

Guillaume MULLER

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✉ Guillaume.MULLER.pro@gmail.com

French, 38 years

single, international mobility

French car driving licence

Teacher in Computer science
Researcher in Artificial intelligence
14 years of experience

Education

- 2002–2006 **Ph.D. in Artificial intelligence, Highest Grade**, Ecole Nationale Supérieure des Mines de Saint-Etienne (ENSM.SE), G2I/SMA, Saint-Etienne, France.
Title: Using norms and reputations to detect and sanction contradictions – Contribution to the Social Control of interactions in Open and Decentralised Multi-Agent Systems.
Supervisors: O. BOISSIER (boissier@emse.fr), L. VERCOUTER (vercouter@insa-rouen.fr).
Specializations: Multi-agent system, Reputation, Social norm, Social commitment, P2P networks.
- 1999–2001 **Master in Artificial intelligence and Pattern recognition, with Honors**, University Paris XI, Orsay, France (1st year), University Paris VI and IRD, Paris and Bondy, France (2nd year).
Specializations: Multi-agent system, Machine learning, Artificial life, Pattern recognition, Simulation, Epidemiology, Java, C/C++, MadKit platform.
- 1996–1999 **Associate's Degree (DEUG) and Bachelor (Licence) in Computer science**, University Paris XI, Orsay, France.
Specializations: Artificial intelligence, Distributed system, C/C++, Java, OCaml.

Scientific & Technical Expertise

- Artificial intelligence** Multi-agent system, Clustering (KMeans, XMeans, EM, SOM, DBScan, LVQ, Mahalanobis), Classification (SMO, MLP, J48, RandomForest, HMM), Regression (linear regression, SMO, MLP, REPTree, ZeroR), Decision making (Fuzzy logic, Genetic algorithm, Genetic programming).
- Computer science** Simulation, Distributed system, Network security, Big data, Statistical hypothesis test, Programming.
- Application domains** Epidemiology, P2P networks, Web 2.0, Air traffic management, Human-machine interaction, House automation, Serious game, Natural resources management, Solar heated house, Aircraft fleet management, Open Innovation.

Computer Skills

- | | | | |
|------------------------------|---|---------------------------------|---|
| Multi-agent platforms | MadKit, Jade, Jason, MAST. | Web | HTML, CSS, XML, PHP. |
| Programming | Grails, Java, R, Bash, C, C++, C#, Prolog, Caml, Pascal, ASM. | Design | SCRUM, UML, Fusion. |
| Editors | Emacs, Eclipse, MonoDevelop, Visual C# & C++, vi. | Office Documents | L ^A T _E X, Libre Office, Microsoft Office. |
| OSes | Linux (Slack...Ubuntu), OpenBSD, Windows (95...10). | Software & libraries | Git/SVN/CVS, Weka, Grobid, SVM-light, Gnuplot, GNU make, OpenGL, MPI/PVM. |
| Administration | OpenSSH, Hadoop, IPCop, OpenVPN. | DataBase | MySQL, PostGreSQL, MongoDB. |

Work Experience

WORK EXPERIENCE SUMMARY		
Since 01/2013	Presans, Palaiseau & Paris	Researcher-Engineer
2011-2012	AIRPX, Orsay & Paris	Researcher
2009-2011	CEA, Saclay	Engineer-Researcher
2008-2009	USP, Brazil	Researcher
2008-2008 (5 months)	LORIA, Nancy	Expert-Engineer
2007-2008 (7 months)	LORIA, Nancy	Expert-Engineer
2006-2007	ÉSIL, Marseilles	Teacher-Researcher
2002-2006	ÉNSM.SÉ & UJM, Saint-Étienne	Teacher-Researcher
2001-2002 (6 months)	NGO « Aide-et-Action », Paris	Volunteer
2001-2002 (3 months)	Gallery OLLIER, Paris	Independent
2000-2001 (6 months)	Paris VI & IRD, Paris	Internship
1999-2000 (6 months)	Paris XI, Paris	Internship, part-time

