Daniel Gehrig

daniel.gehrig18@gmail.com @DanielGehrig6 Daniel Gehrig
Google Scholar https://danielgehrig18.github.io/

Education

2018-2023 **Ph.D.**, University of Zurich, Honors: Summa cum laude
- Research Topic: Robotics, computer vision, and deep learning with event-based cameras
- Dissertation Title: *Efficient Data-driven Perception with Event Cameras*
- Advisor: Prof. Davide Scaramuzza
- Dissertation Committee: Prof. Kostas Daniilidis (University of Pennsylvania), Prof. Marc Pollefeys (ETH Zurich), Prof. Andreas Geiger (University of Tübingen)
- GPA: 6.0/6.0

2016 – 2018 **M.Sc. in Mechanical Engineering**, ETH Zurich, Honors: *Summa cum laude*
-Focus: Robotics, Artificial Intelligence, Computer Vision
-Overall grade point average: 6.0/6.0
-Thesis Title: Asynchronous Photometric Feature Tracking with Event- and Frame-based Cameras
-Advisor: Prof. Davide Scaramuzza
-Thesis Grade: 6.0/6.0

2012 – 2015 **B.Sc. in Mechanical Engineering**, ETH Zurich
-Focus: Nanotechnology
-Overall grade point average: 5.6/6.0
-Thesis Title: Humidity Filters for Breath Analysis
-Advisor: Prof. Sotiris Pratsinis
-Thesis Grade: 6.0/6.0

Awards

2024 **UZH Annual Prize** for outstanding Ph.D. Dissertation in the Department of Informatics

University of Zurich Best Master Thesis Award for the paper "A Hybrid ANN-SNN Architecture for Low-Power and Low-Latency Visual Perception".

2021 **Presentation award** for paper "Event-based Asynchronous Sparse Convolutional Networks", at the On- and Near-sensor Vision Processing, from Photons to Applications (ONSVP), ICRA 2021 Workshop

2022 **NCCR Robotics Master Thesis Award** for Paper "Combining Events and Frames using Recurrent Asynchronous Multimodal Networks for Monocular Depth Prediction"

2019 **Willi Studer Prize** for the highest grade-point average in Masters degree program (6.0/6.0)

ETH Medal for outstanding Master Thesis in Mechanical and Process Engineering

Fellowships

2024 **Postdoc.Mobility fellowship** from the Swiss National Science Foundation (SNSF) for my project on "Adaptive Perception with Event Cameras"

Educational Activities

2025 **Guest Lecturer** at *Real-World Robot Learning*, University of Pennsylvania

Educational Activities (continued)

2019-2022	**Guest Lecturer** at *Vision Algorithms for Mobile Robotics*, ETH Zurich
2019-2020	**Teaching Assistant** at *Vision Algorithms for Mobile Robotics*, ETH Zurich
2014	**Teaching Assistant** at *Lineare Algebra I/II and Analysis I*, ETH Zurich
2014-Current	**Private tutoring** high-school and university students.

Media Coverage

- **IEEE Spectrum**, *Quadrupeds Are Learning to Dribble, Catch, and Balance*. Article available here.
- **IEEE Spectrum**, *Remote-Control Burger Crafting*. Article available here.
- **TechXplore**, *Bio-inspired cameras and AI help drivers detect pedestrians and obstacles faster*. Article available here.
- **Hello Future**, *Autonomous vehicles may soon benefit from 100 times faster neuromorphic cameras*. Article available here.

