

Stéphane MAGNENAT, PhD

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Born on 14th February 1980

Swiss citizenship, married

H-index (Google Scholar, raw): 22

H-index (Scopus, raw): 14

Languages: French (native), English (proficiency, C2), German (intermediate, B2)

Education

- 2007–2010 **PhD**, mobile robotics, Laboratory of Robotics Systems, **EPFL**, Lausanne, Switzerland.
Software integration in mobile robotics, a science to scale up machine intelligence
- 1998–2003 **Master** in computer science, Processor Architecture Laboratory, **EPFL**, Lausanne, Switzerland. *XScale embedded development*
- 1995–1998 **Swiss federal scientific maturity**, Gymnase August Piccard, Lausanne, Switzerland.

Academic positions

- 09.2016– **Game Technology Center, ETH Zurich**, Switzerland head: **Bob Sumner**
Deputy Research Director
- Research on cyber-physical systems; including human-computer/robot interfaces, augmented reality, serious gaming, and computer-science education using robots.
 - **Team leader** on a proposal for an augmented-reality museum app for the LGT bank and the Princely collections of Liechtenstein (**CHF 1.1 million** budget).
- 08.2015– **Lab. of Robotics Systems, EPFL**, Switzerland head: **Francesco Mondada**
08.2016 **Senior researcher and team leader**
- **Team leader** Swiss CTI project 17479.2 *Context-Aware Augmented Reality in Robotics for Education* (7 team members), professor in sabbatical.
 - Research on computer-science education, augmented reality, interaction design, computer vision, serious gaming, robot localization, low-cost robotics.
- 06.2014– **Disney Research Zürich**, Switzerland head: **Markus Gross**
07.2015 **Associate Research Scientist**
- **Work-package leader** (10 partners) of the *FI-CONTENT2* (26 partners) EU **Future Internet Public Private Partnership**.
 - Research on computer-science education, computer graphics, computer vision, interaction design, video games. Conception of a country-wide augmented reality game in collaboration with a large-scale newspaper (20 Minuten).
- 02.2014– **FHNW**, Brugg, Switzerland **Lecturer**
05.2014 Lecturer of educational robotics for pre-service teachers.

- 09.2010–07.2014 **Autonomous Systems Lab, ETH Zurich**, Switzerland head: **Roland Siegwart**
Senior researcher and team leader educational robotics
- Research on educational robotics, autonomous mapping, learning by demonstration, construction by autonomous mobile robots.
 - Contributions to visual programming, computer-science education, 3-D mapping, sensor calibration, task execution, planning, learning and system integration to the *myCopter*, *NIFTi*, *vCharge*, *ASCENS*, *noptilus* EU FP7 collaborative projects.
- 08.2010–08.2010 **Electronics Laboratory, ETH Zurich**, Switzerland head: **Gerhard Tröster**
Senior researcher
 Application of autonomous mental development to sensor networks.
- 10.2006–07.2010 **Lab. of Robotics Systems, EPFL**, Switzerland head: **Francesco Mondada**
PhD student and teaching assistant
- Research on structure construction by autonomous mobile robots.
 - Research on adapting state-of-the-art capabilities (SLAM, HTN planning, symbol grounding, object manipulation) to the constraints of miniature mobile robots.
 - Research on low-level event-based architecture for the control of mobile robots.
 - Worked in the *Swarmanoid* EU FP6 Specific Targeted Research Project.
- 11.2005–09.2006 **Lab. of Digital Systems, HEPIA**, Switzerland head: **René Beuchat**
Research and teaching assistant
- Development of signal-processing software for an orthosis for myopathic patients.
 - Development of the electronics and the control software for a miniature turbojet.
- 05.2003–10.2005 **Lab. of Intelligent Systems, EPFL**, Switzerland head: **Dario Floreano**
Research and teaching assistant
- Research on collective robotics and on the emergence of communication in artificial agents, modelling of the evolutionary dynamics of social insects.
 - Worked in *Swarmbot* and *ECAgents* EU FP6 projects.
- 2002–2003 **Processor Architecture Lab., EPFL**, Switzerland head: **Paolo Ienne**
Master student in a joint project with Julien Pilet
- Design of open-hardware ARM processor and multimedia boards for mobile robots.
 - Port of the Linux kernel.
- 2001–2002 **Lab. of Peripheral Systems, EPFL**, Switzerland head: **Roger Hersch**
Bachelor student in a joint project with Luc-Olivier de Charrière
 Virtual ecosystem running on a parallel supercomputer, OpenGL 3D client.