- Since 01/2013 **Search engine of experts**, « Presans » start-up, Palaiseau & Paris, France.
 Researcher-Engineer
- Collection and cleaning of data about experts (Heritrix/Norconex, Grobid, Java),
 - Automatic feature selection (PCA, ICA, SVD),
 - Detection of document types, information extraction & categorization (Weka, CRF, LDA, Java),
 - Optimization of a search engine's results (SVM-light, Groovy),
 - Development of graphical user interfaces (Grails, JavaFX),
 - System administration (Debian, SVN, Trac, SSH, PostgreSQL, MongoDB).
- Keywords: Artificial intelligence, Machine learning, Grobid, Weka, Groovy/Grails, Trac, OpenSSH, Heritrix/Norconex, PostgreSQL, MongoDB.
- 05/2011-11/2012 **Optimization of aircraft fleet management through predictive maintenance**,
 Researcher « AIRPX » start-up, Orsay & Paris, France.
- Cleaning and preprocessing of big data from actual flights and failures,
 - Expert and automatic feature selection (PCA, ICA),
 - Detection and prediction of failures (clustering, classification, regression, statistical tests)
 - Creation of prototypes: similar situations, outliers,
 - Participation to the ISO-9001 qualification and SCRUM process,
 - Participation to the network administration and the writing of patents.
- Keywords: Artificial intelligence, Machine learning, Signal processing, Hadoop, Weka, R, SCRUM, IPCop, OpenVPN.
- 09/2009-03/2011 **Decentralization and optimization of the thermal regulation of solar heated houses**, Project « *SolaireDuo* » (co-financed by the companies « *ClipSol* » and « *Giordano Industries* »), Commissariat à l'Énergie Atomique (CEA), LIMA, Saclay, France.
 Engineer-Researcher
- Assimilation of the functioning of the regulation of solar houses,
 - Modeling of the regulation with a multi-agent system that adapts to any of the companies' installations,
 - Expert knowledge extraction and formalization with fuzzy logic rules,
 - Inclusion of new sources of information (weather models, building models, etc.),
 - Design and implementation of a multi-agent platform in C#,
 - Participation to the organization of the AFIA'11 la platform (particularly the vulgarization part).
- Keywords: Multi-agent system, Solar heated house, C#, MS .Net/Mono.
- 10/2008-08/2009 **Generation of virtual players, using machine learning techniques, for an e-learning platform about natural resources conflicts**, Project « *NegoWat* », Escola Politecnica, Universidade de São Paulo (EP-USP), São Paulo, Brazil.
 Researcher
- Assimilation of the problems related to natural resources management,
 - Selection of a learning algorithm adapted to real game logs,
 - Development of a genetic programming algorithm in Java,
 - Participation to the development of a multi-agent serious games platform,
 - Supervision of Ph.D. candidates in the domain of multi-agent systems.
- Keywords: Multi-agent system, Machine learning, Serious game, Jason, Java, ECJ.

