Curriculum Vitæ
Sören Schwertfeger

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School of Information Science and Technology
ShanghaiTech University
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RESEARCH INTERESTS

- Mobile Robotics
- Robot Autonomy & Intelligence
- Mobile Manipulation
- Rescue Robotics
- Artificial Intelligence
- Map Representation
- Mapping & Simultaneous Localization and Mapping (SLAM)

EDUCATION

Ph.D. in Computer Science
Jacobs University Bremen, Germany   July 2012
Thesis: Robotic Mapping in the Real World: Performance Evaluation and System Integration
Advisor: Professor Dr. Andreas Birk

Diploma in Computer Science
University Bremen, Germany   June 2005
Thesis: Fine-Grained Qualitative Spatial Reasoning about Point Positions
Advisors: Prof. Dr. Christian Freska and Dr. Reinhard Moratz

PROFESSIONAL EXPERIENCE

ShanghaiTech University, Shanghai, China
Tenured Associate Professor   Since December 2021
Assistant Professor   September 2014 - November 2021
PhD Supervisor, Researcher and Teacher at the School of Information Science and Technology (SIST), ShanghaiTech University. Research on robotics and teaching in robotics and computer science.

University of California Berkeley, California, USA   September – October 2015
Two months visit at UC Berkeley.

Jacobs University Bremen, Germany   August 2006 – July 2014
Research associate and PostDoc in the Robotics group of Prof. Andreas Brik.
Research on intelligent functions for ground, underwater, aerial and space robots.
Projects:
- DLR SpaceBot Cup   November 2013
- MORPH   January 2012 – July 2014
  Marine robotic system of self-organizing, logically linked physical nodes (EU FP-7)
- RobLog   January 2011 – July 2014
  Cognitive Robot for Automation of Logistic Processes (EU FP-7)
- Co3-AUVs   January 2009 – December 2012
  Cooperative Cognitive Control for Autonomous Underwater Vehicles (EU FP-7)
- 3D Mapping in Unstructured Environments (DFG)   June 2006 – July 2009
- RoboCup Rescue Team   October 2005 – July 2010

National Institute of Standards and Technology NIST   February – October 2010
Eight-month research visit at NIST in Gaithersburg, Maryland, USA. Development of the NIST/ Jacobs Map Evaluation Toolkit as part of the DAAD (German Academic Exchange Service) project "Response Robots Performance Evaluation"

University of Bremen   October 2002 – June 2005
Student research assistant at the University of Bremen, Germany. Activities: implementation and verification of different methods of spatial reasoning, teaching assistant for the lecture speech technology

Internship OHB-System GmbH   July – September 2001
Ten-week internship at the OHB-System GmbH, design and development of a control program and of two simulators for the European Physiology Module of the Columbus Module of the International Space Station

SERVICES

· Associate Editor IEEE Robotics and Automation Magazine
· General Chair 2017 IEEE International Symposium on Safety, Security and Rescue Robotics (SSRR) http://www.ssrr-conference.org/2017/
· Program Chair 2018 IEEE International Symposium on Safety, Security and Rescue Robotics (SSRR)
· Guest Editor Frontiers In Robotics and AI - Robot And Machine Vision: Research Topic: Robotics Perception in Adversarial Environments 2020
· Guest Editor Journal of Field Robotics: Special Issue on Safety, Security, and Rescue Robotics 2019
· Workshop Committee of the The Fourth Workshop on Smart Robotics at the Computational Visual Media Conference 2018
· Co-Organizer of the IROS 2017 Workshop on Introspective Methods for Reliable Autonomy
· Co-Organizer of the ShanghaiTech Symposium on Information Science and Technology 2016 & 2018
· Chair of the 2014 German Open RoboCup Rescue League

· Member of the SIST Public Relations Committee (2016 - now)
· Member of the SIST Faculty Search Committee (2016 - 2018)
· Member of the SIST Research Management Committee (2014 - 2018; 2020 - now)
· Member of the SIST Teaching Committee (2014 - 2016)
· Padua ShanghaiTech Summer School chaperone and 2x lectures 2019; 2x lectures 2020
· SIST Graduate Admission Student Interviews: Computer Science 2015 (about 43) & 2016 (about 70) & 2017 (about 35) & 2018 (about 25) & 2019 (about 30) & 2020 (about 25)
· Leading the establishment of the SIST Machine Shop (2015 - 2017)
· Introduction to Robotics Lecture (2 hours). ShanghaiTech 2016, 2015

