} année Licence (sciences)

Objectifs : Ce module vise à introduire aux étudiants les concepts de base de la programmation (variable, affectation, structure de contrôle, etc.) à l'aide d'un langage algorithmique puis d'un langage de programmation impérative, Maple.

Contribution : Module pour lequel j'ai intégré une équipe d'enseignement importante, ce qui m'a fait découvrir d'autres aspects de l'enseignement. Les feuilles de TD/TP existaient déjà.

Responsable : Philippe Janssen – janssen@lirmm.fr

URL : <http://ens.math.univ-montp2.fr/SPIP/ULIN101>

■ 2006 : **« Certificat Informatique et Internet »** (C2i niveau débutant et avancé)

Public : tous niveaux/toutes filières (lettres & sciences sociales)

Objectifs : Le C2i est un certificat national qui atteste de la compétence et de la maîtrise des technologies de l'information et de la communication. L'enseignement effectué n'est pas de l'Informatique « pure », mais de l'initiation à l'outil Informatique, à la bureautique et à Internet (forum, mails, HTML, etc.). Cela m'a permis de me confronter à des aspects plus pédagogiques que techniques de l'enseignement. Le public ayant très peu d'expérience en informatique.

Contribution : Participation à l'amélioration d'un cours existant. Contributions administratives et techniques.

Responsable : Patrice Séebold – seebold@lirmm.fr

URL : <http://www.univ-montp3.fr/miap/ens/info/index.html>

■ 2007 : **Module « Informatique de l'Internet »**

Public : 2^{ème} année, Licence MASS (Mathématiques Appliquées aux Sciences Sociales)

Objectifs : Module dont l'objectif est d'introduire aux étudiants les langages et les concepts de l'Internet (HTML, Java/Javascript, PHP, etc.).

Contribution : Mise à jour et reprise d'éléments de cours existants.

Responsable : Joël Quinqueton – jq@lirmm.fr

URL : <http://www.univ-montp3.fr/miap/ens/MASS/XLIN401/index.htm>

INTERVENTIONS DIVERSES & ENCADREMENTS

- 2010-2015 : Encadrement de 12 stages de fin d'études des étudiants de Polytech Montpellier. Encadrement de 8 projets industriels. Participation à divers jurys.
- 2010-2012 : Cours en Master TIC et Santé (UM2 et Institut Telecom).
- 2006 : Cours en M2P Informatique de l'UM2 dans le module « Informatique Sociale ».
- 2004 : Cours en DEA Informatique de l'UM2 dans le module « Système Multi-Agents ».