# SOFIA ZAIDENBERG

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## Objective

A position in computer science, contributing to the development of innovative applications.

## Summary

- Committed computer science engineer with extended experience in designing approaches to solve research problems and implement functional end-user applications. As a student, won best internship award.
- Excellent teacher in IT, very appreciated by students, with a talent for clear explanation and presentation.
- Gifted with people and communication skills, rapid adaptation and learning. Efficient at producing written documents (first author of 10 scientific papers).
- Extensive knowledge of machine learning, pervasive computing and computer vision, as well as many tools useful for implementation and design.
- Skills include: C++, C, Java, JavaFX 2.0, Python, Qt, LaTeX, OSGi, Java EE 5, Maven, OpenCV, CMake, gdb, SQL among others.

## Experience

- **R&D Engineer at the STARS Team at INRIA**—Sophia-Antipolis – France, *July 2010 – present*
  - Proposed an algorithm to detect and track groups of people in subway video-surveillance for the European project VANAHEIM.
  - Developed using the team's Scene Understanding Platform, tested, evaluated, prepared demonstrations and presentations, published 2 papers. Integrated into the common project platform.
  - Initiated frequently interactions with team members, including guiding of PhD students, in an international office environment. Created documentation of internal tools.
  - Organized the Human Activity and Vision Summer School in collaboration with the VANAHEIM project.
  - *Technical environment:* C++, Qt, OpenCV 2.3.1, NetBeans, CMake, svn, gdb, valgrind, corba, wiki.
- **Teaching and Research Assistant at UPMF/INRIA**—Grenoble – France, *2008 – 2010*
  - Taught IT at Bachelor's level: a total of over 330 hours including algorithmics, programming (Java, C++, C, Ada), object oriented systems design and distributed architectures. Ran the class "Programming by components". Engaged in fruitful collaboration with other members of the teaching staff. Prepared examination subjects, lectures and practical projects. Graded, supervised practical work, lectured.
  - Lead research in ambient intelligence. Co-supervised a master student on the subject of genetic learning of neural networks for situation recognition.
  - Developed an approach to recognize high-level user activities on a computer (such as writing paper, sorting pictures, working) using recurrent neural networks genetically learned from user-labeled training data consisting in keyboard and mouse events associated with an activity label.
  - *Technical environment:* Java, OSGi, iPOJO, Maven, Hibernate, Castor, Eclipse, NetBeans, JOnAS.
- **Master project at INRIA**—Grenoble – France, *November 2004 – June 2005*
  - Proposed an approach for learning context models for the recognition of scenarios. Developed an automatic method based on Hidden Markov Models for recognizing scenarios in videos given the learned models on training videos. Tested and evaluated the method in different conditions.
  - Integrated the resulting software as a contribution to the European project CAVIAR, wrote a deliverable and published 1 paper as main author and 1 as co-author.
  - *Technical environment:* Java, Eclipse.
- **Master project at INRIA**—Grenoble – France, *February 2004 – June 2004*
  - Developed a software for automatic calibration of image-walls (a display surface formed by several video-projectors). The team used the software until the dismantling of the image-wall.
  - *Technical environment:* C++, make, OpenCV, Qt, OpenGL.
- **Programming project at Verimag**—Grenoble – France, *June 2003 – September 2003*
  - Designed and implemented a generator of HTML forms (with the database structure to store submissions).
  - *Technical environment:* php, HTML, PostgreSQL.

- **Programming project at ENERDATA s.a.**—Grenoble – France, *June 2002 – August 2002*
  - Implemented a graphical user interface to an Oracle database.
  - *Technical environment:* C++, Visual C++ .NET, MFC.

## Education

- **PhD in computer science – ambient intelligence field**—2005-2009, *Grenoble INP – France*
  - *Subject*: Reinforcement Learning of Context Models for Ubiquitous Computing
  - Co-financed by CNRS and INRIA, in the PRIMA group of the LIG laboratory under the supervision of Pr. James Crowley and Pr. Patrick Reignier.
  - Elaborated an approach to learn user preferences in a complex ubiquitous system and developed a distributed prototype dealing with a dynamic environment. Addressed difficulties coming from working with a real-world problem.
  - Published 8 papers including 3 book chapters and 1 journal article.
  - *Technical environment:* Java, OSGi, iPOJO, Java EE 5, Maven, Hibernate, Eclipse, NetBeans, JOnAS.
  - *Selected trainings:* Summerschool on computer vision (2005), patents, scientific English.
- **MS in computer science – Image, Vision and Robotics at Grenoble INP**—2004 – 2005, *Grenoble – France*
  - *Selected courses*: "Machine Learning", "Bayesian Learning", "3D Computer Vision", "Image matching and recognition" and "Projective Geometry".
  - Graduating internship on "Learning context models for the recognition of scenarios" – publication of 1 paper.
  - Final grade: 14.63/20, ranked $5^{th}$/14
- **MS+B equivalence in computer science at Institut d'Informatique d'Entreprise**—2001 – 2004, *Evry – France*
  - *Selected courses*: "Advanced information systems", "Network, security", "Optimization", "Robotics and Virtual Reality", "Data mining", "Graph Theory" and "Project Management", "Accounting", "Business Law".
  - Internships: automatic calibration of video-walls (won best intership award), creation in php of a tool to automatically generate html forms (with the database structure to store submissions) and creation in C++ of a graphical user interface to an Oracle database.
  - Final grade: 16.19/20, ranked $3^{rd}$/90