International research experience

- 1.2015 **Learning + Tech. Group, Aalto University**, Finland head: **Lauri Malmi**
 Research on computer science education using mobile robots and augmented reality.
- 7.2013 **CEEQ, Tufts University**, Medford, USA head: **Chris Rogers**
 Research on educational robotics.
- 9.2012–12.2012 **Willow Garage**, Menlo Park, CA, USA CTO: **Brian Gerkey**
 Research on large-scale 3-D localisation and mapping, learning by demonstration.

Industrial experience

- 09.2010– **Association Mobsya**, Switzerland **Initiator and board member**
Initiator and board member until 2016. Producer of the **Thymio** educational robot.

- 8.2000–7.2001 **VulcanArts Development S.A.**, Geneva, Switzerland **Software engineer**
Software architecture for interactive television, **team leader** (5 people).
- 1998–2006 **The Globulation Project** **Project leader, game designer, software engineer**
Co-initiator of this open-source multiplayer real-time strategy game. Team of seven people over Internet, game available in all major Linux distributions.
- 1999–2005 **DIDEL S.A.**, Lausanne, Switzerland **Software engineer**
Various software for embedded development on PIC microcontroller.
- 1999–2001 **The SnakeMe Project** **Software engineer, team leader**
Open-source snake game, > 200 k downloads.

Award and prizes

- 2017.07.18 **University of Cambridge Public Engagement with Research Awards** along with Dr. Elisa Laurenti for our work on **teaching stem cell science with the Thymio robot**.
- 2016.05.12 2016 Edison Gold Award “Student learning” for our work on **Augmented Creativity**
- 2016.05.11 2016 Prix Entreprendre Région Lausanne “Education” for our work on **Thymio**
- 2015.10.02 Best Full Paper Honorable Mention for our paper *Live Texturing of Augmented Reality Characters from Colored Drawings* at ISMAR 2015
- 2013.05.08 Nominee for the 2013 *IEEE/IFR Invention and Entrepreneurship in Robotics and Automation (IERA) Award*
- 2012.08.30 **Best Demonstration** Award at ECAI 2012
- 2011.02.04 Second place for the *Most Useful* entry at the *ROS 3D Contest* from Willow Garage

Grants and fellowships

- 2016.08 Grant from the Mobsya association for the ETH GTC for research and development related to the Thymio robot. Funded research contribution: **CHF 130 000**
- 2015.02 Swiss CTI project: 17479.2 *Context-Aware Augmented Reality in Robotics for Education*. Co-author. Funded research contribution: **CHF 353 000**
- 2015.01 Travel grant for visiting Aalto University, Finland. 2 k Euros
- 1999.10.4–8 Travel and venue grant for participation to the European Student Outreach Program and 50 IAF congress in Amsterdam, Netherland.

Technical Skills

- applied mathematics machine learning, Bayesian methods, neural networks, numerical optimisation, evolutionary computation, automated planning, artificial intelligence
- robotics technologies system integration, 2-D and 3-D mapping, augmented reality, sensor calibration, symbol grounding, digital electronics, embedded systems, microcontrollers, middleware, ros, virtual machines, compilers
- programming languages **c++/c** (18 years experience), **Python** (7 years experience), **QML** (2 years experience)
basic knowledge: **c#**, **Java**, **Scala**, **R**, **PHP**, **Ada**, **Pascal**, **assembly**, **Lisp**, **BASIC**, **SQL**

Technological transfers to products

- 2015–2016 [Augmented reality coloring book](#); used by **Disney**.
- 2012– [libnabo nearest-neighbor](#) library; used by **Google** for [Project Tango](#).
- 2012– [libpointmatcher 3-D mapping](#) library; used by **NASA** for [planetary reconstruction](#).
- 2010– [Thymio educational robot](#); uses my [Aseba](#) software framework and my [visual programming language](#), **15 k units sold**.
- 2008– [Enki 2-D robot simulator](#); used in the [Webots](#) commercial simulator.

