Andreas Ziegler

Robotics & Computer Vision Researcher/Engineer

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Summary

I am a broadly trained roboticist with a passion for application-driven robotics, computer vision, and machine learning research. I developed novel algorithms and implemented them to work on real robots. Having lived, studied, and worked in diverse environments—including Zurich, Basel, Lausanne, Tübingen, Paris, Shanghai, and Seoul/Incheon—I appreciate the opportunity to collaborate and exchange ideas with individuals from diverse backgrounds. Diverse perspectives foster creativity and innovation, enabling teams to navigate challenges and deliver impactful results.
I am committed to contributing to a collaborative work environment that embraces experimentation, celebrates learning from failures, and ensures mutual respect and openness. I believe such a culture empowers individuals to take ownership, enabling both personal and collective growth.
I now seek to grow as an individual contributor while leveraging my leadership experience to foster team collaboration and drive impactful results. By transitioning from individual successes to driving collective achievements, I aspire to stimulate the field of robotics, computer vision, and machine learning as a Postdoctoral Researcher.

Personal details

Nationality Swiss

Education

2021.06– **PhD Candidate**, *University of Tübingen*, Tübingen, Germany
Thesis: Event-based computer vision for fast robot control
- In collaboration with Sony AI Zürich
- Thesis supervisors: Prof. Dr. Andreas Zell and Prof. Dr. Andreas Geiger

2014.09–2018.04 **MSc ETH in EEIT**, *ETH Zürich*, Zürich, Switzerland
Specialized in: Robotics, Computer Vision and Machine Learning
Master Thesis: A Representation for Exploration that is Robust to State Estimate Drift
- Examiner: Prof. Dr. Roland Siegwart and Prof. Dr. Davide Scaramuzza
- Resulted in [11]

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

2009.09–2013.09 **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

2011.09-2012.08 **Exchange year**, *Shanghai Jiao Tong University*, Shanghai, China
Courses taken: Chinese language, Electrical engineering and Computer Science

Publications

[1] T. Gossard, J. Schmalzl, A. Ziegler, and A. Zell, "Spin detection using racket bounce sounds in table tennis," in *2025 IEEE International Workshop on Sport, Technology and Research (STAR)*, IEEE, Oct. 2025. [Online]. Available: https://arxiv.org/abs/2409.11760.

[2] T. Gossard, A. Ziegler, and A. Zell, "Tt3d: Table tennis 3d reconstruction," in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, Jun. 2025.

[3] A. Ziegler, D. Joseph, T. Gossard, E. Moldovan, and A. Zell, "Biasbench: A reproducible benchmark for tuning the biases of event cameras," in *2025 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, IEEE, Jun. 2025. DOI: 10.48550/arXiv.2504.18235. [Online]. Available: http://dx.doi.org/10.1109/CVPRW63382.2024.00339.

[4] A. Ziegler, K. Vetter, T. Gossard, J. Tebbe, S. Otte, and A. Zell, "Detection of fast-moving objects with neuromorphic hardware," in *2025 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, May 2025. DOI: 10.48550/arXiv.2403.10677. [Online]. Available: https://doi.org/10.48550/arXiv.2403.10677.

[5] T. Gossard, J. Krismer, A. Ziegler, J. Tebbe, and A. Zell, "Table tennis ball spin estimation with an event camera," in *2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*, IEEE, Jun. 2024. DOI: 10.48550/arXiv.2404.09870.

[6] T. Gossard, A. Ziegler, L. Kolmar, J. Tebbe, and A. Zell, "Ewand: A calibration framework for wide baseline frame-based and event-based camera systems," in *2024 International Conference on Robotics and Automation (ICRA)*, IEEE, 2024. [Online]. Available: https://arxiv.org/pdf/2309.12685.pdf.

[7] T. Gossard, J. Tebbe, A. Ziegler, and A. Zell, "Spindoe: A ball spin estimation method for table tennis robot," in *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, Oct. 2023. DOI: 10.1109/iros55552.2023.10342178. [Online]. Available: http://dx.doi.org/10.1109/IROS55552.2023.10342178.

[8] A. Ziegler, T. Gossard, K. Vetter, J. Tebbe, and A. Zell, "A multi-modal table tennis robot system," in *RoboLetics: Workshop on Robot Learning in Athletics @CoRL 2023*, 2023. DOI: 10.48550/arXiv.2310.19062. [Online]. Available: https://arxiv.org/abs/2310.19062.

[9] A. Ziegler, D. Teigland, J. Tebbe, T. Gossard, and A. Zell, "Real-time event simulation with frame-based cameras," in *2023 IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, May 2023. DOI: 10.1109/icra48891.2023.10160654. [Online]. Available: http://dx.doi.org/10.1109/ICRA48891.2023.10160654.

[10] A. Horvath 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.

[11] 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.

