

# Vlad Mihai TRIFA

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## OBJECTIVES

Curious and creative researcher with a deep understanding of emerging technologies seeks a challenging position within a multidisciplinary research environment where he could use his broad range of skills for prototyping innovative applications in the area of ubiquitous computing.

## EDUCATION

### **Eidgenössische Technische Hochschule Zürich (ETH Zurich)**

**Research assistant**

**May 2007 – Present**

Ph.D. student at the Institute for Pervasive Computing with Prof. Friedemann Mattern. Design and development of the *Web of Things*, a Web-based framework for fast prototyping of interactive applications for heterogeneous networked devices. Attended many courses in technology management.

### **University of California, Los Angeles (UCLA)**

**Masters Thesis project**

**August 2005 – March 2006**

Development of computer-based tools to support biologists for studying animal behavior in natural environments. Design and implementation of a framework for bird songs recognition and localization using acoustic sensor networks. Final grade 6/6.

### **École Polytechnique Fédérale de Lausanne (EPFL)**

**M.Sc. in Computer Science (GPA 5.6/6)**

**October 2001 – April 2006**

Specialization in artificial intelligence, neuroscience and mathematical biology, machine learning, bio-inspired robotics and algorithms, embedded systems, and distributed information systems.

## EXPERIENCE

**SAP Research CEC Zurich, Switzerland**

**Research Associate**

**May 2007 – Present**

Research and development for an architecture to integrate distributed computing devices (sensor networks, production lines, shop floor machinery) into high-level business applications and IT systems (SAP NetWeaver, xMII, Business Objects).

**ATR Computational Neuroscience Laboratories, Kyoto, Japan**

**Researcher**

**May 2006 – April 2007**

Research in multi-modal information processing for human-robot interaction. Development of a model for integration of acoustic and visual cues for emergence of attention shift reflexes. Development of an integrated control system for a humanoid robot.

**Department of Biology, University of California Los Angeles, CA, USA**

**Scientific collaborator**

**August 2005 – April 2007**

Coordinated a project between biology and engineering departments. Development of a framework for automated bird songs detection, localization, and species/individuals classification using speech recognition tools and embedded sensor networks .

**Daily Bruin, Los Angeles, CA, USA**

**Photojournalist**

**October 2005 – March 2006**

Photographer for the top-rated US college newspaper. Published a dozen of photos and acquired experience with digital photography, graphic editing tools, journalism, and work within media.

**Swarm-Intelligent Systems Research Group, EPFL**

**Research assistant**

**August 2004 – May 2006**

Helped with development and maintenance of various applications for distributed embedded systems. Tasks included complete upgrade of a robotic hardware and software platform and design of energy-aware load balancing techniques for micro-robots and sensor networks.

## **Ecole Polytechnique Fédérale de Lausanne**

### **Teaching Assistant**

**October 2003 – June 2005**

TA for different programming classes offered to undergraduate students in Computer Science (Java, C, Shell and PERL), Life Sciences (C++), and Communication Systems (UNIX and system oriented C). Contributed to the elaboration of student projects and exercises and grading exams.

## **PROJECTS**

### **Oscillatory associative memories**

**March 2005 – July 2005**

Semester project at the Biologically-Inspired Robotics Group (BIRG), EPFL, under supervision of Prof. Auke Jan Ijspeert. Design, implementation, and simulation of associative memory models based on coupled non-linear oscillators. Final grade: 6/6.

### **Sound localization using sensor networks**

**September 2004 – March 2005**

Semester project at the Swarm-Intelligent Systems Research Group (SWIS), EPFL, under supervision of Prof. Alcherio Martinoli. Full development of a framework in Java and Matlab for distributed sound source localization with sensor networks. Final grade: 6/6.

## **LANGUAGES**

<b>French</b>	Native language
<b>Romanian</b>	Native language
<b>English</b>	Fluent
<b>German and Swiss German</b>	Advanced
<b>Japanese</b>	Intermediate (Japanese Proficiency Test Level 3)
<b>Spanish</b>	Beginner

## **COMPUTER SKILLS**

Java Enterprise Edition, C/C++, PERL, Shell scripting, LISP, UML, PHP, CSS, XML, MySQL, Matlab,  $\LaTeX$ , Visual Studio, SAP Application Server / NetWeaver, Adobe CS suite.