Open-source software

- 2007–2017 [Aseba](#), an event-based architecture for distributed control of mobile robots. C++/C/Python. 50 k SLOC, 63 % by me. Initiator and project leader, 6 contributors. Used by the [Thymio](#) project and [Swarmoid](#), [Perplexus](#), [ASCENS](#) European projects.
- 2012–2017 [Thymio VPL mobile](#). Visual programming language for the [Thymio robot](#) on tablet. QML/C++. 5 k SLOC, 70 % by me. Initiator and project leader, 1 contributor.
- 1999–2016 [Enki](#), a fast 2D mobile robot simulator. C++. 15 k SLOC, 80 % by me. Initiator and project leader, 5 contributors. Used by [Aseba](#), the [Webots](#) simulator, and several research projects.
- 2011–2015 [libpointmatcher](#), a modular and fast ICP library for 3-D mapping. C++. 15 k SLOC, 16 % by me. Project co-initiator, 10 contributors. Used by several researcher project and NASA for [planetary reconstruction](#).
- 2011–2015 [libnabo](#), a fast nearest-neighbour-search library. C++. 5 k SLOC, 95 % by me. Project initiator, 10 contributors. Used by Google for [Project Tango](#).
- 2009–2012 [Planner9](#), a HTN planner distributed on miniature mobile robots. C++. 7 k SLOC, 70 % by me. Initiator and project leader, 1 contributor.
- 2005–2006 [Osqoop](#), a software Oscilloscope with support for orthosis control. C++. 10 k SLOC, 80 % by me. Initiator and project leader, 6 contributors.
- 2004–2005 [Teem](#), an artificial evolution framework. C++. 25 k SLOC, 60 % by me. Co-initiator and project leader, 3 contributors.
- 1998–2006 [Globulation](#), an open-source multiplayer real-time strategy game. C++. 94 k SLOC, 20 % by me. Co-initiator and project leader, 6 contributors. Game available in all major Linux distributions.

SLOC measurements as reported by `clloc/sloccount`, contribution percentage as the ratio of my committed SLOC vs all.

Supervision of graduate students, researchers, engineers and designers

- Researcher EPFL: Dr Amaury Dame, Dr Pablo Márquez Neila, Mohammad Ehsanul Karim; DRZ: Dat Ngo Tien, Fabio Zünd; ETH-ASL: Dr Jiwon Shin
- Engineer & designer ETH-GTC: Julia Chatain; EPFL: Martin Voelkle, Maria Beltran, Ramiz Morena; DRZ: Mattia Ryffel; ETH-ASL: Benoit Lescot; EPFL: Kevin Frugier, Matthieu Bontemps

- Master students **Master theses:** ETH-GTC: Marie Woon; EPFL: Rémy Siegfried, Coline Lugaz; ETH-ASL: Titus Cieslewski, Janine Stocker, Stefan Wismer, Ganesh Ramanathan; EPFL: Christophe Gusthiot, Martin Voelkle
Semester projects: ETH-ASL: Shiling Wang, Jürg Weber, Marcel Flügel; EPFL: Nicolas Dinh, Guillaume Monnard, Max Laager
- Bachelor students ETH-GTC: Michael Flückiger, Olivier Bitter; ETH-ASL: Luc Weydert, Markus Stäuble, Matthias Konrad Bloch, Thomas Gubler, Stefan Stalder, Jonathan Huber, Roman Müller, Timo Müller, Wolf Vollprecht, Lorenz Wellhausen, Lorenz Kuechler, Mischa Kolbe, Timon Homberger, Dominik Rüttimann; EPFL: Yves Stauffer

Teaching activities

- 2008– **Initiator and coordinator**, robot programming workshops for children; team of ten assistants, several events per year, EPFL and ETH Zurich. 50 students.
- 2014 **Lecturer**, educational robotics seminar for pre-service teachers, FHNW. 15 students.
- 2010 **Main teacher**, c++ program. course, bachelor in microengineering, EPFL. 60 stud.
- 2008–2010 **Main teacher**, robot localisation laboratory work, master microeng., EPFL, 20 stud.
- 2006–2009 **Teaching assistant**, embedded systems and c++ programming courses, bachelor in microengineering, EPFL, 60 students.
- 2005–2006 **Teaching assistant**, embedded systems, microengineering and computer science students, HEPIA, 30 students.
- 2003–2005 **Teaching assistant**, bio-inspired computing machines, master course, EPFL, 40 stud.
- 2001–2003 **Student assistant**, comp. hardware, peripherals, real-time systems, EPFL, 50 stud.