Advising

Master Students	
2024-2025	Royina Jayanth Karegoudra (now Ph.D. candidate at Princeton University)
	Nishant Rao (now Ph.D. candidate at Princeton University)
2023	Asude Aydin (now SonyAI)
	Arman Raayatsanati (now TexQL)
	Roberto Pellerito (now Ph.D. candidate at the University of Zurich)
2022	Benedek Forrai (now founding engineer mimic)
	Yang Miao (now at INSAIT)
	Nico Schulthess (now Ph.D. candidate at ETH)
2021	Florian Mahlknecht (now at Apple)
	Friedrich Rockenbauer (now at Daedalean AI)
	Julius Erbach (now Ph.D. candidate at ETH)
	Yilun Wu (now Ph.D. candidate at TU Delft)
	Mario Millhäusler (now at Huawei)
2020	Patrick Barton (now founding member Caterra)
Visiting Students	
2023	Nikola Zubic (now Ph.D. candidate at UZH)
2022	Matteo Visona (now at Stevanato Group)
2021	Simon Schaefer (now Ph.D. candidate at TU Munich)
2020	Nico Messikommer (now Ph.D. candidate at UZH)

Professional Service

Area Chair	Robotics: IEEE International Conference on Robotics and Automation (ICRA)
Journal Reviewer	IEEE Robotics and Automation Letters (RA-L), Nature, IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), International Journal of Computer Vision (IJCV), IEEE Transactions on Image Processing (TIP)

Professional Service (continued)

Conference Reviewer

- *Robotics*: Robotics: Science and Systems (RSS), IEEE International Conference on Robotics and Automation (ICRA), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
  Computer Vision: IEEE/CVF International Conference of Computer Vision (ICCV), European Conference of Computer Vision (ECCV), IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), International Conference on 3D Vision (3DV), IEEE/CVF Computer Vision and Pattern Recognition (CVPR), British Machine Vision Conference (BMVC)
  Graphics: ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)
  Machine Learning: Association for the Advancement of Artificial Intelligence (AAAI)

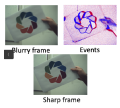
Invited Speaker

- Aug. 22, 2025 — Carnegie Mellon University (Invited by Prof. Sebastian Scherer)
- Jul. 8, 2025 — University of Wisconsin-Madison (Invited by Prof. Timothy Duff)
- Nov. 8, 2024 — University of Delaware (Invited by Prof. Paul Huang)
- Jul. 10 2024 — Efficient, Data-driven Perception with Event Cameras, Omnivision (Invited by Dr. Bo Mu)
- May 9, 2024 — Kolloquium for GI-Dissertation Prize 2023, Schloss Dagstuhl (Invited by Prof. Rüdiger Reischuk
- Dec. 8 2023 — Efficient, Data-driven Perception with Event Cameras, Stanford (Invited by Prof. Leonidas Guibas)
- Nov. 13 2023 — Efficient, Data-driven Perception with Event Cameras, University of Pennsylvania (Invited by Prof. Kostas Daniilidis)
- Nov. 6 2023 — Efficient, Data-driven Perception with Event Cameras, MIT (Invited by Prof. Luca Carlone)
- Efficient, Data-driven Perception with Event Cameras, MIT (Invited by Prof. Sangbae Kim)
- Nov. 3 2023 — MIT (Invited by Prof. Ramesh Raskar)
- Sept. 27 2023 — Adaptive and Efficient Perception with Event Cameras, Intitute for Neuroinformatics Seminar
- Sept. 19 2023 — Adaptive and Efficient Perception with Event Cameras, GCPR workshop on Scene Understanding for Autonomous Drone Delivery, University of Heidelberg
- Sept. 9 2023 — Efficient, Data-driven Perception with Event Cameras, DataFest 2023 in Yerevan, Armenia (Invited by Dr. Martin Danelljan)
- Jun. 19 2023 — Efficient Event Processing with Geometric Deep Learning, CVPR 2023 Workshop on Event-based Vision (Invited by Prof. Guillermo Gallego)
- Jun. 12 2023 — Event-based Vision in the era of Deep Learning: Challenges and Opportunities, University of California, Berkeley (Invited by Prof. Jitendra Malik)
- Mar, 23 2022 — At the intersection of Machine Learning and Event-based Vision, Prophesee (Invited by Prof. Christoph Posch)

Research Publications

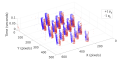
Google Scholar Profile: https://scholar.google.ch/citations?hl=en&user=FWpgbBsAAAAJ
The * symbol indicates shared first authorship.