- 04/2008–09/2008
Expert-Engineer **Design and implementation of an ambient, domestic, intelligent and communicant assistant**, *Oseo Project (co-financed by the company)*, « Intuitive Machine » start-up, LORIA, Nancy, France.
- Design of a natural language processing engine which combines speech recognition and ontologies,
 - Design of a multi-agent architecture for the decentralization of the system,
 - Development of a prototype in Java,
 - Supervision of students in internship, working on the user interface and ontologies.
- Keywords: Multi-agent system, Human-machine interaction, House automation, Ontology, Java, Eclipse, SVN, Protege.
- 09/2007–03/2008
Expert-Engineer **Modeling of authority sharing between the actors of air traffic management (pilots, controllers and machines)**, *Project « PAuSA » (co-financed by Airbus, Dassault Aviation, Eurisco, DSNA, DGAC...)*, LORIA, Nancy, France.
- Assimilation of the functioning of air traffic management,
 - Expert knowledge extraction,
 - Modeling of authority sharing with a multi-agent system,
 - Participation in the design of the prototype presented to DGAC in Paris.
- Keywords: Multi-agent system, Organizational modeling, Air traffic management.
- 09/2006–08/2007
Teacher-Researcher **Personalization of the results of a search engine, using trust and reputation levels**, Ecole Supérieure d'Ingenieurs de Luminy (ÉSIL, part-time teacher), Marseilles, France.
- Definition of a trust and reputation model fitted to the Web 2.0,
 - Definition of a realistic application scenario that takes into account the subjectivity of information,
 - Teachings in Networks, JavaME, XML, WebServices, Java.
- Keywords: Multi-agent system, Data mining, Web 2.0, Java, Axis.
- 2002–2006
Teacher-Researcher **Improving the reliability of decentralized applications, using trust and reputation models**, Ph.D. at Ecole Nationale Supérieure des Mines de Saint-Etienne (ÉNSM.SÉ) and part-time teacher at University Jean Monnet (UJM), Saint-Etienne, France.
- Design of multi-agent models to improve the reliability of open and decentralized systems,
 - Implementation in Java of a simulator inspired by GNUtella-like P2P networks,
 - Participation to the development of the decentralized multi-agent platform MAST,
 - Teachings in Multi-Agent Systems, C, Systems and Networks, Java, Data Structures and Algorithms, UML.
- Keywords: Multi-agent system, P2P networks, Network security, MAST platform, Java.
- 2001–2002
(6 months) **System & network administration and User assistance**, « Aide-et-Action » (NGO), Paris, France.
- Keywords: System & network administration, User assistance, GNU/Linux, Samba.
- 2001–2002
(3 months) **Design and deployment of a website**, Art Gallery « Jacques OLLIER », Paris, France.
- Keywords: Web Programming (LAMP): GNU/Linux, Apache, MySQL, PHP.
- 2000–2001
(6 months) **Multi-agent simulations of the transmission of sleeping-sickness**, *2nd year Master's internship*, University Paris VI and IRD, LIP6 and UR079-GEODES, Paris and Bondy, France.
- Keywords: Artificial intelligence, Multi-agent system, Simulation, Epidemiology, MadKit, Java.
- 1999–2000
(6 months, part-time) **Development of a literate programming tool for OCaml**, *1st year Master's internship*, University Paris XI, LIMSI, Orsay, France.
- Keywords: Functional Programming, Literate programming, OCaml, CamlLex, CamlYacc.

Synthesis of Research Activities

2004–2009 Member of the development team of the ART-testbed, an experimentation and competition testbed for multi-agent trust and reputation models.

Publications

Journals with committee	2
Post-Proceedings of conferences with committee	4
Conferences & workshops with committee	10
Technical Reports	5
Demonstrations	4
Vulgarization	2

Synthesis of Teaching Activities

Lectures and Labs.

Category	Initiation	Standard CS			Avanced CS			
Domains	Initiation	Systems Networks	Algo.×★ Prog.	Security★	Web★ Services	JavaMe★	XML★	MAS★
Volume Le/TD/La in HeqTD	0/0/12	0/42/0	30/35/89	0/0/21	0/12/0	0/8/0	0/10/0	8.5/0/0
Audience	eng.	eng. L2PC	eng. L2ST, L1I	eng.	eng.	eng.	eng.	eng.
Place	ÉNSM.SÉ	ÉSIL UJM	ÉNSM.SÉ UJM	ÉSIL	ÉSIL	ÉSIL	ÉSIL	ÉNSM.SÉ

- *Legend* : CS=Computer Science, Le=Lecture, TD=Travaux Dirigés, La=Labs., HeqTD=equivalent-TD hour, ×=in charge of the unit, ★=completely built, eng.=engineer, L1I=1st year CS Licence, L2PC=2nd year Physics Licence, L2ST=2nd year Sciences & Technology Licence, MAS=Multi-Agent System.
- **Total Volume** : 38.5/107/122 (CM/TD/TP), ≈ **270 TD eq. Hours**
- **Others** : French lectures (grammar and conversation) for Brazilian beginners.