Other contributions to the community

- Reviewer **Journal:** Robotics and Automation Magazine, Autonomous Robots, Swarm Intelligence, Journal of Software Engineering for Robotics, EURASIP Journal on Embedded Systems, Journal of Advanced Robotic Systems, Algorithms, Systems Science and Control Engineering, IEEE Transactions on Learning Technologies
Conference: IEEE International Conference on Robotics and Automation, IEEE/RSJ International Conference on Intelligent Robots and Systems, Distributed Autonomous Robotic Systems, Conference on Design and Architectures for Signal and Image Processing, Human-Robot Interaction
- PC member Towards Autonomous Robotic Systems 2011, ROS Developer Conference 2013
- Event Co-organizer of the EPFL robotics festival, 2008–2010 (15 k attendees in 2010)

Presentations, talks and demonstrations

I have given 60 talks and workshops worldwide, not listing internal meetings of research projects. 24 were invited.

Journal papers

- [1] F. Mondada, M. Bonani, F. Riedo, M. Briod, L. Pereyre, P. Rétornaz, and S. **Magnenat**. [Bringing Robotics to Formal Education: The Thymio Open-Source Hardware Robot](#). *IEEE Robotics & Automation Magazine*, volume 24, pages 77–85, 2017.
- [2] S. **Magnenat**, D. T. Ngo, F. Zünd, M. Ryffel, G. Noris, G. Rothlin, A. Marra, M. Nitti, P. Fua, M. Gross, and R. W. Sumner. [Live Texturing of Augmented Reality Characters from Colored Drawing](#). *IEEE Transactions on Visualization and Computer Graphics*, volume 21, pages 1201–1210, 2015.
- [3] F. Pomerleau, F. Colas, R. Siegwart, and S. **Magnenat**. [Comparing ICP Variants on Real-World Data Sets](#). *Autonomous Robots*, volume 34, pages 133–148, 2013.
- [4] F. Ducatelle, G. A. D. Caro, A. Förster, M. Bonani, M. Dorigo, S. **Magnenat**, F. Mondada, R. O’Grady, C. Pinciroli, P. Rétornaz, V. Trianni, and L. M. Gambardella. [Cooperative Navigation in Robotic Swarms](#). *Swarm Intelligence*, volume 8, pages 1–33, 2013.
- [5] S. **Magnenat**, R. Philippsen, and F. Mondada. [Autonomous construction using scarce resources in unknown environments](#). *Autonomous Robots*, volume 33, pages 467–485, 2012.
- [6] J. Elseberg, S. **Magnenat**, R. Siegwart, and A. Nüchter. [Comparison of nearest-neighbor-search strategies and implementations for efficient shape registration](#). *Journal of Software Engineering for Robotics*, volume 3, pages 2–12, 2012.
- [7] M. Dorigo, D. Floreano, L. M. Gambardella, F. Mondada, S. Nolfi, T. Baaboura, M. Birattari, M. Bonani, M. Brambilla, A. Brutschy, D. Burnier, A. Campo, A. L. Christensen, A. Decugnière, G. D. Caro, F. Ducatelle, E. Ferrante, A. Förster, J. M. Gonzales, J. Guzzi, V. Longchamp, S. **Magnenat**, N. Mathews, M. M. de Oca, R. O’Grady, C. Pinciroli, G. Pini, P. Rétornaz, J. Roberts, V. Sperati, T. Stirling, A. Stranieri, T. Stützle, V. Trianni, E. Tuci, A. E. Turgut, and F. Vaussard. [Swarmoid: a novel concept for the study of heterogeneous robotic swarms](#). *IEEE Robotics & Automation Magazine*, volume 20, pages 60–71, 2013.
- [8] D. Roggen, S. **Magnenat**, M. Waibel, and G. Tröster. [Designing and sharing activity recognition systems across platforms: methods from wearable computing](#). *IEEE Robotics and Automation Magazine*, volume 18, pages 83–95, 2011.
- [9] S. **Magnenat**, P. Rétornaz, M. Bonani, V. Longchamp, and F. Mondada. [ASEBA: A Modular Architecture for Event-Based Control of Complex Robots](#). *IEEE/ASME Transactions on Mechatronics*, volume 16, pages 321–329, 2011.
- [10] D. Floreano, S. Mitri, S. **Magnenat**, and L. Keller. [Evolutionary Conditions for the Emergence of Communication in Robots](#). *Current Biology*, volume 17, pages 514–519, 2007.
- [11] M. Waibel, D. Floreano, S. **Magnenat**, and L. Keller. [Division of labour and colony efficiency in social insects: effects of interactions between genetic architecture, colony kin structure and rate of perturbations](#). *Proc. of the Royal Society B*, volume 273, pages 1815–1823, 2006.