Journal Publications



Lei Sun, **Daniel Gehrig**, Christos Sakaridis, Mathias Gehrig, Jingyun Liang, Peng Sun, Zhijie Xu, Kaiwei Wang, Luc Van Gool, and Davide Scaramuzza. " A Unified Framework for Event-Based Frame Interpolation With Ad-Hoc Deblurring in the Wild ". In: *IEEE Trans. Pattern Anal. Machine Intell.* 47.04 (2025), pp. 2265–2279. DOI: 10.1109/TPAMI.2024.3510690

Links: PDF, Code and Datasets

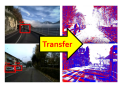


Mohammed Salah, Abdulla Ayyad, Muhammad Humais, **Daniel Gehrig**, Abdelqader Abusafieh, Lakmal Seneviratne, Davide Scaramuzza, and Yahya Zweiri. "E-Calib: A Fast, Robust, and Accurate Calibration Toolbox for Event Cameras". In: *IEEE Transactions on Image Processing (TRIP)* 33 (2024), pp. 3977–3990. DOI: 10.1109/TIP.2024.3410673

Links: PDF, Video, Code

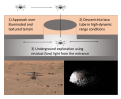
Daniel Gehrig and Davide Scaramuzza. "Low-latency Automotive Vision with Event Cameras". In: *Nature*. Vol. 629. 2024, pp. 1034–1040. DOI: 10.1038/s41586-024-07409-w

Links: PDF, Video, Dataset, Code



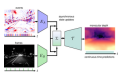
Nico Messikommer, **Daniel Gehrig**, Mathias Gehrig, and Davide Scaramuzza. "Bridging the Gap Between Events and Frames Through Unsupervised Domain Adaptation". In: *IEEE Robot. Autom. Lett. (RA-L)* 7.2 (2022), pp. 3515–3522. DOI: 10.1109/LRA.2022.3145053

Links: PDF, Video, Code



Florian Mahlknecht, **Daniel Gehrig**, Jeremy Nash, Friedrich M. Rockenbauer, Benjamin Morrell, Jeff Delaune, and Davide Scaramuzza. "Exploring Event Camera-Based Odometry for Planetary Robots". In: *IEEE Robot. Autom. Lett. (RA-L)* 7.4 (2022), pp. 8651–8658. DOI: 10.1109/LRA.2022.3187826

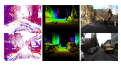
Links: PDF, Video, Code, Dataset



Daniel Gehrig*, Michelle Rüegg*, Mathias Gehrig, Javier Hidalgo-Carrió, and Davide Scaramuzza. "Combining Events and Frames Using Recurrent Asynchronous Multimodal Networks for Monocular Depth Prediction". In: *IEEE Robot. Autom. Lett. (RA-L)*. vol. 6. 2. 2021, pp. 2822–2829. DOI: 10.1109/LRA.2021.3060707

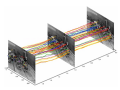
Links: PDF, Video, Code, Dataset

NCCR Robotics Best Master Thesis Award



Mathias Gehrig, Willem Aarents, **Daniel Gehrig**, and Davide Scaramuzza. "DSEC: A Stereo Event Camera Dataset for Driving Scenarios". In: *IEEE Robot. Autom. Lett. (RA-L)* 6.3 (2021), pp. 4947–4954. DOI: 10.1109/LRA.2021.3068942

Links: PDF, Video, Code, Dataset

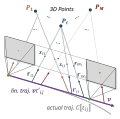


Daniel Gehrig, Henri Rebecq, Guillermo Gallego, and Davide Scaramuzza. "EKLT: Asynchronous Photometric Feature Tracking using Events and Frames". In: *Int. J. Comput. Vis. (IJCV)* 3 (2020). DOI: 10.1007/s11263-019-01209-w

