

Mario Gleirscher



Department of Computer Science · University of York · United Kingdom
mario.gleirscher@york.ac.uk · +44 (0)1904 325500 · gleirscher.de

ORCID: [0000-0002-9445-6863](https://orcid.org/0000-0002-9445-6863) · [DBLP](#) · [ResearchGate](#) · [LinkedIn](#) · [Xing](#) · [Publons](#)

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Profile

My postdoctoral research focuses (i) on compositional formal methods for the analysis, verification, and refinement of high-level controllers for risk-aware, ethically aligned, and dependable autonomous machines, and (ii) on the empirical validation of such methods, particularly, in regulated application domains. My theoretical work is devoted to cross-disciplinary theory unification and the use of control-theoretic models.

Education

Technical University of Munich Munich, DE
Ph.D. in Computer Science (Dr. rer. nat.) 01/10/2008 – 20/11/2014
Title: Behavioural Safety of Technical Systems. Advisors: Prof. Dr. Manfred Broy, Prof. Dr. Jan Peleska
M.Sc. in Computer Science (Informatik-Diplom) 01/11/1999 – 15/04/2005
Major: Theoretical Computer Science. Minor subject: Mathematics

Professional Experience

University of York / Dept. of Computer Science York, UK
Visiting researcher 01/10/2017 – present
Dependable autonomous machines (Profs. Woodcock & Cavalcanti)

Technical University of Munich / Dept. of Informatics Munich, DE
Postdoctoral research associate 01/10/2015 – 30/09/2017
Formal methods for dependable systems (Profs. Broy & Pretschner)

Research associate, teaching assistant, and doctoral candidate 01/05/2010 – 30/09/2014
System specification, design, and verification (Prof. Broy)

Research associate, teaching assistant, and doctoral candidate 01/10/2008 – 30/04/2010
Part-time / Requirements engineering and system specification (Prof. Broy)

Postgraduate Positions in Industry

Senior software engineer, self-employed in own office, German software industry Munich & Cologne, DE
Analysis and development of business information systems, consultancy 01/06/2008 – 31/01/2010

Junior systems engineer and researcher at Airbus Group Innovations Ottobrunn, DE
Methods for architecture-centric engineering, design of corresponding engineering (MDE/PDM/PLM) tools, internal consultancy, supervision 01/09/2005 – 31/05/2008

Research Grants and Awards

DFG research fellowship GL 915/1-2 PI / Oct 2018 – Mar 2019
Safest states of autonomous machines (follow-up grant); work with Isabelle/HOL and FDR checker

DFG research fellowship GL 915/1-1 PI / Oct 2017 – Sep 2018
Safest states of autonomous machines; formalised risk models in extended CSP; continued work on [Yap](#)

Best paper at 4th Software Quality Days, Vienna, Austria Jan 2012

Key Publications

1. Mario Gleirscher. “Strukturen für die Gefahrenerkennung und -behandlung in autonomen Maschinen”. In: *acatech DISKUSSION* (Oct. 26, 2018): *Beiträge zu einer Systemtheorie Sicherheit*. Ed. by Jürgen Beyerer and Petra Winzer, pp. 154–167. ISSN: 2192-6182. URL: <https://www.acatech.de/Publikation/beitraege-zu-einer-systemtheorie-sicherheit/> (visited on 10/30/2018)
2. Mario Gleirscher. “Run-Time Risk Mitigation in Automated Vehicles: A Model for Studying Preparatory Steps”. In: *1st iFM Workshop on Formal Verification of Autonomous Vehicles 2017 (FVAV 2017)*. Ed. by L. Bulwahn, M. Kamali, and S. Linker. EPTCS. 2017. DOI: [10.4204/eptcs.257.8](https://doi.org/10.4204/eptcs.257.8)
3. Mario Gleirscher and Stefan Kugele. “From Hazard Analysis to Hazard Mitigation Planning: The Automated Driving Case”. In: *NASA Formal Methods (NFM) – 9th Int. Symp., Proceedings*. Ed. by C. Barrett et al. Vol. 10227. LNCS. Springer, Berlin/New York, May 16, 2017. DOI: [10.1007/978-3-319-57288-8_23](https://doi.org/10.1007/978-3-319-57288-8_23)
4. Mario Gleirscher, Dmitriy Golubitskiy, Maximilian Irlbeck, and Stefan Wagner. “Introduction of Static Quality Analysis in Small and Medium-Sized Software Enterprises: Experiences from Technology Transfer”. In: *Software Quality Journal* 22.3 (Sept. 1, 2014), pp. 499–542. DOI: [10.1007/s11219-013-9217-z](https://doi.org/10.1007/s11219-013-9217-z)
5. Mario Gleirscher. “Hazard-based Selection of Test Cases”. In: *6th ICSE Workshop on Automation of Software Test (AST)*. ed. by Richard N. Taylor, Harald Gall, and Nenad Medvidovic. ACM, May 1, 2011. ISBN: 978-1-4503-0445-0. DOI: [10.1145/1982595.1982609](https://doi.org/10.1145/1982595.1982609)

Academic Leadership and Citizenship

Chairs

- SCAV 2018: 2nd Int’l Workshop on [Safe Control of Autonomous Vehicles](#) CPSWeek’18
- SCAV 2017: 1st Int’l Workshop on Safe Control of Autonomous and Connected Vehicles CPSWeek’17

PC Memberships

- SafeAI 2019: 1st Workshop on [Artificial Intelligence Safety](#) AAAI’19
- WAISE 2018: 1st Workshop on [Artificial Intelligence Safety Engineering](#) SAFECOMP’18