

# MARKUS SOLBACH

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## EDUCATION

<i>2015 – Present</i>	PhD student under supervision of Prof. John K. Tsotsos, Active Vision for Robotics at York University, Canada
<i>2014</i>	Master of Science (Computer Science) at University of Koblenz, Germany
<i>2014</i>	Exchange Semester in Spain at the University of the Balearic Islands, Spain
<i>2013</i>	Bachelor of Science (Computer Science) at University of Koblenz, Germany
<i>2012–2013</i>	Exchange Semester at Fraunhofer IDM at Nanyang Technological University, Singapore
<i>2012</i>	Summer School: Intense Program on Computer Vision at University of Koblenz, Germany

## SKILLS

<i>Programming Languages</i>	C/C++, Python, Java, Bash, MATLAB, JavaScript, Objective-C, Octave, PHP, Assembler, ...
<i>Frameworks</i>	OpenCV, ROS, Gazebo, PCL, OpenGL, PyTorch, Caffe, TensorFlow, Fraunhofer VisionLib, ...
<i>Software</i>	Linux, MacOS, Windows, Microsoft Office, Adobe Creative Suite, Vim, Microsoft Projects, Git, SVN, Mercurial, Xcode, IntelliJ, CLion, PyCharm, Pentaho, ...
<i>Database</i>	PostgreSQL, MySQL, MongoDB, SQLite

## PROFESSIONAL EXPERIENCE

<i>2015 – Present</i>	Research Assistant at York University, Canada <ul style="list-style-type: none"><li>• Random Polyhedral Scenes: An Image Generator for Active Vision System Experiments</li><li>• Totally Looks Like – How Humans Compare, Compared to Machines</li><li>• Attentive Pose Estimation – 6DOF Object Pose Estimation</li><li>• Search and Detection for Fallen People</li><li>• Visuospatial Functionality for Active Observers: The Same-Different Task</li><li>• Stereo-Vision SLAM for Land Robots</li><li>• Automatic Landing-Spot Detection for Drones</li></ul>
<i>2015 – Present</i>	Teaching Assistant at York University, Canada <ul style="list-style-type: none"><li>• 2018   Winter: EECS 4421 - Introduction to Robotics</li><li>• 2018   Winter: EECS 4443 - Mobile User Interfaces</li><li>• 2017   Fall: EECS 4443 - Mobile User Interfaces</li><li>• 2017   Fall: EECS 2030 - Advanced Object Oriented Programming</li><li>• 2017   Winter: EECS 1028 - Discrete Math for Engineers</li><li>• 2017   Winter: EECS 1022 - Mobile Programming</li><li>• 2016   Fall: EECS 1012 - Net-centric Introduction to Computing</li><li>• 2016   Winter: EECS 1022 - Introduction to Software Development</li><li>• 2016   Winter: EECS 2021 - Computer Organization</li><li>• 2015   Fall: EECS 1012 - Introduction to Computer Science</li><li>• 2015   Fall: EECS 3451 - Signals and System</li></ul>
<i>2014 – 2017</i>	Consultant & Developer at DSA GmbH/SKYLIZE <ul style="list-style-type: none"><li>• Developed Build Server implementation for large scale Java projects</li><li>• Created Pentaho plugin for live master data editing</li></ul>

- Designed and implemented a virtual-machine environment

2013 – 2014 Research Assistant at the Active Vision Group of the University of Koblenz, Germany

- Developed autonomous Mars exploration robot for DLR (German Aerospace Center)
- Implemented vision-based system for rehabilitation support

2012 – 2013 Research Assistant at Fraunhofer IDM at Nanyang Technological University, Singapore

- Designed and implemented automatic initialization of model-based 3D tracking (Bachelor of Science thesis)

2012 Research Assistant at the Institute of Software Engineering of the University of Koblenz, Germany

### SIGNIFICANT PROJECTS

2016 Literature review on Convolutional Neural Networks for automatic image captioning at York University, Canada

2014 6 DOF EKF SLAM in Underwater Environments at University of the Balearic Islands, Spain (Master of Science thesis)

2012 Vision-based head tracking for HMDs at University of Koblenz, Germany

### PUBLICATIONS

2017 Solbach, Markus D., and John K. Tsotsos. "Vision-Based Fallen Person Detection for the Elderly." arXiv preprint arXiv:1707.07608 (2017).

2016 Solbach, M., et al. "Robust world-centric stereo EKF localization with active loop closing for AUVs." Pattern Recognition and Image Analysis 26.1 (2016): 205-215.

Bonin-Font, F., Pep Lluís Negre Carrasco, A., Solbach, M., Oliver, G. Stereo SLAM for Robust Dense 3D Reconstruction of Underwater Environments. In MTS/IEEE Oceans, Genova

2015 Bonin-Font, Francisco, et al. "Stereo SLAM for robust dense 3D reconstruction of underwater environments." OCEANS 2015-Genova. IEEE, 2015.

### EDITORIAL DUTIES

Review *International Conference on Computer Vision, International Conference on Computer Vision Systems, IET Computer Vision Journal, Signal, Image and Video Processing Journal*

### PROFESSIONAL AFFILIATIONS

2016 – Present President of computer science and engineering graduate student's association, York University

2016 – 2017 Students' rep. on the Tenure & Promotion Committee, York University

2015 – 2016 Vize-president of computer science and engineering graduate student's association, York University

Languages German (Mother tongue) · English (Fluent) · Spanish (Beginner) · Latin

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