## **DIVERSE ACTIVITIES**

Invited to Mediamatic RFID Hackers camp 2007-2009, Picnic Conference, Amsterdam, Netherlands.

Organized of various workshops at LIFT08 (25 participants), Picnic08 (60 participants), LIFT09 conference (40 participants), and Picnic09 (100 participants), with leading experts in the area of ubiquitous computing and networked objects.

Chaired a session on Artificial Life and Living, for the International Symposium on Artificial Life and Robotics (AROB 12th '07), Beppu, Oita, Japan.

Reviewed for: Journal of Acoustical Society of America, Pattern Recognition Letters, IEEE Internet Computing.

## **INTERESTS**

Member of IEEE, ACM, Electronic Frontier Foundation, Reporters without Borders, and several Swiss art/design/photography associations.

Experienced freelance photographer and Web developer.

Played several years with an improvisation theatre group during high school.

Jazz and classical music, world cultures and food, snowboarding, bicycling, martial arts.

## JOURNAL PUBLICATIONS

- TRIFA, V., KIRSCHER, A., TAYLOR, C. E., AND VALLEJO, E. E. Automated species recognition of antbirds in a mexican rainforest using hidden markov models. *Journal of the Acoustical Society of America* 123, 4 (April 2008), 2424–2431.
- TRIFA, V., KIRSCHER, A., YAO, Y., TAYLOR, C. E., AND GIROD, L. D. From bird species to individual songs recognition: automated methods for detection and recognition in real habitats using wireless sensor networks. *Invited paper at the International Expert meeting on IT-based detection of bioacoustical patterns, Isle of Vilm, Germany* (December 2007).

## PEER-REVIEWED CONFERENCES

### Submitted

- D. GUINARD, V. TRIFA, AND E. WILDE. Architecting a Mashable Open World Wide Web of Things. Submitted to *8th IEEE International Conference on Pervasive Computing and Communications (PerCom 2010)*.
- V. TRIFA, D. GUINARD, AND I. DELCHEV. Web-based Messaging Mechanisms for Open and Scalable Distributed Sensing Applications. Submitted to *19th International World Wide Web Conference (WWW 2010)*.
- V. TRIFA, D. GUINARD, J. MA, D. YAZAR, AND A. DUNKELS Building Interoperable Applications on the Web of Things. Submitted to *7th European Conference on Wireless Sensor Networks (EWSN2010)*.

### 2009

- GUINARD, D., TRIFA, V., SPIESS, P., DOBER, B., AND KARNOUSKOS, S. Discovery and On-demand Provisioning of Real-World Web Services. In *ICWS '09: Proceedings of the 2009 IEEE International Conference on Web Services* (Washington, DC, USA, 2009), IEEE Computer Society, pp. 583–590.
- SPIESS, P., KARNOUSKOS, S., GUINARD, D., SAVIO, D., BAECKER, O., SOUZA, L. M. S. D., AND TRIFA, V. Soa-based integration of the Internet of Things in Enterprise Services. In *ICWS '09: Proceedings of the 2009 IEEE International Conference on Web Services* (Washington, DC, USA, 2009), IEEE Computer Society, pp. 968–975.
- TRIFA, V., WIELAND, S., GUINARD, D., AND BOHNERT, T. M. Design and Implementation of a Gateway for Web-based Interaction and Management of Embedded Devices. In *Proceedings of the 2nd International Workshop on Sensor Network Engineering (IWSNE'09)* (Marina del Rey, CA, USA, June 2009).
- GUINARD, D., TRIFA, V., PHAM, T., AND LIECHTI, O. Towards Physical Mashups in the Web of Things. In *Proceedings of the 6th International Conference on Networked Sensing Systems (INSS 2009)* (Pittsburgh, USA, June 2009), pp. 196–199.
- TRIFA, V. Towards an Open Infrastructure for Fast Prototyping Applications on the Web of Things. In *Adjunct Proceedings of the Seventh International Conference on Pervasive Computing (PERVASIVE09)* (Nara, Japan, May 2009).
- GUINARD, D., AND TRIFA, V. Towards the Web of Things: Web Mashups for Embedded Devices. In *2nd Workshop on Mashups, Enterprise Mashups and Lightweight Composition on the Web (MEM 2009)* (Madrid, Spain, April 2009).
- SPIESS, P., KARNOUSKOS, S., SOUZA, L. M. S. D., SAVIO, D., GUINARD, D., TRIFA, V., BAECKER, O., AND KÖHLER, M. Reliable Execution of Business Processes on Dynamic Networks of Service-Enabled Devices. In *Proceedings of the 7th IEEE International Conference on Industrial Informatics* (Cardiff, UK, 2009).
- KARNOUSKOS, S., GUINARD, D., SAVIO, D., SPIESS, P., BAECKER, O., TRIFA, V., AND SOUZA, L. M. S. D. Towards the Real-Time Enterprise: Service-based Integration of heterogeneous SOA-Ready Industrial Devices with Enterprise Applications. In *Proceedings of the 13th IFAC Symposium on Information Control Problems in Manufacturing (INCOM '09)* (2009).

