

## MARJOVI, Ali

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### Education

- 2013 PhD in Intelligent Systems and Algorithms, University of Coimbra, Portugal.
- 2005 M.Sc. in Computer Engineering, Sharif University of Technology, Iran.
- 2002 B.Sc. in Computer Engineering, University of Isfahan, Iran.

### Core Experiences

2013 - present

#### Postdoctoral Researcher at EPFL, Switzerland

- ◆ **Data analysis and modeling of air quality measurements for OpenSense and OpenSWISS projects:** Generating high-resolution air-quality maps for the city of Lausanne, by fusing four types of sparse and big data through deep learning and probabilistic graphical models. Strong collaborations with many research and industrial partners including: **AirVeraCity, EMPA, IST, CHUV, ETHZ, AlphaSense, Naneos.**
- ◆ **Researcher on "3DNoseNet" project:** Developing innovative probabilistic algorithms for gas distribution mapping and source localization in real environments using mobile agents in 3-D.
- ◆ **System designer on EU-FP7 AutoNet2030 project:** Designing cooperative intelligent algorithms for networked **autonomous cars** in highways. Strong collaborations with many industrial partners including: **Volvo, Scania, Baselabs, Broadbit, and FIAT.**

2007 - 2013

#### Researcher at Institute of Systems and Robotics, Portugal

- ◆ **AI system designer and software developer on EU-FP7 TIRAMISU project:** Developing algorithms for groups of mobile agents in search operations.
- ◆ **Researcher EU-FP6 GUARDIANS project:** Research and development on autonomous environmental monitoring and chemical sensing with multi-agent systems.
- ◆ **PhD thesis** on developing smart and probabilistic algorithms for a group of mobile agents to search for sources in an environment.

2005

#### Master thesis at Sharif University of Technology, Iran

- ◆ Developing machine learning methods for motion control of a humanoid robot.

## Technical skills

- ◆ Robotics programming using Webots, ROS and Player/Stage.
- ◆ Computer and embedded programming in C, Python, Matlab, and occasionally in Java and C#.
- ◆ Practical Experience in Machine Learning, Big Data Processing, and Deep Learning using TensorFlow, Reinforcement Learning, Predictive Models, Neural Networks, Linear Regression, Bayesian Inference, and Particle Swarm Optimization.
- ◆ Embedded, IoT and low-power systems design. From electronics design to PCB and embedded programming.
- ◆ Firmware designer and micro-controllers programming for Atmel, Microchip, nRF and STM.
- ◆ Experienced in working with various embedded communication technologies including, Bluetooth low energy, LoRa, Wi-Fi, RS232, RS485, CAN, CANOpen, I2C and Zigbee.
- ◆ Experienced working with different types of electronic sensors such as gas, sonar, laser and tactile sensors.
- ◆ Experienced in testing and debugging embedded systems and preparing software verification and validation plans and test reports.
- ◆ Experienced in working with Altium Designer and Solidworks.
- ◆ Deep understanding of how to work with real environmental, geostatistical and noisy sensory data.
- ◆ Knowledge on database principles and SQL.
- ◆ General computer software and programming tools, LaTeX, Git, SVN, HTML, etc.

## Languages

English (Fluent), French (level B1.2), Portuguese (level B2), Arabic (Basic), Persian (native)

## Personal skills

- ◆ Expert in English technical writing with the experience of writing more than 10 project proposals (**raised more than 5M CHF**), one business plan, and being the first author of more than 30 technical/scientific papers in high-ranked journals and conferences.
- ◆ Dependable in leading a project from the very early phase of problem definition, market analysis, and proposal writing to planning, execution, control and closeout.
- ◆ Expert in project management and delivering by the deadlines.
- ◆ Expert in oral presentations in English (with the experience of more than 10 technical/scientific talks given in prestigious international conferences).
- ◆ Having a research-oriented mind, always searching for solutions for tough technical challenges.