Supervising

- **Ph.D. review & defense jury**: Eugen STAAB, April 16, 2010.
- **Ph.D evaluation committee**: 1 in Luxembourg (E. STAAB, 2008–2010) and 1 in Colombia (Jose Luis Giraldo HENAO, 2009–2011).
- **Supervising of projects**: programming (8 groups) and research (2 groups).
- **Co-supervising of internships**: in companies (1 engineer) and in laboratories (2 master students).

Collective and Administrative Activities

- 2008 **Tutor in lectures on trust and reputation models**, AAMAS'08 and EASSS'08.
- 2008 **Elected vice-president of the association BSD-France**.
- 2006–2011 **Co-organizer of events**, INCOM'06 Doctoral Consortium, INCOM'06, SPECIF'06, ART-testbed competitions (in 2006, 2007 and 2008), workshop PAUSA'08, AFIA'11 platform.
- 2004–2012 **Reviewer**, for journals: JAAMAS (2008), TIST (2010) and conferences: JFSMA'04, IEEE P2P'05, MCCSIS'07, MCCSIS'08, AAMAS'09, ICORE'09, SBSC'09, EUMAS'10, EUMAS'12.
- 2002–2008 **Fund raising, vulgarization of research, vulgarization of computer science, formations and co-organization of events**, in the context of young researcher associations and free & open source software promotion associations.
- 2005 **Webmaster of ASEC**, young researcher's association in Saint-Etienne.
- 2005 **Elected Ph.D. candidate Representative**, Ecole des Mines de Saint-Etienne.

Languages

Mother tongue French.
Fluent English, Portuguese.
Scholar German, Polish.

(score TOEIC-2004: 935/990)

Miscellaneous

Music Classical (F. Chopin, W.A. Mozart, J.S. Bach...), Jazz (K. Jarrett, D. Gillespie...).

Sports Running (competition), Roller (Long-Distance: competition, Slalom: jury), Climbing (club).

Associations CJC (young researchers), Mirabellug (free & open source software).

Journals

G. Muller, J.P. Gouteux, and P. Grébaut. An agent based model of sleeping sickness: Simulation trials of a forest focus in southern Cameroon. CRAS (Comptes Rendus de l'Académie des Sciences) Biology, 327(1):1–11, january 2004.

L. Vercouter and G. Muller. L.I.A.R.: Achieving social control in open and decentralised multi-agent systems. Applied Artificial Intelligence (AAI), 2010.

Post-proceedings of conferences

K. K. Fullam, T. B. Klos, G. Muller, J. Sabater i Mir, Z. Topol, K. S. Barber, J. Rosenschein, and L. Vercouter. The agent reputation and trust (ART) testbed architecture. In Frontiers in Artificial Intelligence and Applications, volume 131, pages 389–396. IOS Press, October 2005.

A. Grizard, L. Vercouter, T. Stratulat, and G. Muller. A peer-to-peer normative system to achieve social order. In V. Dignum, N. Fornara, and P. Noriega, editors, Post-Proceedings of the Workshop on "Coordination, Organizations, Institutions, and Norms in Agent Systems" at Autonomous Agents and Multi-Agent Systems (AAMAS'06), volume LNCS 4386 of Lecture Notes in Computer Science, pages 274–289. Springer-Verlag, Berlin, Germany, 2007.

G. Muller and L. Vercouter. Decentralized monitoring of agent communications with a reputation model. In R. Falcone, S. Barber, J. Sabater, and M.P. Singh, editors, Post-Proceedings of the Workshop on "Trust in Agent Societies" at Autonomous Agents and Multi-Agent Systems (AAMAS'04), volume 3577 of Lecture Notes in Artificial Intelligence. Trusting Agents for trusting Electronic Societies, pages 144–161. Springer-Verlag, Berlin, Germany, 2005.

