Andreas Ziegler

Robotics & Computer Vision Researcher/Engineer

Zihlweg 22
8712 Stäfa
Switzerland
+41 (0)79 581 46 90
062.127@gmail.com
andreasaziegler.github.io/
andreas-ziegler

Summary

I am passioned about a mix of robotics and computer vision research and industrial/commercial applications. My vision is to develop novel algorithms and make them work on real robots. I enjoy working independently on researcher and engineer projects, but I appreciate the opportunity to exchange ideas with a variety of individuals from various backgrounds.

Personal details

Date of birth 25.03.1988

Nationality Swiss

Education

05.2021– **PhD Candidate**, *University of Tübingen*, Tübingen, Germany
Thesis: Event-based vision for fast robot control
- In collaboration with Sony AI Zürich
- Thesis supervisors: Prof. Dr. Andreas Zell and Prof. Dr. Andreas Geiger

09.2014–04.2018 **MSc ETH in EEIT**, *ETH Zürich*, Zürich, Switzerland
Specialized in: Robotics, Computer Vision and Machine Learning
Master Thesis: A Representation for Exploration that is Robustto State Estimate Drift
- Examiner: Prof. Dr. Roland Siegwart and Prof. Dr. Davide Scaramuzza
- Resulted in [4]

Semester Project 2: Map Fusion for Collaborative UAV SLAM
- Examiner: Prof. Dr. Roland Siegwart and Prof. Dr. Margarita Chli

Semester Project 1: Robust object tracking in 3D by fusing ultra-wideband and vision
- Examiner: Prof. Dr. Luc Van Gool and Prof. Dr. Otmar Hilliges

09.2009–09.2013 **BSc FHO in Electrical Engineering**, *University of Applied Science Eastern Switzerland (HSR)*, Rapperswil, Switzerland
Specialized in: Digital Signal and Image Processing, Embedded Systems and Software Engineering and Mobile Communication

09.2011-08.2012 **Exchange year**, *Shanghai Jiao Tong University*, Shanghai, China
Courses taken: Chinese language, Electrical engineering and Computer Science

Independent Coursework

edX DT-01x: Self-Driving Cars with Duckietown by ETHx on edX. Specialization Certificate earned on Auguts 15, 2021

Coursera Deep Learning, a 5-course specialization by deeplearning.ai on Coursera. Specialization Certificate earned on March 16, 2018

edX Autonomous Mobile Robots by ETHx on edX. Certificate earned on April 17, 2014

Work experience

08.2022–10.2022 **Computer Vision & ML Research Intern**, *Prophesee*, Paris, France, 100%

Worked on slow motion from frame and event data under the supervison of Dr. Amos Sironi

Technologies used: Python, PyTorch, OpenCV, numpy, git, Atlassian tools

06.2021–present **PhD Candidate**, *University of Tübingen*, Tübingen, Germany, 100%

- Working on Event-based computer vision for fast robot control in collaboration with Sony AI Zürich
- Supervision of MSc and BSc students
- Teaching Assistant

Technologies used: C++, Python, Julia, PyTorch, OpenCV, numpy, Eigen, ROS1/2, git, LaTeX

09.2018–05.2021 **Robotics Engineer**, *MT Robot AG*, Zwingen, Switzerland, 100%

Accomplished tasks:

- Development of a computer vision based safety field intrusion detection system
- Improvement of a multi robot collision avoidance system
- Development and maintenance of software for automated guided vehicle (AGVs), including topics such as multi sensor fusion, mapping, path planning, (multi robot) obstacle avoidance, etc.
- Deputy Scrum Master

Technologies used: C++, Python, ROS1/2, DDS, OpenCV, CMake, git, Atlassian tools

06.2018–09.2018 **Research Assistant**, *University of Zürich, Robotics and Perception Group*, Zurich, Switzerland, 100%

Continued working on my master thesis project which lead to [4]

04.2018–06.2018 **Research Associate Intern**, *Disney Research Zurich*, Zurich, Switzerland, 100%

Integrated a Leica total station in an existing ROS setup within the PaintCopter project.
Technologies used: C++, Python, ROS, Ceres, CMake, git