Links: PDF, Video, Code, Evaluation Code

Invited journal extension

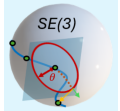
Peer-Reviewed Conference Papers



Hang Su, Yunlong Feng, **Daniel Gehrig**, Panfeng Jiang, Ling Gao, Xavier Lagorce, and Laurent Kneip. "A Linear N-Point Solver for Structure and Motion from Asynchronous Tracks". In: *Int. Conf. Comput. Vis. (ICCV)*. 2025

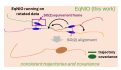
Links: PDF, Code

Highlight Presentation



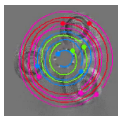
Royina Jayanth Karegoudra, Yinshuang Xu, Evangelos Chatzipantazis, Kostas Daniilidis, and **Daniel Gehrig**. "Neural Inertial Odometry from Lie Events". In: *Robotics: Science and Systems (RSS)*. 2025

Links: PDF, Code



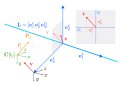
Royina Karegoudra Jayanth*, Yinshuang Xu*, Ziyun Wang, Evangelos Chatzipantazis, Kostas Daniilidis, and **Daniel Gehrig**. "EqNIO: Subequivariant Neural Inertial Odometry". In: *Int. Conf. on Learning Representations (ICLR)*. 2025

Links: PDF, Code, OpenReview



Friedhelm Hamann, **Daniel Gehrig**, Filbert Febryanto, Kostas Daniilidis, and Guillermo Gallego. "ETAP: Event-based Tracking of Any Point". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)*. 2025

Links: PDF, Video, Code



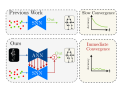
Ling Gao, **Daniel Gehrig**, Hang Su, Davide Scaramuzza, and Laurent Kneip. "An N-Point Linear Solver for Line and Motion Estimation with Event Cameras". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)*. IEEE. 2024, pp. 14596–14605. DOI: 10.1109/CVPR52733.2024.01383

Links: Paper, Code, Video

Oral Presentation (Top 0.78%)

Roberto Pellerito, Marco Cannici, **Daniel Gehrig**, Joris Belhadj, Olivier Dubois-Matra, Massimo Casasco, and Davide Scaramuzza. "Deep Visual Odometry with Events and Frames". In: *IEEE/RSJ Int. Conf. Intell. Robot. Syst. (IROS)*. 2024

Links: PDF, Code and Datasets, Video



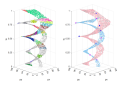
Asude Aydin, Mathias Gehrig, **Daniel Gehrig**, and Davide Scaramuzza. " A Hybrid ANN-SNN Architecture for Low-Power and Low-Latency Visual Perception ". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. Workshops (CVPRW)*. 2024, pp. 5701–5711. DOI: 10.1109/CVPRW63382.2024.00579

Links: PDF, Code

Winner of the University of Zurich Best Master Thesis Award.

Nikola Zubić*, **Daniel Gehrig***, Mathias Gehrig, and Davide Scaramuzza. "From Chaos comes Order: Ordering Event Representations for Object Recognition and Detection". In: *Int. Conf. Comput. Vis. (ICCV)*. 2023, pp. 12800–12810

Links: PDF, Code, Poster



Ling Gao, Hang Su, **Daniel Gehrig**, Marco Cannici, Davide Scaramuzza, and Laurent Kneip. "A 5-Point Minimal Solver for Event Camera Relative Motion Estimation". In: *Int. Conf. Comput. Vis. (ICCV)*. 2023, pp. 8015–8025. DOI: 10.1109/ICCV51070.2023.00739

Links: PDF, Video, Poster, Code

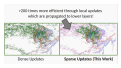
Oral Presentation (Top 1.68%)

Benedek Forrai*, Takahiro Miki*, **Daniel Gehrig***, Marco Hutter, and Davide Scaramuzza. "Event-based Agile Object Catching with a Quadrupedal Robot". In: *IEEE Int. Conf. Robot. Autom. (ICRA)*. 2023, pp. 12177–12183. DOI: 10.1109/ICRA48891.2023.10161392