· 2015: Graduate recruiting at Southeast University, Nanjing
· 2016: Graduate recruiting at Southeast University, Nanjing & Nanjing University of Posts & Telecommunications
· 2017: Graduate recruiting at Xidian University, Xi'an
· 2018: Graduate recruiting in Qingdao at China University of Petroleum & Ocean University of China
· 2019: Graduate recruiting in Wuhan at Wuhan University of Technology

REVIEWER

· IEEE Transactions on Robotics T-RO: 1x 2016
· IEEE Transactions on Automation Science and Engineering T-ASE: 1x 2015
· IEEE Robotics and Automation Letters: 2x 2017; 7x 2020; 3x 2021
· Science Robotics: 2x 2021
· Journal of Field Robotics: 2013; 3x 2014; 2015; 2x 2018
· Robotics and Autonomous Systems: 3x 2020, 1x 2021
· Advanced Robotics: 1x 2012
· IEEE Transactions on Mechatronics: 1x 2020, 1x 2021
· IEEE Transactions on Systems, Man, and Cybernetics: 1x 2014
· International Journal on Advanced Robotic Systems: 1x 2020

· Journal of Intelligent & Robotic Systems: 1x 2020
· KI-Künstliche Intelligenz Journal: 1x 2016
· Robot: 1x 2016
· RoboMech: 1x 2019

· ICRA: 2x 2011; 3x 2017; 2x 2018; 5x 2019; 10x 2020
· IROS: 2014; 2x 2015; 2x 2016; 2017; 2x 2018; 1x 2019; 2x 2020;
· IJCAI: 7x 2018
· ICAR: 1x 2019
· RSS: 1x 2020
· Workshop on Smart Robotics at the Computational Visual Media Conference: 2x 2018
· Humanoids: 2015
· SSRR: 2013; 2x 2014; 2015; 3x 2016; 2x 2019; 2x 2020
· ACM Symposium on Applied Computing 2x 2019
· RoboCup Symposium: 2010
· NIST: 2010

· RoboCup: 2013, 2014, 15x 2015; 26x 2016; 22x 2017; 20x 2018; 20x 2019; 26x 2020

MEMBERSHIPS

Institute of Electrical and Electronics Engineers IEEE
Robotics and Automation Society RAS - IEEE
Executive Committee RoboCup Rescue

ADVISEES

· Jiawei Hou (PhD student)	expected 2022
· Jiadi Cui (PhD student)	expected 2024
· Xiting Zha (PhD student)	expected 2024
· Delin Feng	expected 2023
· Yuanyuan Yang	expected 2023
· Wenqing Jiang	expected 2023
· Fujing Xie	expected 2024
· Yinjie Li	expected 2024
· Chengqian Li	expected 2024

GRADUATES

· Qingwen Xu, PhD Thesis: Fourier-Mellin Transform: From Image Registration to Robot Vision	2021
· Haofei Kuang, Master Thesis: Learning Video Representations via Temporal Segment Sampling	2021
· Zhenpeng He, Master Thesis: Hierarchical Topometric Representation of 3D Robotic Maps	2021
· Yijun Yuan, Master Thesis: Self-supervised Descriptors and Flipper Planning for Autonomous Rescue Robots	2021
· Hongyu Chen, Master Thesis: Advanced Mapping Robot and High-Resolution Dataset	2020
· Xiaoling Long, Master Thesis: Omni-directional Camera Orientation Estimation via Sinusoid Fitting	2020
· Zeyong Shan, Master Thesis: RGBD-Inertial Trajectory Estimation and Mapping for Ground Robots	2019
· Xiangyang Zhi, Master Thesis: Image-based Autonomous Exploration and Mapping	2018
· Tianyan Yu, Master Thesis: *Room Detection and Path Matching for Topological Map Evaluation*	2016
· Yifan Guo, Bachelor Thesis: Application of Mirror Reflection in SLAM	2021
· Yuqing Yao, Bachelor Thesis: Point Cloud Registration	2021