02.2018–03.2018 **Research Assistant**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zurich*, Zürich, Switzerland, 100%

Developed an LED light controller for a microscope setup which contributed to [3].
Technologies used: C++, Qt, wxWidgets, CMake, git

03.2017–08.2017 **Computer Vision & Robotics Research Intern**, *Pix4D SA*, Lausanne, Switzerland, 100%

Accomplished tasks:

- Worked on indoor navigation for UAVs
- Implementation of a filtering method for a robust target detection
- Participation on an indoor mapping project with an industrial partner
- Investigation of barcode localization and detection algorithms for automatic inventory
- Participation on a development of a target detection library for radiometric corrections
- Worked on various computer vision applications (Barcode localization/detection, 3D reconstruction, Camera calibration)

Technologies used: C++, ROS, OpenCV, Eigen, Conan, CMake, Jenkins, git

08.2015–06.2018 **Software Engineer & System Administrator**, *Accelerom AG*, Zürich, Switzerland, 20%-30%

Technologies used: Java, Groovy, JavaScript, jQuery, CSS, Grails, Hibernate, MySQL, git, Redmine, Tomcat, Apache, SAMBA

02.2014–08.2015 **Research Assistant**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zurich*, Zürich, Switzerland, 100%/20%

Continued my work, provided further consulting and maintenance.

11.2013–02.2014 **Research Assistant (Civil service)**, *Computer Assisted Research and Development, University Hospital Balgrist*, Zürich, Switzerland, 100%
Worked on segmentation algorithms for computer-assisted surgical planning
Technologies used: Matlab, C#, VTK, CVS

08.2013–11.2013 **Research Assistant (Civil service)**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zurich*, Zürich, Switzerland, 100%
Accomplished tasks:
- Extended and adapted a microscope control software which contributed to [2]
- Developed and implemented a stretcher control software

Technologies used: C++, Qt, wxWidgets, CMake, git

08.2008–03.2009 **Computer Science Intern**, *ERPsourcing AG*, Wallisellen, Switzerland, 100%

08.2004–08.2008 **Electronics Engineer Apprentice**, *Hch. Kündig & Cie. AG*, Rüti ZH, Switzerland, 100%

Publications

[1] A. Ziegler, D. Teigland, J. Tebbe, T. Gossard, and A. Zell, *Real-time event simulation with frame-based cameras*, 2022. DOI: 10.48550/ARXIV.2209.04634. [Online]. Available: https://arxiv.org/abs/2209.04634.

[2] A. Horvath, A. Ziegler, S. Gerhard, *et al.*, "Focus on time: Dynamic imaging reveals stretch-dependent cell relaxation and nuclear deformation," *Biophysical Journal*, Jan. 2021. DOI: 10.1016/j.bpj.2021.01.020.

[3] A. N. Horvath, A. A. Ziegler, S. Gerhard, *et al.*, "Time-controlled multichannel dynamic traction imaging of biaxially stretched adherent cells," Mar. 2020. DOI: 10.1101/2020.03.02.972919. [Online]. Available: https://doi.org/10.1101/2020.03.02.972919.

[4] T. Cieslewski, A. Ziegler, and D. Scaramuzza, "Exploration without global consistency using local volume consolidation," in *IFRR International Symposium on Robotics Research (ISRR), Hanoi, 2019*, IFRR: IEEE, Oct. 2019. [Online]. Available: https://doi.org/10.5167/uzh-197724.

Languages

German	Mother tongue
English	Excellent, Level C1
French	Good, Level B1,
Chinese	Basics, Level A1
Korean	Basics, Level A2

Technical skills

Languages	C++, Python, Julia, C, Java
Software packages	OpenCV, ROS1/2, PyTorch, Eigen, boost, DDS, pcl, scikit-learn, wxWidgets, Qt, MATLAB

Hobbies

Sports	Wing Chun Kung Fu, Yoga, Jogging, Mountaineering
Music	Drums, Piano, Vocals

Extra-Curricular activities

- Board member *jevp (Junge Evangelische Volkspartei Schweiz)

- Foodsaver at Foodsharing
- Managing a Labdoo hub