## 2008

- TRIFA, V., CIANCI, C., AND GUINARD, D. On the Usage of Web Services for Flexible and Dynamic Reconfiguration of Robotic Swarms. In *Proceedings of the International Symposium on Artificial Life and Robotics (AROB 13th 2008)* (2008).
- TRIFA, V., GUINARD, D., AND KOEHLER, M. Messaging Methods in a Service-Oriented Architecture for Industrial Automation Systems. In *Proceedings of the Fifth International Conference on Networked Sensing Systems (INSS 08)* (2008).
- TRIFA, V. Content Creation on the Web: Mashing up the Real World with the Internet. In *Proceedings of The First International Workshop on Contents Creation Activity Support by Networked Sensing (CCASNS)* (Kanazawa, Japan, 2008).
- BAECKER, O., GUINARD, D., KARNOUSKOS, S., KÖHLER, M., SAVIO, D., SOUZA, L. M. S. D., SPIESS, P., AND TRIFA, V. Coupling erp systems with shop-floor web service enabled devices. In *Adjunct Proceedings of the First International Conference on the Internet of Things* (2008).

## 2007

- TRIFA, V., KOENE, A., MOREN, J., AND CHENG, G. Real-time acoustic source localization in noisy environments for human-robot multimodal interaction. In *Proceedings of the 16th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2007)*. (2007).
- KOEHLER, M., AND TRIFA, V. Epidemic modeling using mobile phones. In *Workshop on Participatory Sensing Research, SenSys 2007* (2007).
- KOENE, A., MOREN, J., TRIFA, V., AND CHENG, G. Gaze shift reflex in a humanoid active vision system. In *Proceedings of the 5th International Conference on Computer Vision Systems (ICVS 2007)*, Applied Computer Science Group (2007).
- TRIFA, V., GIROD, L., COLLIER, T., BLUMSTEIN, D., AND TAYLOR, C. Automated wildlife monitoring using self-configuring sensor networks deployed in natural habitats. In *Proceedings of the International Symposium on Artificial Life and Robotics (AROB 12th 2007)* (Beppu, Japan, 2007).

## Before 2007

- GIROD, L., LUKAC, M., TRIFA, V., AND ESTRIN, D. The design and implementation of a self-calibrating distributed acoustic sensing platform. In *SenSys '06: Proceedings of the 4th international conference on Embedded networked sensor systems* (New York, NY, USA, 2006), ACM, pp. 71–84.
- GIROD, L., LUKAC, M., TRIFA, V., AND ESTRIN, D. A self-calibrating distributed acoustic sensing platform. In *SenSys '06: Proceedings of the 4th international conference on Embedded networked sensor systems* (New York, NY, USA, 2006), ACM, pp. 335–336.
- CIANCI, C., TRIFA, V., AND MARTINOLI, A. Threshold-based algorithms for power-aware load balancing in sensor networks. In *Proceedings of 2005 IEEE Swarm Intelligence Symposium, IEEE-SIS* (Pasadena, CA, USA, 2005).

## REFERENCES

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