## Social skills

- ◆ **Multicultural:** I have lived, studied, and worked in different cities and countries and collaborated and communicated with people from different cultures and backgrounds.
- ◆ **Teamwork:** I have experienced teamwork both as a member of the team and as the leader of the team. In any of these cases I organize, schedule and perform the missions in a goal oriented basis.
- ◆ **Communication:** Working in a wide range of environments in different countries has taught me the flexibility to communicate and cooperate easily with people.

## Extra-curricular activities

Playing football and table tennis with friends and family, Alpine skydiving, hiking in mountains, cooking (Middle Eastern cuisine), and traveling to natural destinations.

1. "Extending Urban Air Pollution Maps Beyond the Coverage of a Mobile Sensor Network: Data Sources, Methods, and Performance Evaluation," Ali Marjovi, Adrian Arfire, Alcherio Martinoli, Int. Conf. on Embedded Wireless Systems and Networks (EWSN), Sweden, 2017.
2. "Mitigating Slow Dynamics of Low-Cost Chemical Sensors for Mobile Air Quality Monitoring Sensor Networks", Adrian Arfire, Ali Marjovi, Alcherio Martinoli, International Conference on Embedded Wireless Systems and Networks, Graz, Austria, 2016.
3. "High Resolution Air Pollution Maps in Urban Environments Using Mobile Sensor Networks", Ali Marjovi, Adrian Arfire, Alcherio Martinoli, Int. Conf. on Distributed Computing in Sensor Systems, Fortaleza, Brazil, 2015.
4. "Model-based Rendezvous Calibration of Mobile Sensor Networks for Monitoring Air Quality", Adrian Arfire, Ali Marjovi, Alcherio Martinoli, IEEE SENSORS, Busan, South Korea, 2015.
5. "A 3-D Bio-Inspired Odor Source Localization and Its Validation in Realistic Environmental Conditions," Faezeh Rahbar, Ali Marjovi, Pierre Kibleur, Alcherio Martinoli, IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Canada, 2017.
6. "Adaptive Lévy Taxis for Odor Source Localization in Realistic Environmental Conditions," Romain Emery, Faezeh Rahbar, Ali Marjovi, Alcherio Martinoli, IEEE Int. Conf. on Robotics and Automation (ICRA), Singapore, 2017.
7. "Challenges for Automated Cooperative Driving: The AutoNet2030 Approach," Marcus Obst, Ali Marjovi, Milos Vasic, Iñaki Navarro, Alcherio Martinoli, et al., Automated Driving: Safer and More Efficient Future Driving, 561-570, Springer, 2017.
8. "Towards 3-D Distributed Odor Source Localization: An Extended Graph-Based Formation Control Algorithm for Plume Tracking", Jorge Soares, Ali Marjovi, Jonathan Giezendanner, Anil Kodiyan et al., IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Daejeon, South Korea, 2016.
9. "Distributed Graph-based Convoy Control for Networked Intelligent Vehicles", Ali Marjovi, Milos Vasic, Joseph Lemaitre, Alcherio Martinoli, IEEE Intelligent Vehicles Symposium (IV), Seoul, South Korea, 2015.
10. "Optimal Swarm Formation for Odor Plume Finding," Ali Marjovi, Lino Marques. IEEE Transactions on Cybernetics, 44(12):2302-2315, 2014.
11. "Optimal Spatial Formation of Swarm Robotic Gas Sensors in Odor Plume Finding," Ali Marjovi, Lino Marques. Autonomous Robots, 35:93-109, 2013.
12. "Swarm Robotic Plume Tracking for Intermittent and Time-Variant Odor Dispersion," Ali Marjovi, Lino Marques, European Conference on Mobile Robotics, Barcelona, Spain, 2013.
13. "Robotic Clusters: Multi-Robot Systems as Computer Clusters; a topological map merging demonstration," Ali Marjovi, Sarvenaz Choobdar, Lino Marques. Robotics and Autonomous Systems, 60(9):1191-1204, 2012.