· Yiren Lu, Bachelor Thesis: Underwater Scene Parsing via Deep Neural Network   2021
· Chengqian Li, Bachelor Thesis: Campus Autonomy: Planning and SLAM   2021
· Haoyun Chen, Bachelor Thesis: Campus Autonomy: Navigation and Parameter Tuning   2021
· Junyu Diao, Bachelor Thesis: Underwater 3D Reconstruction Algorithms   2021
· Jiaying Du, Bachelor Thesis: Campus SLAM   2021
· Yinjie Li , Bachelor Thesis: Agriculture Robotics   2021

· Zhijie Yang, Bachelor Thesis: Super Accuracy Mapping   2020
· Yi Yang, Bachelor Thesis: Transmission of Correction Data and Estimation of Position Accuracy of dGPS
  2020
· Zhihao Zhang, Bachelor Thesis: Automatic Evaluation of SLAM algorithms - Construction and Evaluation
  of SLAM Hive Platform   2020
· Xiting Zhao, Bachelor Thesis: Reflection Detection of 3D Lidar   2019
· Jianxiong Cai, Bachelor Thesis: RGB-D Planar Object Detection with Homography-based Rectification
  for Mobile Robotics Applications   2019
· Song Bai, Bachelor Thesis: Robot control and using depth camera for navigation   2019
· Ruijian Li, Bachelor Thesis: Locally and Globally Consistent Grid Mapping based on Improved Octomap
  2019
· Yijun Yuan, Bachelor Thesis: Topologcial Map Representation using Connected Areas   2018

TEACHING

Graduate course: Robotics/ Mobile Robotics	Fall: 2014, 2015, 2016, 2017, 2019, 2020
Graduate course: Mobile Robotics Lab	Spring: 2015
Graduate course: 1/4 of Smart Vehicles	Spring: 2021
Undergraduate course: 1/4 of Introduction to Information Science and Technology	Spring: 2015, 2016, 2017
Undergraduate course: 1/2 of Introduction to Computer Science	Fall: 2017
Summer Internships in Robotics	Summer: 2015, 2016, 2017
Basic Training of Scientific Research	Summer: 2017, 2018, 2019, 2020

AWARDS

Finalist for Best Paper Award, ROBIO 2019	Dec 2019
Best Workshop Paper Award, Workshop on Underwater Robotics Perception, ICRA 2019	May 2019
Excellent Course in Shanghai, together with:	
Jingyi Yu, Xuming He, Xiliang Luo, Haoyu Wang, Song Fu	Jul 2018
Excellent Professor in 2016, ShanghaiTech University	Feb 2017
Best Teaching Award 2016, SIST, ShanghaiTech University	Jan 2017
Best College Mentor Award 2016, ShanghaiTech University	Dec 2016
Finalist for Best Paper Award, SSRR 2015	Oct 2015
Best Paper Award, SSRR 2011	Oct 2011

Invited Talks, Conference Visits & Competitions

· Invited talk: "From China to ChAIna?" Petersberger Gespräche 2018, Bonn, Germany; September 9 2018
· Invited talks: "Intelligent Robotics and Topology Graphs for Robotics" Southeast University May 10 2016;
  Nanjing University May 11 2016; Fudan University Sep 26 2016; Shanghai Jiao Tong University May 16
  2018; Tongji University Jun 16 2018
· Invited talk: "Robotics and AI" European Union Chamber of Commerce in China: Artificial Intelligence
  Conference; Shanghai Nov 16 2017

· Invited talk: "Pose Estimation for Omni-directional Cameras using Sinusoid Fitting" FU Berlin , Jan 24 2020

· Invited talk: "Pose Estimation for Omni-directional Cameras using Sinusoid Fitting" Multimedia Intelligent Perception and Application Forum 2020, Dec 07 2020

· ICRA: 2019, 2018, 2017, 2015, 2013, 2009, 2008
· IROS: 2019, 2017, 2016
· SSRR: 2019, 2017, 2015, 2012, 2011, 2010, 2007
· ROBIO: 2019
· IAV: 2016, 2007
· PerMIS: 2010
· LAB-RS: 2008

· RoboCup Rescue Team ShanghaiTech University: 2017 & 2018: RoboCup China Open
2019 German Open & Worldcup
· RoboCup Rescue Team Jacobs University : 2006 - 2010 (in total 11 regional and international competitions)
· RoboCup Rescue Admin & Judge: 2011 - now (up to now 10 regional and international competitions)
· Robot testing administrative and adjudication support:
· DARPA Robotics Challenge Trials 2013
· MAGIC 2010
· DLR Spacebot Cup Team: 2013
· Disaster City Robot testing: 2011, 2010, 2008
· ICRA Robot Space Challenge Team: 2008, 2007
· ELROB Team: 2008, 2007
· SICK Robot Day Team: 2007
· SAUC-E Team: 2006