Conference papers

- [12] R. Siegfried, S. Klinger, M. Gross, R. W. Sumner, F. Mondada, and S. **Magnenat**. [Improved mobile robot programming performance through real-time program assessment](#). In *Proc. of the 2017 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE)*. ACM, 2017.
- [13] S. Wang, F. Colas, M. Liu, F. Mondada, and S. **Magnenat**. [Localization of inexpensive robots with low-bandwidth sensors](#). In *Distributed Autonomous Robotic Systems (DARS)*. IEEE, 2016.
- [14] F. Zünd, M. Ryffel, S. **Magnenat**, A. Marra, M. Nitti, M. Kapadia, G. Noris, K. Mitchell, M. Gross, and R. W. Sumner. [Augmented creativity: bridging the real and virtual worlds to enhance creative play](#). In *SIGGRAPH ASIA 2015 Mobile Graphics and Interactive Applications*, pages 21–27. ACM, 2015.

- [15] D. Roy, P.-Y. Oudeyer, S. **Magnenat**, F. Riedo, G. Gerber, M. Chevalier, and F. Mondada. [IniRobot: a pedagogical kit to initiate children to concepts of robotics and computer science](#). In *Proc. of the 6th International Conference on Robotics in Education*. 2015.
- [16] S. **Magnenat**, M. Ben-Ari, S. Klinger, and R. W. Sumner. [Enhancing Robot Programming With Visual Feedback and Augmented Reality](#). In *Proc. of the 2015 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE)*, pages 153–158. ACM, 2015.
- [17] T. Cieslewski, S. Lynen, M. Dymczyk, S. **Magnenat**, and R. Siegwart. [Map API - Scalable Decentralized Map Building for Robots](#). In *Proc. of the 2015 IEEE International Conference on Robotics and Automation (ICRA)*, pages 6241–6247. IEEE, 2015.
- [18] J. Shin, R. Siegwart, and S. **Magnenat**. [Visual Programming Language for Thymio II Robot](#). In *Proc. of the 2014 Conference on Interaction Design and Children (IDC)*. 2014.
- [19] S. **Magnenat**, J. Shin, F. Riedo, R. Siegwart, and M. Ben-Ari. [Teaching a Core CS Concept through Robotics](#). In *Proc. of the 2014 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE)*, pages 315–320. ACM, 2014.
- [20] F. Riedo, M. Chevalier, S. **Magnenat**, and F. Mondada. [Thymio II, a Robot That Grows Wiser with Children](#). In *Proc. of the 2013 IEEE Workshop on Advanced Robotics and its Social Impacts (ARSO)*, pages 187–193. IEEE Press, 2013.
- [21] P. Réturnaz, F. Riedo, S. **Magnenat**, F. Vaussard, M. Bonani, and F. Mondada. [Seamless Multi-Robot Programming for the People: Aseba and the Wireless Thymio II Robot](#). In *Proc. of the 2013 IEEE International Conference on Information and Automation (ICIA)*, pages 337–343. IEEE Press, 2013.
- [22] S. **Magnenat**, C. Pradalier, and F. Colas. [Towards Non-Parametric Bayesian Learning of Robot Behaviors from Demonstration](#). In *Bayesian Nonparametric Models for Reliable Planning and Decision-Making Under Uncertainty, NIPS 2012*. 2012.
- [23] S. Wismer, G. Hitz, M. Bonani, A. Gribovskiy, and S. **Magnenat**. [Autonomous Construction of a Roofed Structure: Synthesizing Planning and Stigmergy on a Mobile Robot](#). In *Proc. of the 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 5436–5437. IEEE Press, 2012.
- [24] S. **Magnenat**, F. Riedo, M. Bonani, and F. Mondada. [A Programming Workshop using the Robot “Thymio II”: The Effect on the Understanding by Children](#). In *Proc. of the 2012 IEEE International Workshop on Advanced Robotics and its Social Impacts (ARSO)*, pages 24–29. 2012.
- [25] S. **Magnenat**, J.-C. Chappelier, and F. Mondada. [Integration of Online Learning into HTN Planning for Robotic Tasks](#). In *Proc. of the 2012 AAAI Spring Symposia, Designing Intelligent Robots: Reintegrating AI*. 2012.
- [26] J. Sturm, S. **Magnenat**, N. Engelhard, F. Pomerleau, F. Colas, W. Burgard, D. Cremers, and R. Siegwart. [Towards a benchmark for RGB-D SLAM evaluation](#). In *Proc. of the RGB-D Workshop on Advanced Reasoning with Depth Cameras at Robotics: Science and Systems Conference (RSS)*. 2011.
- [27] J. Stocker, A. Veillat, S. **Magnenat**, F. Colas, and R. Siegwart. [Towards Adaptive Robotic Green Plants](#). In *Towards Autonomous Robotic Systems*, volume 6856 of *Lecture Notes in Computer Science*, pages 422–423. Springer, 2011.
- [28] F. Pomerleau, S. **Magnenat**, F. Colas, M. Liu, and R. Siegwart. [Tracking a Depth Camera: Parameter Exploration for Fast ICP](#). In *Proc. of the 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 3824–3829. IEEE Press, 2011.
- [29] M. Bonani, P. Réturnaz, S. **Magnenat**, H. Bleuler, and F. Mondada. [Physical interactions in swarm robotics, the hand-bot case study](#). In *Proc. of the 10th International Symposium on Distributed Autonomous Robotic Systems (DARS)*, volume 83 of *Springer Tracts in Advanced Robotics*, pages 585–595. Springer, 2010.