## Skills

- **Computer Languages:** C++, Java, C, JavaFX 2.0, JavaScript, HTML, LaTeX, PHP, SQL, Ada, Pyton, bash scripting, AJAX
- **Tools:** OSGi, iPOJO, Java EE 5, JOnAS, Hibernate, Maven, CVS/SVN/GIT, Make, CMake, PostgreSQL, MySQL, Eclipse/NetBeans, Qt, OpenGL, UML, XML, XSD, gdb, valgrind, gprof, Visual C++
- **Operating Systems:** Linux (Debian, Fedora, Ubuntu), Windows XP/Vista/7
- **Spoken Languages:**
  - **French:** fluent
  - **English:** fluent (890/990 at the TOEIC test in 2003)
  - **Russian:** spoken – advanced, written – intermediate
  - **German:** spoken and written – intermediate
  - **Spanish:** spoken and written – beginner

## Achievements and Activities

- Won best internship award for engineering school (IIE) graduating internship "Auto-calibration of image walls" from the industrial sponsor (2004). Selection among the 90 students of the class.
- Volunteered for conference/summer school organization (2005, 2007, 2012).

## Personal interests

- Extra-curricular interests and activities include sports (jogging, yoga, roller hockey...) and reading (novels in French and English). Most valued activities are the ones involving communication and sharing with friends or new people, for an enriched and open mind.

References available on demand.

# Publications


[1] Sofia Zaidenberg, Bernard Boulay, and François Bremond. A generic framework for video understanding applied to group behavior recognition. In *Advanced Video and Signal-Based Surveillance (AVSS), 2012 IEEE Ninth International Conference on*, pages 136 –142, sept. 2012.

[2] Sofia Zaidenberg, Bernard Boulay, Carolina Garate, Duc Phu Chau, Etienne Corvée, and François Bremond. Group interaction and group tracking for video-surveillance in underground railway stations. In *International Workshop on Behaviour Analysis and Video Understanding (ICVS 2011)*, page 10, Sophia Antipolis, France, September 2011.

[3] Sofia Zaidenberg and Patrick Reignier. Reinforcement Learning of User Preferences for a Ubiquitous Personal Assistant. In Abdelhamid Mellouk, editor, *Advances in Reinforcement Learning*, pages 59–80. Intech, 2011. Open access book: http://www.intechopen.com/books/advances-in-reinforcement-learning.

[4] Sofia Zaidenberg, Patrick Reignier, and Nadine Mandran. Learning User Preferences in Ubiquitous Systems: a User Study and a Reinforcement Learning Approach. In *6th IFIP International Conference on Artificial Intelligence Applications and Innovations*, Cyprus, October 2010.

[5] Sofia Zaidenberg. *Apprentissage par renforcement de modèles de contexte pour l'informatique ambiante*. PhD thesis, Groupe Grenoble INP, 46, avenue Félix Viallet - 38031 Grenoble Cedex 1 - France, October 2009.

[6] Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. *Pervasive Computing: A Multidimensional Approach*, chapter An Architecture for Ubiquitous Applications. IT. Icfai Books, April 2009.

[7] Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. An architecture for ubiquitous applications. *Ubiquitous Computing and Communication Journal (UBiCC)*, 4(2), January 2009.

[8] Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. *Reinforcement Learning of Context Models for a Ubiquitous Personal Assistant*, volume Volume 51/2009 of *Advances in Soft Computing*, pages 254–264. Springer Berlin / Heidelberg, September 2008.

[9] Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. Reinforced learning of context models for ubiquitous computing: a ubiquitous personal assistant. In Jorge Cardoso, editor, *Proceedings of the 6th ICEIS Doctoral Consortium (DCEIS 2008)*, volume 6, pages 36–48. INSTICC Press, June 2008.

[10] Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. An architecture for ubiquitous applications. In Hans Weghorn, Soraya Kouadri Mostfaoui, Qusay H. Mahmoud, George M. Giaglis, and Zakaria Maamar, editors, *The 4th International Joint Workshop on Wireless Ubiquitous Computing (WUC 2007)*, volume 1, pages 86–95. INSTICC, INSTICC Press, June 2007.

[11] Oliver Brdiczka, Pong Chi Yuen, Sofia Zaidenberg, Patrick Reignier, and James L. Crowley. Automatic acquisition of context models and its application to video surveillance. In *Pattern Recognition, 2006. ICPR 2006. 18th International Conference on*, volume 1, pages 1175–1178, August 2006.

[12] Patrick Reignier, Sofia Zaidenberg, Rémi Emonet, Dominique Vaufreydaz, and Julien Letessier. jomiscid, un intergiciel sous osgi pour l'informatique ubiquitaire. In *Atelier OSGi, 3e Journées Francophones Mobilité et Ubiquité*, Paris, France, September 2006.

[13] Sofia Zaidenberg, Oliver Brdiczka, Patrick Reignier, and James L. Crowley. Learning context models for the recognition of scenarios. In *3rd IFIP Conference on Artificial Intelligence Applications & Innovations (AIAI) 2006*, volume Volume 204/2006 of *IFIP International Federation for Information Processing*, pages 86–97. IFIP, Springer Boston, June 2006.