G. Muller and L. Vercouter. Using social commitments to control the agents' freedom of speech. In F. Dignum *et al.*, editor, Post-Proceedings of the Workshop on "Agent Communications, Languages and Conversation Policies" at Autonomous Agents and Multi-Agent Systems (AAMAS'05), volume 3859 of Lecture Notes in Artificial Intelligence, pages 109–123. Springer-Verlag, Berlin, Germany, Utrecht, The Netherlands, July 2005.

Conferences with committee

K. Fullam, T. Klos, G. Muller, J. Sabater, A. Schlosser, Z. Topol, K. S. Barber, J. S. Rosenschein, L. Vercouter, and M. Voss. A specification of the agent reputation and trust (ART) testbed: Experimentation and competition for Trust in Agent Societies. In F. Dignum, V. Dignum, S. Koenig, S. Kraus, M. P. Singh, and M. Wooldridge, editors, Proceedings of Autonomous Agents and Multi-Agent Systems (AAMAS'05), pages 512–518, Utrecht, The Netherlands, July 2005. ACM Press, New York, NY, United States of America.

K. Fullam, T. Klos, G. Muller, J. Sabater, Z. Topol, K. S. Barber, J. S. Rosenschein, and L. Vercouter. The Agent Reputation and Trust (ART) testbed architecture. In C. Castelfranchi, K.S. Barber, J. Sabater-Mir, and M.P. Singh, editors, Proceedings of the 8th Workshop on "Trust in Agent Societies", Utrecht, The Netherlands, July 2005.

M. Gomez, J. Sabater-Mir, J. Carbo, and G. Muller. Improving the art-testbed, thoughts and reflections. In Proceedings of the 12th Conference of the Spanish Association for Artificial Intelligence (CAEPIA), Salamanca (Spain), November 2007.

G. Muller and J.S. Sichman. Selecting learning algorithms for the design of virtual players in natural resources management platforms. In Sociedade Brasileira de Inteligencia Artificial, editor, Proceedings of the VIIIth Brazilian Symposium on Games and Digital Entertainment, pages 93–96, Rio de Janeiro, RJ, Brazil, October 8–10, 2009.

G. Muller and L. Vercouter. Détection décentralisée d'agents menteurs. In O. Boissier and

Z. Guessoum, editors, Actes des Journées Francophones sur les Systèmes Multi-Agents (JFSMA'04), pages 243–248. Hermès Sciences, novembre 2004.

G. Muller and L. Vercouter. Liar detection within agent communication. In W. van der Hoek, A. Lomuscio, E. de Vink, and M. Wooldridge, editors, Proceedings of the second international workshop on Logic and Communication in Multi-Agent Systems (LCMAS'04), pages 4–16, Nancy, France, 16-20 August 2004.

G. Muller, L. Vercouter, and O. Boissier. Towards a general definition of trust and its application to openness in MAS. In R. Falcone, K.S. Barber, L. Korba, and M. Singh, editors, Proceedings of the Workshop on "Deception, Fraud and Trust in Agent Societies" at Autonomous Agents and Multi-Agent Systems (AAMAS'03), pages 49–56, Melbourne, Australia, July 2003.

G. Muller, L. Vercouter, and O. Boissier. A trust model for the reliability of agent communications. In C. Castelfranchi, S. K. Barber, J. Sabater, and M. P. Singh, editors, Proceedings of the Workshop on "Trust in Agent Societies" at Autonomous Agents and Multi-Agent Systems (AAMAS'05), Utrecht, The Netherlands, July 2005.

L. G. Nardin, G. Muller, A. A. F. Brandao, L. Vercouter, and J. S. Sichman. Effects of expressiveness and heterogeneity of reputation models in the ART testbed: Some preliminary experiments using the SOARI architecture. In Proc. Workshop on "Trust in Agent Societies", Autonomous Agents and Multi-Agent Systems (AAMAS'09), Budapest, Hungary, May 2009.