- [30] M. Bonani, V. Longchamp, S. **Magnenat**, P. Rétornaz, D. Burnier, G. Roulet, H. Bleuler, and F. Mondada. [The MarXbot, a Miniature Mobile Robot Opening new Perspectives for the Collective-robotic Research](#). In *Proc. of the 2010 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4187–4193. IEEE Press, 2010.
- [31] F. Rochat, P. Schoeneich, M. Bonani, S. **Magnenat**, and F. Mondada. [Design of Magnetic Switchable Device and Applications in Climbing Robots](#). In *Climbing and Walking Robots: Proc. of the 13th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines (CLAWAR)*, pages 375–382. World Scientific, 2010.
- [32] S. **Magnenat**, V. Longchamp, M. Bonani, P. Rétornaz, P. Germano, H. Bleuler, and F. Mondada. [Affordable SLAM through the Co-Design of Hardware and Methodology](#). In *Proc. of the 2010 IEEE International Conference on Robotics and Automation (ICRA)*, pages 5395–5401. IEEE Press, 2010.
- [33] S. **Magnenat**, M. Voelkle, and F. Mondada. [Planner9, a HTN planner distributed on groups of miniature mobile robots](#). In *Proc. of the Second International Conference on Intelligent Robotics and Applications (ICIRA)*, volume 5928 of *Lecture Notes in Computer Science*, pages 1013–1022. Springer, 2009.
- [34] M. Bonani, S. **Magnenat**, P. Rétornaz, and F. Mondada. [The Hand-bot, a Robot Design for Simultaneous Climbing and Manipulation](#). In *Proc. of the Second International Conference on Intelligent Robotics and Applications (ICIRA)*, volume 5928 of *Lecture Notes in Computer Science*, pages 11–22. Springer, 2009.
- [35] S. **Magnenat** and F. Mondada. [Aseba Meets D-Bus: From the Depths of a Low-Level Event-Based Architecture into the Middleware Realm](#). In *Proc. of the 2009 IEEE TC-Soft Workshop on Event-based Systems in Robotics (EBS-RO)*. 2009. Invited paper.
- [36] R. Groß, S. **Magnenat**, and F. Mondada. [Segregation in swarms of mobile robots based on the Brazil nut effect](#). In *Proc. of the 2009 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4349–4356. IEEE Press, 2009.
- [37] R. Groß, S. **Magnenat**, L. Kùchler, V. Massaras, M. Bonani, and F. Mondada. [Towards an Autonomous Evolution of Non-Biological Physical Organisms](#). In *Proc. of the 10th European Conference on Artificial Life (ECAL)*, volume 5777 of *Lecture Notes in Computer Science*, pages 173–180. Springer, 2009.