Links: PDF, Video, Code

N. Messikommer, S. Georgoulis, **Daniel Gehrig**, S. Tulyakov, J. Erbach, A. Bochicchio, Y. Li, and D. Scaramuzza. "Multi-Bracket High Dynamic Range Imaging with Event Cameras". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. Workshops (CVPRW)*. 2022, pp. 546–556. DOI: 10.1109/CVPRW56347.2022.00070

Links: PDF, Video



Simon Schaefer*, **Daniel Gehrig***, and Davide Scaramuzza. "AEGNN: Asynchronous Event-based Graph Neural Networks". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)* (2022), pp. 12361–12371. DOI: 10.1109/CVPR52688.2022.01205

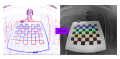
Links: PDF, Video, Code

Stepan Tulyakov, Alfredo Bochicchio, **Daniel Gehrig**, Stamatios Georgoulis, Yuanyou Li, and Davide Scaramuzza. "Time Lens++: Event-based Frame Interpolation with Parametric Non-linear Flow and Multi-scale Fusion". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)* (2022), pp. 17734–17743. DOI: 10.1109/CVPR52688.2022.01723

Links: PDF, Video, Dataset

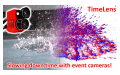
Zhaoning Sun*, Nico Messikommer*, **Daniel Gehrig**, and Davide Scaramuzza. "ESS: Learning Event-based Semantic Segmentation from Still Images". In: *European Conference on Computer Vision. (ECCV)* (2022), pp. 341–357. DOI: 10.1007/978-3-031-19830-4_20

Links: PDF, Video, Code, Dataset



Manasi Muglikar, Mathias Gehrig, **Daniel Gehrig**, and Davide Scaramuzza. "How to Calibrate Your Event Camera". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. Workshops (CVPRW)*. 2021, pp. 1403–1409. DOI: 10.1109/CVPRW53098.2021.00155

Links: PDF, Video, Code,



Stepan Tulyakov*, **Daniel Gehrig***, Stamatios Georgoulis, Julius Erbach, Mathias Gehrig, Yuanyou Li, and Davide Scaramuzza. "Time Lens: Event-Based Video Frame Interpolation". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)*. 2021, pp. 16155–16164. DOI: 10.1109/CVPR46437.2021.01589

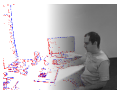
Links: PDF, Video, Code, Dataset

Mathias Gehrig, Mario Millhausler, **Daniel Gehrig**, and Davide Scaramuzza. " E-RAFT: Dense Optical Flow from Event Cameras ". In: *3D Vision (3DV)*. 2021, pp. 197–206. DOI: 10.1109/3DV53792.2021.00030

Links: PDF, Video, Code, Dataset

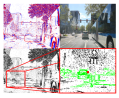
Daniel Gehrig*, Mathias Gehrig*, Javier Hidalgo-Carrió, and Davide Scaramuzza. "Video to Events: Recycling Video Datasets for Event Cameras". In: *IEEE Int. Conf. Comput. Vis. Pattern Recog. (CVPR)*. 2020, pp. 3583–3592. DOI: 10.1109/CVPR42600.2020.00364

Links: PDF, Video, Code



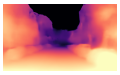
Cedric Scheerlinck, Henri Rebecq, **Daniel Gehrig**, Nick Barnes, Robert E. Mahony, and Davide Scaramuzza. "Fast Image Reconstruction with an Event Camera". In: *IEEE Winter Conf. Appl. Comput. Vis. (WACV)*. 2020, pp. 156–163. DOI: 10.1109/WACV45572.2020.9093366

Links: PDF, Video, Code, Dataset



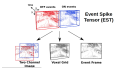
Nico Messikommer*, **Daniel Gehrig***, Antonio Loquercio, and Davide Scaramuzza. "Event-based Asynchronous Sparse Convolutional Networks". In: *Eur. Conf. Comput. Vis. (ECCV)*. 2020, pp. 415–431. DOI: 10.1007/978-3-030-58598-3_25

