

Dr. Konstantin Schauwecker



PLEASE NOTE: I am no longer a member of the chair of cognitive systems. Therefore, this website will no longer be updated. If you are looking for any recent information about me, please visit [my personal website](#).

Background

- Oct. 2003 - Feb. 2008: Studies of Software Engineering and Media Informatics at the Esslingen University of Applied Sciences. Graduated as a graduate engineer.
- Feb. 2008 - Feb. 2009: Employed as Software Engineer at STZ-Softwaretechnik, Esslingen (part of IT-Designers Group). Appointed to Thales Air Systems GmbH.
- Mar. 2009 - Nov. 2009: Postgraduate Diploma in Computer Science at the University of Auckland, New Zealand.
- Mar. 2010 - Dec. 2010: Master of Science in Computer Science at the University of Auckland, New Zealand. Thesis title: "Vertical Road Profile Modelling Using Stereo-Vision and B-Spline Curves".
- Feb. 2011 - Mar. 2014: Part-time Software engineer at STZ-Softwaretechnik, Esslingen (part of IT-Designers Group). Appointed to Thales Air Systems GmbH and Robert Bosch GmbH
- Feb. 2011 - Apr. 2014: Part-time PhD student at the University of Tübingen. Research area: Robot Vision. Date of thesis defense: July 11, 2014.
- Apr. 2014 - June 2014: Full-time software engineer at STZ-Softwaretechnik, Esslingen (part of IT-Designers Group). Appointed to Robert Bosch GmbH.
- July 2014 - June 2015: Software engineer at IT-Designers GmbH, Esslingen (part of IT-Designers Group). Appointed to Robert Bosch GmbH and Daimler AG.
- Since July 2015: Founder of [Nerian Vision Technologies](#). Specializing in real-time machine vision applications such as stereo vision.

Research Interests

- Computer / Robot Vision
- Stereo Vision

Awards and Honors

- Award of the Eberhard-Herter Stiftung for outstanding achievements in the studies of information technologies at the Esslingen University of Applied Sciences, 2008.
- Award of the Esslingen University of Applied Sciences for the best degree in Software Engineering and Media Informatics in the winter semester 2007/2008.
- Prize of the computer science department of the University of Auckland for the best postgraduate diploma in 2009.

Projects

- Robust and Efficient Volumetric Occupancy Mapping: A method for the creation of volumetric occupancy maps. This method was specifically designed to provide robust results when used in conjunction with noisy measurements, as they result from stereo matching.
- exFAST / HPSSM: An efficient sparse stereo analysis algorithm that applies a dense consistency check, leading to accurate matching results. Matching accuracy is further improved by the new feature detector exFAST, which is based on FAST but exhibits a less clustered feature distribution.

Publications

- [1] Konstantin Schauwecker and Andreas Zell. Robust and Efficient Volumetric Occupancy Mapping with an Application to Stereo Vision. In *IEEE International Conference on Robotics and Automation (ICRA)*, pages 6102--6107, Hong Kong, China, May 2014.
- [2] Konstantin Schauwecker and Andreas Zell. On-Board Dual-Stereo-Vision for the Navigation of an Autonomous MAV. *Journal of Intelligent & Robotic Systems*, 74(1-2):1--16, January 2014. [The final publication is available at link.springer.com]. [[link](#)]
- [3] Shaowu Yang, Sebastian A. Scherer, Konstantin Schauwecker, and Andreas Zell. Autonomous Landing of MAVs on Arbitrarily Textured Landing Sites using Onboard Monocular Vision. *Journal of Intelligent & Robotic Systems*, 74(1-2):27--43, 2014. [[DOI](#) | [link](#)]
- [4] Konstantin Schauwecker and Andreas Zell. On-Board Dual-Stereo-Vision for Autonomous Quadrotor Navigation. In *International Conference on Unmanned Aircraft Systems (ICUAS)*, pages 332--341, Atlanta, GA, USA, May 2013. IEEE. [[link](#)]
- [5] Shaowu Yang, Sebastian A. Scherer, Konstantin Schauwecker, and Andreas Zell. Onboard Monocular Vision for Landing of an MAV on a Landing Site Specified by a Single Reference Image. In *2013 International Conference on Unmanned Aircraft Systems (ICUAS'13)*, pages 317--324, Atlanta, GA, USA, May 2013. [[link](#)]
- [6] Konstantin Schauwecker, Reinhard Klette, and Andreas Zell. A New Feature Detector and Stereo Matching Method for Accurate High-Performance Sparse Stereo Matching. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 5171--5176, Vilamoura, Algarve, Portugal, October 2012. IEEE. [[link](#)]
- [7] Konstantin Schauwecker, Nan Rosemary Ke, Sebastian A. Scherer, and Andreas Zell. Markerless Visual Control of a Quad-Rotor Micro Aerial Vehicle by Means of On-Board Stereo Processing. In *22nd Conference on Autonomous Mobile Systems (AMS)*, pages 11--20, Stuttgart, Germany, September 2012. Springer. [[link](#)]
- [8] Konstantin Schauwecker, Sandino Morales, Simon Hermann, and Reinhard Klette. A Comparative Study of Stereo-Matching Algorithms for Road-Modeling in the Presence of Windscreen Wipers. In *IEEE Intelligent Vehicles Symposium (IV)*, pages 7--12, Baden-Baden, Germany, June 2011. IEEE. [[link](#)]
- [9] Reinhard Klette, Je Ahn, Ralf Haeusler, Simon Herman, Jinsheng Huang, Waqar Khan, Sathiamoorthy Manoharan, Sandino Morales, John Morris, Radu Nicolescu, FeiXiang Ren, Konstantin Schauwecker, and Xi Yang. Advance in Vision-Based Driver Assistance. In *Electric Technology and Civil Engineering (ICETCE)*, pages 987--990, Lushan, China, April 2011. IEEE. [[link](#)]
- [10] Konstantin Schauwecker, Simon van den Hurk, Wallace Yuen, and Burkhard Wünsche. Sketched Interaction Metaphors for Character Animation. In *International Conference on Computer Graphics Theory and Applications (GRAPP)*, pages 247--252, Vilamoura, Algarve, Portugal, March 2011. Springer. [[pdf](#)]
- [11] Konstantin Schauwecker and Reinhard Klette. A Comparative Study of Two Vertical Road Modelling Techniques. In *ACCV Workshop: Computer Vision in Vehicle Technology*, pages 174--183, Queenstown, New Zealand, November 2010. Springer. [[link](#)]

Theses

- [1] Konstantin Schauwecker. *Konzeption und Realisierung eines konfigurierbaren Software-in-the-Loop-Systems unter Einsatz von C# und .NET zum Test von Emissionsanalysesystemen*. Diplomarbeit, Esslingen University of Applied Sciences, Germany, 2008.
- [2] Konstantin Schauwecker. *Vertical Road Profile Modelling Using Stereo-Vision and B-Spline Curves*. MSc thesis, The University of Auckland, New Zealand, 2011.
- [3] Konstantin Schauwecker. *Stereo Vision for Autonomous Micro Aerial Vehicles*. PhD thesis, University of Tübingen, Germany, 2014. [[link](#)]

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