S. Straussberger, J.-Y. Lantes, A. Boumaza, G. Muller, and F. Salis. A socio-cognitive descriptive modelling approach to represent authority distribution in ATM. In Proc. of 7th Innovative ATM Research Workshop & Exhibition (INO'08), pages 77–84, EURO-CONTROL Experimental Centre, Brétigny-sur-Orge, France, December 2008. EURO-CONTROL.

Technical Reports

G. Muller. La confiance au sein des systèmes multi-agents ouverts et décentralisés. Technical report, École Nationale Supérieure des Mines de Saint-Étienne, 158 Cours Fauriel, Saint-Étienne, France, 2003.

J.-M. Nougaret, S. Nodet, G. Muller, L. Boudet, and M. Albaric. Livrable tâche 3.1.2 : Première présentation des contrôles-commandes des sous-systèmes. Technical report, Jacques Giordano Industries, Clipsol, CEA/LIST et CEA/LITEN, 2010.

J.-M. Nougaret, S. Nodet, G. Muller, L. Boudet, and M. Albaric. Livrable tâche 3.1.3 : Auto apprentissage et estimation des besoins. Technical report, Jacques Giordano Industries, Clipsol, CEA/LIST et CEA/LITEN, 2011.

S. Straussberger, G. Boy, S. Barjou, S. Figarol, F. Salis, S. Debernard, and P. Le Blaye. PAUSA Partage d'Autorité dans le Système Aéronautique – PAUSA for the future - a synthesis of phase 1. Technical report, EURISCO, June 2008.

S. Straussberger, J.-Y. Lantes, G. Muller, A. Boumaza, and F. Salis. Technical report - task 5 - socio-cognitive modeling. Technical report, Partage d'Autorité dans le Système Aérien (PAUSA), March 2008.

Demonstrations

K. Fullam, T. Klos, G. Muller, J. Sabater, A. Schlosser, Z. Topol, K. S. Barber, J. S. Rosenschein, L. Vercouter, and M. Voss. A demonstration of the Agent Reputation and Trust (ART) Testbed: Experimentation and competition for Trust in Agent Societies. In Proceedings of Autonomous Agents and Multi-Agent Systems (AAMAS'05), pages 151–152, Utrecht, The Netherlands, July 2005. ACM Press, New York, NY, United States of America.

K. K. Fullam, T. B. Klos, G. Muller, J. Sabater, Z. Topol, K. S. Barber, J. S. Rosenschein, and L. Vercouter. Le banc d'essais ART (Agent Reputation and Trust) pour les modèles de confiance. In A. Drogoul and É. Ramat, editors, Actes des Journées Francophones sur les Systèmes Multi-Agents (JFSMA'05), pages 175–179, Calais, France, novembre 2005. Hermès Sciences.

K. K. Fullam, T. B. Klos, G. Muller, J. Sabater-Mir, K. S. Barber, and L. Vercouter. The agent reputation and trust (ART) testbed (demo). In Belgium-Netherlands Conference on Artificial Intelligence (BNAIC'06), pages 449–450, 2006.

K. K. Fullam, T. B. Klos, G. Muller, J. Sabater-Mir, K. S. Barber, and L. Vercouter. The Agent Reputation and Trust (ART) testbed (demo). In K. Stølen, W. H. Winsborough, F. Martinelli, and F. Massacci, editors, Proceedings of the International Conference on Trust Management (iTrust'06), volume 3986 of Lecture Notes in Computer Science, pages 439–442. Springer-Verlag, Berlin, Germany, Pisa, Italy, May 2006.

Vulgarization

G. Muller, S. Straussberger, and F. Salis. Contribution au bulletin sur les SMA et les transports, 2008. Association Française pour l'Intelligence Artificielle (AFIA).

G. Muller *et al.* Suite de posters de vulgarisation sur l'intelligence artificielle pour la plate-forme afia'11, 2011. Association Française pour l'Intelligence Artificielle (AFIA).