MEDIA COVERAGE

· CGTN Big Story: "China's AI Revolution" 18.10.2019 https://america.cgtn.com/2019/10/18/big-story-chinas-ai-revolution
· Video-interview with heise.de (Germany's biggest tech website): "RoboCup-WM: Nicht-kickende Roboter retten und helfen" 03.07.2019 https://heise.de/-4461336
· Nature: "China's A.I. Dreams" 17.01.2018 https://www.nature.com/articles/d41586-018-00539-y
· Showing my robots and explaining them on Shanghai Education TV 13.04.2018
https://mp.weixin.qq.com/s/xFplCbD-nS-BePqTvUXGnA
· New York Times: "Is China Outsmarting America in A.I.?" 27.05.2017
https://www.nytimes.com/2017/05/27/technology/china-us-ai-artificial-intelligence.html
· Shine: "Robotics conference kicks off at ShanghaiTech University" (about SSRR 2017)
12.10.2017 https://www.shine.cn/news/metro/1710124823/
· Chinese article about AI and SSRR at ShanghaiTech 11.12.2017
http://newsxmwb.xinmin.cn/kechuang/2017/12/11/ls/31341404.html
· 上观新闻: "地震或爆炸后，营救机器人将大有用武之地，但从遥控向自主控制还有艰难的路要走" (about SSRR 2017) 12.10.2017 https://web.shobserver.com/wx/detail.do?id=67827
· 文汇网: "精准营救受困者成未来救援机器人研制重点" (about SSRR 2017) 12.10.2017
http://wenhui.whb.cn/zhuzhan/shenghuo/20171012/63927.html
· Wired Germany: "Erst Copycat, dann Tech-Macht: China überholt das Silicon Valley"
13.11.2017 https://www.wired.de/collection/life/china-tech-supermacht-ki-silicon-valley
· SVZ (German Newspaper): "Von Raben Steinfeld nach China: Bis nach Shanghai programmiert"
20.08.2017 https://www.svz.de/lokales/-id17602326.html

PUBLICATIONS · Journals

Google scholar h-index of 18 with 1192 citations in total as of Nov 2021. Clickable paper links are also provided.

Google scholar:	`https://scholar.google.com/citations?user=Y2olJ9kAAAAJ`
Orcid:	`https://orcid.org/0000-0003-2879-1636`
Scopus:	`https://www.scopus.com/authid/detail.uri?authorId=24477534600`
Mendeley:	`https://www.mendeley.com/authors/24477534600/`

