

MARKUS D. SOLBACH

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CURRICULUM VITAE

EDUCATION

- 2022 PhD (Computer Science) at York University (Tsotsos Lab for Active and Attentive Vision), Canada
- 2014 Master of Science (Computer Science) at University of Koblenz, Germany
- 2014 Exchange Semester in Spain at the University of the Balearic Islands, Spain
- 2013 Bachelor of Science (Computer Science) at University of Koblenz, Germany
- 2012–2013 Exchange Semester at Fraunhofer IDM at Nanyang Technological University, Singapore

SKILLS

- Programming Languages* C/C++, Python, Java, Bash, MATLAB, JavaScript, C#, Swift, Go, Octave, ...
- Libraries* OpenCV, ROS, Gazebo, PCL, OpenGL, TensorFlow, PyTorch, Three.js, Pandas, NumPy, SciPy, ...
- Software* Docker, Git, Asana, JetBrains, Adobe Creative Cloud, Pentaho, ...
- Database* PostgreSQL, MySQL, MongoDB, SQLite

PROFESSIONAL EXPERIENCE

- 2021 – Present Research Associate at York University, Canada
- Computer Vision, Active Vision, 3D Vision, Machine Learning, Robotics
- 2019 – Present Lab Manager of the Tsotsos Lab for Active and Attentive Vision, Canada
- 2015 – 2021 Research Assistant at York University, Canada
- Computer Vision, Active Vision, 3D Vision, Machine Learning, Robotics
- 2015 – Present Teaching Assistant at York University, Canada
- 2021 | Winter: 4443 Mobile User Interfaces
 - 2020 | Fall: 2030 Advanced OO Programming
 - 2020 | Winter: 1520 Computer Use Fundamentals
 - 2019 | Fall: 2030 Advanced OO Programming
 - 2019 | Winter: 1028 Discrete Math for Engineers
 - 2018 | Fall: 3451 Signals and Systems
 - 2018 | Winter: 4421 Introduction to Robotics & 4443 Mobile User Interfaces
 - 2017 | Fall: 4443 Mobile User Interfaces & 2030 Advanced OO Programming
 - 2017 | Winter: 1028 Discrete Math for Engineers & 1022 Mobile Programming
 - 2016 | Fall: 1012 Net-centric Introduction to Computing
 - 2016 | Winter: 1022 Intro. to Software Dev. & 2021 Computer Organization
 - 2015 | Fall: 1012 Introduction to Computer Science & 3451 Signals and Systems
- 2020 Robotics Consultant at RoboEye, Toronto, Canada
- 2017 – 2018 Part-Time Teacher at St. Clair College, Toronto, Canada
- 2017 Part-Time Consultant at Altius Analytics Labs Inc., Toronto, Canada

- 2014 – 2017 Consultant & Developer at DSA GmbH/SKYLYZE, Germany
- 2013 – 2014 Research Assistant at Active Vision Group of the University of Koblenz, Germany
- 2012 – 2013 Research Assistant at Fraunhofer IDM, Nanyang Technological University, Singapore
- 2012 Research Assistant at the Institute of Software Engineering of the University of Koblenz, Germany

PUBLICATIONS

- 2022 Solbach, Markus D. "Active Observers in a 3D World: Human Visual Behaviours for Active Vision" Ph.D. Thesis, York University, 2022.
- 2021 Solbach, Markus D., Tsotsos, John K. "Blocks World Revisited: The Effect of Self-Occlusion on Classification by Convolutional Neural Networks" In Proceedings of the IEEE/CVF International Conference on Computer Vision 2021 (Workshop: Real-World Computer Vision from Inputs with Limited Quality (RLQ)) (pp. 3505-3514), 2021.
- Korbach, Christian, Solbach, Markus D., Memmesheimer, Raphael, Paulus, Dietrich, Tsotsos, John K. "Next-Best-View Estimation based on Deep Reinforcement Learning for Active Object Classification" arXiv preprint arXiv:2110.06766, 2021.
- Solbach, Markus D., Tsotsos, John K. "Active Observer Visual Problem-Solving Methods are Dynamically Hypothesized, Deployed and Tested" Ninth Advances in Cognitive Systems (ACS) Conference 2021 (arXiv:2201.06134), 2021.
- Solbach, Markus D., Tsotsos, John K. "Tracking Active Observers in 3D Visuo-Cognitive Tasks" Symposium on Eye Tracking Research and Applications (ETRA '21 Adjunct), 2021.
- Tsotsos, John K., Abid, Omar, Kotseruba, Iuliia, Solbach, Markus D. "On the Control of Attentional Processes in Vision" Cortex, 2021.
- 2020 Solbach, Markus D., Tsotsos, John K. "PESAO: Psychophysical Experimental Setup for Active Observers" arXiv preprint arXiv:2009.09933, 2020.
- Solbach, Markus D. and Tsotsos, John K. "Active Observers in a 3D World: The 3D Same-Different Task" Journal of Vision. The Association for Research in Vision and Ophthalmology, 2020.
- 2018 Rosenfeld, Amir, Solbach, Markus D. and Tsotsos, John K. "Totally Looks Like-How Humans Compare, Compared to Machines" Asian Conference on Computer Vision. Springer, Cham, 2018.
- Tsotsos, John K., Kotseruba, Iuliia, Rasouli, Amir and Solbach, Markus D. "Visual attention and its intimate links to spatial cognition" Cognitive processing 19.1 (2018): 121-130.
- Rosenfeld, Amir, Solbach, Markus D. and Tsotsos, John K. "Totally Looks Like-How Humans Compare, Compared to Machines" Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops. 2018.
- Solbach, Markus D., Volland, Stephen, Edmonds, Jeff and Tsotsos, John K. "Random Polyhedral Scenes: An Image Generator for Active Vision System Experiments" arXiv preprint arXiv:1803.10100, 2018.
- Rosenfeld, Amir, Solbach, Markus D. and Tsotsos, John K. "Totally-Looks-Like: A

Dataset and Benchmark of Semantic Image Similarity" Journal of Vision 18.10 (2018): 136-136.

2017 Solbach, Markus D., Tsotsos, John K. "Vision-Based Fallen Person Detection for the Elderly" Computer Vision Workshop (ICCV-W), 2017 IEEE International Conference on. IEEE, 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.

2015 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, 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, Computer Vision and Image Understanding Journal*

PROFESSIONAL AFFILIATIONS

2016 – 2018 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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