Leopoldina
Nationale Akademie
der Wissenschaften

Curriculum Vitae Professor Dr Sami Haddadin

Image: Markus Scholz | Leopoldina

Name: **Sami Haddadin**

Research Priorities: **Robotics, embodied AI (embodied artificial intelligence), collective intelligence, human-robot interaction, motor intelligence**

Sami Haddadin is an electrical engineer and computer scientist who conducts research in the fields of robotics, artificial intelligence and human motor control.

Academic and Professional Career

since 2018	Chair of Robotics and Systems Intelligence, Executive Director, Munich Institute of Robotics and Machine Intelligence (MIRMI, formerly MSRM), Technical University of Munich (TUM), Munich, Germany
2016 / 2017	Offers from Stanford University, Stanford, USA, and Massachusetts Institute of Technology (MIT), Cambridge, USA
2014 - 2017	Professor, Faculty for Electrical Engineering and Computer Science, Director, Institute of Automatic Control, Gottfried Wilhelm Leibniz University Hannover, Hanover, Germany
2016	Founder, Franka Emika GmbH, Munich, Germany
2014 - 2016	CEO and Founder, KBee AG, Munich, Germany
2012 - 2014	CEO and Founder, Kastanienbaum GmbH, Munich, Germany
2013 - 2014	Project Manager “Terrestrial Assistive Robotics”, German Aerospace Center (DLR), Oberpfaffenhofen, Germany
2012 - 2014	Scientific Coordinator “Human-Centered Robotics”, DLR, Oberpfaffenhofen, Germany
2011 - 2013	Visiting Scholar and Scientific Advisor, IT-Company Willow Garage, Menlo Park, USA
2011 - 2012	Team Leader “Human-Robot Interaction”, DLR, Oberpfaffenhofen, Germany

2011	Visiting Scholar, Stanford University, Palo Alto, USA
2010 - 2011	Coordinator “Human-Robot Interaction”, DLR, Oberpfaffenhofen, Germany
2010 - 2013	Lecturer, TUM, Munich, Germany
2005 - 2013	Research Associate, Robotics and Mechatronics Center, DLR, Oberpfaffenhofen, Germany
2006 - 2011	Dissertation, Rheinisch-Westfälische Technische Hochschule Aachen, Aachen, Germany
1999 - 2005	Degrees in electrical engineering, computer science and technology management, Universities of Hannover, Germany, Oulu, Finland, and TU Munich, LMU Munich as well as FernUniversität Hagen, Germany

Functions in Scientific Societies and Committees

since 2020	Chair of Bavarian AI Council, Munich, Germany
since 2019	Member, Future Council of the Bavarian Economy, Munich, Germany
2018 - 2020	Member, High-Level Expert Group on “Artificial Intelligence” (AI HLEG), European Union (EU)
2018 - 2020	Member as external expert, Study Commission “Artificial Intelligence – Social Responsibility and Economic, Social and Ecological Potential”, German Bundestag, Berlin, Germany
2018 - 2019	Member, High-Level Industrial Roundtable “Industry 2030”, European Commission, Brussels, Belgium

Project Coordination, Membership in Collaborative Projects

since 2021	Principal Investigator, Subproject “DARKO – Dynamic agile production robots that learn and optimise knowledge and operations”, Research and Innovation Programme Horizon 2020 (H2020), European Commission
since 2020	Principal Investigator, Lighthouse Initiative “KI.FABRIK Bavaria”, Munich, Germany
since 2019	Principal Investigator, Subproject Clusters of Excellence “CeTI”, German Research Foundation (DFG), Germany
since 2018	Principal Investigator, Lighthouse Initiative “Geriatronics”, Munich, Germany
2016 - 2020	Principal Investigator, subproject “SOFTPRO – Synergy-based open-source foundations and technologies for prosthetics and rehabilitation”, H2020, European Commission

Honours and Awarded Memberships

since 2021	Member, German National Academy of Sciences Leopoldina, Germany
2021	Technology Transfer Award, euRobotics AISBL, Brussels, Belgium
2021	Collection of 41 influential patents in German history since 1877: Tactile Robot (2015), German Patent and Trade Mark Office (DPMA), Munich, Germany
since 2020	Member, acatech – National Academy of Science and Engineering, Germany
2019	Gottfried Wilhelm Leibniz Prize, DFG, Germany
2017	Deutscher Zukunftspreis, Federal President's Award for Innovation in Science and Technology, Germany
2015	Alfried Krupp Award for Young University Lecturers, Alfried Krupp von Bohlen und Halbach Foundation, Essen, Germany
2015	Early Career Award for Young Researchers in Robotics, Institute of Electrical and Electronics Engineers Robotics and Automation Society (IEEE RAS), Piscataway, USA
2012	Georges Giralt PhD Award for best European Dissertation in Robotics, euRobotics AISBL, Brussels, Belgium

Research Priorities

Sami Haddadin is electrical engineer and computer scientist who conducts research in the fields of robotics, artificial intelligence and human motor control. A strong interdisciplinary focus of his work – in addition to the development of a wide variety of intelligent machines – lies in the interface between the development of intelligent machines and the basic principles of the human body and its functionality. Their understanding is key to the development of autonomously interacting machines that will support humans in the future in key areas such as work, health, mobility, the environment, or space.

In addition to exploring the fundamentals of robotics and artificial intelligence, the overarching goal of Sami Haddadin's research group is to make state-of-the-art robotics accessible to laypeople for the first time utilizing intelligent programming, learning and interaction systems that interactively link humans and machines. Commercial introduction of this technology can thus represent a change towards intelligent machines meeting people's needs more broadly, beyond industrial use. Examples can be found in healthcare in assisting the sick, elderly or disabled. The concept developed by Sami Haddadin and other researchers for cost-effective, flexible and intuitively operable robots turns them into aids for humans.

From Sami Haddadin's point of view, there are still some significant challenges ahead before robotics, and artificial intelligence can be merged into machine intelligence: For one, the technological boundaries of sensorimotor and integrated system design must be significantly expanded in order to get closer to the unique performance and embodied intelligence of the human body. Secondly, the two previously separate paradigms of model-based control and regulation and data-driven machine learning algorithms must be united in such a way that the next generation of AI algorithms seamlessly bridges the gap between the physical and virtual worlds.