Niranjan Deshpande

Curriculum Vitae

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July 18th, 1986

Education

2018 - 2021 **Doctor of Philosophy (PhD)**, *Mathematics and Informatics*, Inria - University Grenoble Alpes, Grenoble, France.

2012 - 2016 **Masters of Autonomous Systems (MAS)**, *Computer Science Department*, Bonn-Rhein-Sieg University of Applied Sciences (BRSU), Bonn, Germany.

2004 - 2008 **Bachelor of Engineering**, *Instrumentation and Controls*, University of Pune, India.

Academic Experience

2018 - Present **Doctoral Researcher**, INRIA, Grenoble, France.
- Working on autonomous vehicle navigation in urban environments in the presence of pedestrians.
- The focus is on decision making aspect of navigation using **Deep Reinforcement Learning (DRL)**.

2015/15 **Research Intern**, INRIA, Grenoble, France.
- The objective was to develop a mobile robot **navigation system** which could generate and execute plans for pushing an object in situations where a robot cannot navigate by just avoiding objects and has to reposition an object to find a path to its goal.

2014 - 2015 **Research Intern**, ENSTA ParisTech, Paris, France.
- The objective was to develop **planning and obstacle avoidance** strategies that take the type of objects into account to be able to react(navigate) differently as a function of the context.

2014/14 **Research Assistant**, Institute of Visual Computing (BRSU), Bonn, Germany.
- Worked on the design and development of novel interactive devices for 2D and 3D interaction.
- Specifically, the work encompassed the rapid prototyping of devices and interaction techniques using sensor and actuators controlled over Arduino and Unity3D.

2013/13 **Research Assistant**, Institute of Visual Computing (BRSU), Bonn, Germany *website*.
- Worked on a project called SimuBridge to develop a generic, independent from Programmable Logic Controller (PLC) vendor, a visual simulator of devices, systems and industrial plants.
- Major focus was on realistic simulation of devices and their physical characteristics, realistic behavior and reaction of the simulator on the real control signals, correct visual representation of real-time events and modulated signals with low latency.

2013 - 2014 **Robocup Member**, B-IT Bots, Germany *website*.
- Was an active member of @home robocup team working on domestic robots.
- Was responsible for improving the 2D navigation for omni-directional Care-O-bot robot platform in dynamic and cluttered environments.

Work Experience

2017 - 2018 **Robotics Software Engineer**, Moley Robotics, London, United Kingdom *website*.
- Was involved remotely in the development of several software components for a robotic kitchen.

2016 - 2017 **Research Engineer**, The Hi-Tech Robotics Systems (UGV team), Gurgaon, India *website*.
- Worked on the improvement and development of a navigation system for an outdoor autonomous shuttle.
- Developed Lane Departure Warning(LDW) and Forward Collision Warning(FCW) functionalities based on image processing for an Advanced Driver Assistance System(ADAS).
- Also worked on the integration of LIDAR and GNSS sensors for the autonomous shuttle.

2014 - 2016 **Embedded Software Freelancer**, SCADA SCOPE, Sydney, Australia *website*.
- Was involved remotely in the software development for an IOT based monitoring system.
- The project is a commercial water pressure and volume monitoring system for automated maintenance, warning and response alerts by Internet and SMS services.

2011 - 2012 **Team Lead & Co-Owner**, Omni Mentors Academy, Nasik, India *website*.
- Developed embedded training kits for robotics and embedded systems educational workshops.
- Conducted robotics training workshops for school and bachelors students.
- Also involved in spreading awareness and knowledge about robotics in rural and urban parts of India.

2009 - 2010 **Robotics Engineer**, Fennec Fox Technologies, Pune, India *website*.
- Was involved in the research, design and development of a service robot ESKORTA: A low cost, multi purpose, autonomous mobile robot for service industries like hospitals, warehouses, airports, etc.

Publications

2019 Niranjan Deshpande and Anne Spalanzani, "Deep Reinforcement Learning based Vehicle Navigation amongst pedestrians using a Grid-based state representation", In *IEEE Conference on Intelligent Transportation Systems (ITSC)*, 2019

2020 Niranjan Deshpande, Dominique Vaufreydaz and Anne Spalanzani, "Behavioral decision-making for urban autonomous driving in thepresence of pedestrians using Deep Recurrent Q-Learning", In *International Conference on Control, Automation, Robotics and Visions (ICARCV)*, 2020

Awards

Winter 2012 DAAD scholarship **STIBET**-Program I.I

2013 – 2014 DAAD Matching funds Scholarship **STIBET**-Program III.

2014 – 2015 Erasmus scholarship 2014 for traineeship/internship

Summer 2015 Erasmus scholarship 2015 for traineeship/internship

Skills

Programming	C++, Python
Libraries	ROS, MoveIt, OpenCV, Gazebo, Keras, Pytorch
Embedded	Philips 8051, Microchip dsPIC, Atmel AVR, Arduino, Sparkcore
PLC	Siemens SIMATIC S7-1200, Eaton XC200, CODESYS