Links: PDF, Video, Code



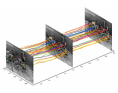
Javier Hidalgo-Carrió, **Daniel Gehrig**, and Davide Scaramuzza. "Learning Monocular Dense Depth from Events". In: *3D Vision (3DV)*. 2020, pp. 534–542. DOI: 10.1109/3DV50981.2020.00063

Links: PDF, Code, Dataset



Daniel Gehrig, Antonio Loquercio, Konstantinos G. Derpanis, and Davide Scaramuzza. "End-to-End Learning of Representations for Asynchronous Event-Based Data". In: *Int. Conf. Comput. Vis. (ICCV)*. 2019, pp. 5632–5642. DOI: 10.1109/ICCV.2019.00573

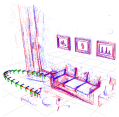
Links: PDF, Video, Code



Daniel Gehrig, Henri Rebecq, Guillermo Gallego, and Davide Scaramuzza. "Asynchronous, Photometric Feature Tracking using Events and Frames". In: *Eur. Conf. Comput. Vis. (ECCV)*. 2018, pp. 766–781. DOI: 10.1007/978-3-030-01258-8_46

Links: PDF, Poster, Video, Oral Presentation, Eval Code, Tracking Code

Oral Presentation (Top 2.4%)



Henri Rebecq, **Daniel Gehrig**, and Davide Scaramuzza. "ESIM: an Open Event Camera Simulator". In: *Conf. on Robotics Learning (CoRL)*. vol. 87. 2018, pp. 969–982

Links: PDF, Video, Code

Patents

2023 Stepan Tulyakov, Alfredo Bocicchio, Stamatios Georgoulis, Yuanyou Li, **Daniel Gehrig**, Mathias Gehrig, and Davide Scaramuzza, **IMAGE PROCESSING APPARATUS AND METHOD FOR GENERATING INTERPOLATED FRAME**, WO/2023/083467, Published 19.05.2023, Link, Paper

Stamatios Georgoulis, Nico Messikommer, Stepan Tulyakov, Julius Erbach, Alfredo Bochicchio, **Daniel Gehrig**, Yuanyou Li, and Davide Scaramuzza, HIGH DYNAMIC RANGE IMAGING DEVICE AND METHOD OF GENERATING A HIGH DYNAMIC RANGE IMAGE, WO/2023/083466, Published 19.05.2023, Link, Paper

2022 Stepan Tulyakov, Stamatios Georgoulis, Yuanyou Li, **Daniel Gehrig**, Julius Erbach, Mathias Gehrig, and Davide Scaramuzza, **DEVICE AND METHOD FOR VIDEO INTERPOLATION**, WO/2022/096158, Published 12.05.2022, Link, Paper

Employment History

2024-Current **Postdoctoral Researcher**, GRASP Lab, University of Pennsylvania, USA
- Work on equivariance in event-based vision and neural inertial odometry.
- Advisors: Kostas Daniilidis

2018-2023 **Graduate Student Researcher**, Robotics and Perception Group, University of Zurich
- Advisor: Davide Scaramuzza

2018 **Research Assistant**, Robotics and Perception Group, University of Zurich, Switzerland
- Work on Deep Learning for Event Cameras
- Advisor: Davide Scaramuzza

2017 – 2018 **Software Developer**, F&P Robotics, Switzerland
- Service robotics in artificial intelligence and context management.

2016 **Research Assistant**, Particle Technology Lab, ETH Zurich, Switzerland
- Experimental testing and specific tasks.

2015 **Software Developer**, F&P Robotics, Switzerland
- Development of artificial intelligence and context management for service robots.

2014 **Teaching Assistant**, D-MATH department, ETH Zurich, Switzerland
- Linear Algebra and Analysis course for mechanical engineers at ETH Zurich

2014-Current **Private Tutor**
- Physics, mathematics, and chemistry tutoring for high school and university students.

2013 **Engineer**, Prettl Automotive, USA
- Various workshop-related tasks.

References

Available on request