- [38] F. Mondada, M. Bonani, X. Raemy, J. Pugh, C. Cianci, A. Klaptocz, S. **Magnenat**, J.-C. Zufferey, D. Floreano, and A. Martinoli. [The e-puck, a Robot Designed for Education in Engineering](#). In *Proc. of the 9th Conference on Autonomous Robot Systems and Competitions*, pages 59–65. IPCB: Instituto Politécnico de Castelo Branco, 2009.
- [39] S. **Magnenat**, P. Rétornaz, B. Noris, and F. Mondada. [Scripting the swarm: event-based control of microcontroller-based robots](#). In *SIMPAR 2008 Workshop Proceedings*. 2008.
- [40] S. **Magnenat**, B. Noris, and F. Mondada. [Aseba-Challenge: An Open-Source Multiplayer Introduction to Mobile Robots Programming](#). In *Proc. of the 2008 Conference on Fun and Games*, volume 5294 of *Lecture Notes in Computer Science*, pages 65–74. Springer, 2008.
- [41] A. Beyeler, S. **Magnenat**, and A. Habersaat. [Ishtar: a flexible and lightweight software for remote data access](#). In *European Micro Air Vehicle Conference EMAV08*. 2008.
- [42] S. **Magnenat**, V. Longchamp, and F. Mondada. [ASEBA, an event-based middleware for distributed robot control](#). In *Workshops and Tutorials CD IEEE/RSJ 2007 International Conference on Intelligent Robots and Systems*. IEEE Press, 2007.
- [43] F. Mondada, M. Bonani, A. Guignard, S. **Magnenat**, C. Studer, and D. Floreano. [Superlinear Physical Performances in a SWARM-BOT](#). In *Proc. of the VIIIth European Conference on Artificial Life (ECAL)*, volume 3630 of *Lecture Notes in Artificial Intelligence*, pages 282–291. Springer, 2005.

- [44] F. Mondada, M. Bonani, S. **Magnenat**, A. Guignard, D. Floreano, F. Groen, N. Amato, A. Bonari, E. Yoshida, and B. Kröse. [Physical connections and cooperation in swarm robotics](#). In *Proc. of the 8th Conference on Intelligent Autonomous Systems (IAS8)*, pages 53–60. 2004.

Other publications

- [45] S. **Magnenat**. [Software integration in mobile robotics, a science to scale up machine intelligence](#), 2010.
- [46] S. **Magnenat**, P. Schoeneich, F. Rochat, P. Rétornaz, M. Bonani, V. Longchamp, M. Voelkle, T. Barras, D. Burnier, P. Noirat, T. Baaboura, F. Vaussard, and F. Mondada. [Autonomous Construction by a Mobile Robot in Unknown Environments with Scarce Resources](#). Presented at CogSys 2010, ETH Zurich, Switzerland, 2010.

Patents

- 2017 R. Sumner, M. Nitti, G. Roethlin, A. Marra, M. Ryffel, G. Noris, K. Mitchell, **S. Magnenat**. [Augmented reality image transformation](#). U.S. Patent 9,652,895
- 2015 R. Sumner, D.T. Ngo, M. Nitti, A. Marra, **S. Magnenat**, M. Ryffel. [Deformable-Surface Tracking Based Augmented Reality Image Generation](#). U.S. Patent Application 14/831,657