Work experience

2021.06–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

2023.11–2024.03 **Research Scientist Intern**, *Sony AI*, Zurich, Switzerland, 100%
Worked on multi modal camera calibration under the supervision of Dr. Raphaela Kreiser and Dr. Naoya Takahashi.
Technologies used: C++, Python, OpenCV, Ceres, git

2022.08–2022.10 **Computer Vision & ML Research Intern**, *Prophesee*, Paris, France, 100%
Worked on slow motion from frame and event data under the supervision of Dr. Amos Sironi.
Technologies used: Python, PyTorch, OpenCV, numpy, git, Atlassian tools

2018.09–2021.05 **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 autonomous mobile robots (AMRs), 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

2018.06–2018.09 **Research Assistant**, *University of Zürich, Robotics and Perception Group*, Zurich, Switzerland, 100%
Continued working on my master thesis project which lead to [11].

2018.04–2018.06 **Research Associate Intern**, *Disney Research Zürich*, Zürich, Switzerland, 100%
Integrated a Leica total station in an existing ROS setup within the PaintCopter project.
Technologies used: C++, Python, ROS, Ceres, CMake, git

2018.02–2018.03 **Research Assistant**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zürich*, Zürich, Switzerland, 100%
Developed an LED light controller for a microscope setup which contributed to [10].
Technologies used: C++, Qt, wxWidgets, CMake, git

2017.03–2017.08 **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
- Investigation of barcode localization and detection algorithms for automatic inventory

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

2015.08–2018.06 **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

2014.02–2015.08 **Research Assistant**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zürich*, Zürich, Switzerland, 100%/20%
Continued my work, provided further consulting and maintenance.

2013.11–2014.02 **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

2013.08–2013.11 **Research Assistant (Civil service)**, *Laboratory for Orthopaedic Biomechanics at the University and ETH Zürich*, Zürich, Switzerland, 100%
Accomplished tasks:
- Extended and adapted a microscope control software
- Developed and implemented a stretcher control software

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

2008.08–2009.03 **Computer Science Intern**, *ERPsourcing AG*, Wallisellen, Switzerland, 100%

2004.08–2008.08 **Electronics Engineer Apprentice**, *Hch. Kündig & Cie. AG*, Rüti ZH, Switzerland, 100%

Independent coursework and training

University of Tübingen — Leadership Talent Academy. Certificate earned on November, 2024

SIY — Search Inside Yourself: Emotional Intelligence for Leadership. Certificate earned on May 28, 2024

Center for Nonviolent Communication — NVC Workshops. Certificate earned on October 6, 2024

University of Tübingen — Writing successful grant proposals. Certificate earned on July 11, 2025

University of Tübingen — From Chaos to Structure: Time- and Self-Management for a More Efficient Work Style. Certificate earned on March 9, 2022

University of Tübingen — Slidewriting and Storylining. Certificate earned on May 16, 2022

University of Tübingen — Setting and Achieving Goals Efficiently. Certificate earned on May 5, 2022

University of Tübingen — Speedreading. Certificate earned on April 14, 2022

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

Media coverage

Schwäbisches Tagblatt — Forscherteam der Uni Tübingen entwickelt Tischtennis-Roboter

Supervised thesis

Bachelor thesis — Simulating event-based cameras with frame-based cameras, Daniel Teigland

Deep-learning based table tennis ball tracking with an event camera, Genc Ahmeti

Event-camera, camera and robot arm calibration, Levin Kolmar

3D trajectory prediction from event data, Julian John

Pushing an event-simulator towards its limit, Laura Schiller

Adding noise and artifacts to the event-simulator, Steven Krämer

Event-based camera bias optimization, Eric Langlouis

Multi object tracking via event-based motion segmentation with event cameras, Zhiyu Han

	Automatic bias optimization for event cameras using Reinforcement Learning, Emil Moldovan
	Automatic bias optimization for event cameras using offline Reinforcement Learning, David Joseph
	Grasping a table tennis ball using Model Predictive Control, David Grawe
	Asynchronous Graph-based Neural Networks for Ball Detection with Event Cameras, Adrian Bytyqi
	Spin estimation of a table tennis ball with an event-camera, Maximilian Schnitt
	Event-Based vision for a tactile sensor, Alexander Löwe
Master thesis	Spiking neural network for event based ball detection, Karl Vetter
	Event-based spin estimation, Julian Krismer
	Real-time MPC control of an industrial robot arm for table tennis, Till Köpf

Teaching activities

SS 2025	Teaching Assistant: Mobile Robots
AS 2024	Teaching Assistant: Foundations of Robotics
SS 2024	Teaching Assistant: Mobile Robots
AS 2023	Seminar: Robotics and Robot Vision
AS 2022	Teaching Assistant: Introduction to Computer Engineering
SS 2022	Teaching Assistant: Mobile Robots
AS 2021	Teaching Assistant: Deep Learning

Languages

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

Technical skills

Languages	C++, Python, Julia, C, Java
Software packages	OpenCV, ROS1/2, PyTorch, Eigen, boost, DDS

Hobbies

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

Extra-Curricular activities

- Foodsaver at Foodsharing, managing a Labdoo hub
- Co-clerk at Switzerland Yearly Meeting (Quakers)