1. Jiawei Hou, Yijun Yuan, Zhenpeng He, and **Sören Schwertfeger**. Matching maps based on the area graph. *Intelligent Service Robotics*, In Press
2. Zhenpeng He, Hao Sun, Jiawei Hou, Yajun Ha, and **Sören Schwertfeger**. Hierarchical topometric representation of 3d robotic maps. *Autonomous Robots*, 2021. `https://doi.org/10.1007/s10514-021-09991-8`
3. Qingwen Xu, Haofei Kuang, Laurent Kneip, and **Sören Schwertfeger**. Rethinking the fourier-mellin transform: Multiple depths in the camera's view. *Remote Sensing*, 13(5):1000, 2021. `https://doi.org/10.3390/rs13051000`
4. Qingwen Xu, Xiaoling Long, Haofei Kuang, and **Sören Schwertfeger**. Rotation estimation for omnidirectional cameras using sinusoid fitting. *Journal of Intelligent & Robotic Systems*, 103(1):1–29, 2021. `https://doi.org/10.1007/s10846-021-01455-6`
5. Yijun Yuan, Dorit Borrmann, Jiawei Hou, Yuexin Ma, Andreas Nüchter, and **Sören Schwertfeger**. Self-supervised point set local descriptors for point cloud registration. *Sensors*, 2021. `https://doi.org/10.3390/s21020486`
6. Jiadi Cui, Haofei Kuang, Qingwen Xu, and **Sören Schwertfeger**. Underwater depth estimation for spherical images. *Journal of Robotics*, 2021, 2021. `https://doi.org/10.1155/2021/6644986`
7. Hongyu Chen, Zhijie Yang, Xiting Zhao, Guangyuan Weng, Haochuan Wan, Jianwen Luo, Xiaoya Ye, Zehao Zhao, Zhenpeng He, Yongxia Shen, and **Sören Schwertfeger**. Advanced mapping robot and high-resolution dataset. *Robotics and Autonomous Systems*, 2020. `https://doi.org/10.1016/j.robot.2020.103559`
8. **Sören Schwertfeger** and Kazunori Ohno. Editorial: Special issue on safety, security, and rescue robotics. *Journal of Field Robotics*, 36(4):639–640, 2019. `https://dx.doi.org/10.1002/rob.21875`
9. Zeyong Shan, Ruijian Li, and **Sören Schwertfeger**. Rgbd-inertial trajectory estimation and mapping for ground robots. *Sensors*, 19(10):2251, 2019. `https://doi.org/10.3390/s19102251`
10. Raymond Sheh, **Sören Schwertfeger**, and Arnoud Visser. 16 years of robocup rescue. *KI-Künstliche Intelligenz*, 30(3-4):267–277, 2016. `http://dx.doi.org/10.1007/s13218-016-0444-x`
11. Todor Stoyanov, Narunas Vaskevicius, Christian A Mueller, Tobias Fromm, Robert Krug, Vinicio Tincani, Rasoul Mojtahedzadeh, Stefan Kunaschk, R Mortensen Ernits, D Ricao Canelhas, Manuel Bonilla, **Sören Schwertfeger**, Marco Bonini, Harry Halfar, Kaustubh Pathak, Moritz Rohde, Gualtiero Fantoni, Antonio Bicchi, Andreas Birk, Achim Lilienthal, and Wolfgang Echelmeyer. No more heavy lifting: Robotic solutions to the container unloading problem. *Robotics and Automation Magazine*, 2016. `http://dx.doi.org/10.1109/MRA.2016.2535098`
12. **Schwertfeger, Sören** and Andreas Birk. Map evaluation using matched topology graphs. *Autonomous Robots*, pages 1–27, 2015. `http://dx.doi.org/10.1007/s10514-015-9493-5`
13. Andreas Birk, Burkhard Wiggerich, Heiko Bülow, Max Pfingsthorn, and **Sören Schwertfeger**. Safety, security, and rescue missions with an unmanned aerial vehicle (uav): Aerial mosaicking and autonomous flight at the 2009 european land robots trials (elrob) and the 2010 response robot evaluation exercises (rree). *Journal of Intelligent and Robotic Systems*, 64(1):57–76, 2011. `http://dx.doi.org/10.1007/s10846-011-9546-8`
14. Andreas Birk, Kaustubh Pathak, Narunas Vaskevicius, Max Pfingsthorn, Jann Poppinga, and **Sören Schwertfeger**. Surface representations for 3d mapping: A case for a paradigm shift. *KI - Kuenstliche Intelligenz*, 24(3):249–254, 2010. `http://dx.doi.org/10.1007/s13218-010-0035-1`

15. Kaustubh Pathak, Andreas Birk, Narunas Vaskevicius, Max Pfingsthorn, **Sören Schwertfeger**, and Jann Poppinga. Online 3d slam by registration of large planar surface segments and closed form pose-graph relaxation. *Journal of Field Robotics, Special Issue on 3D Mapping*, 27(1):52–84, 2010. `http://dx.doi.org/10.1002/rob.20322`

16. Andreas Birk, **Sören Schwertfeger**, and Kaustubh Pathak. A networking framework for teleoperation in safety, security, and rescue robotics (ssrr). *IEEE Wireless Communications, Special Issue on Wireless Communications in Networked Robotics*, 6(13):6–13, 2009. `http://dx.doi.org/10.1109/MWC.2009.4804363`

17. Andreas Birk, Narunas Vaskevicius, Kaustubh Pathak, **Sören Schwertfeger**, Jann Poppinga, and Heiko Bülow. 3d perception and modeling: Motion level teleoperation and intelligent autonomous functions. *IEEE Robotics and Automation Magazine (RAM)*, 6(4):53–60, 2009. `http://dx.doi.org/10.1109/MRA.2009.934822`

18. Narunas Vaskevicius, Andreas Birk, Kaustubh Pathak, **Sören Schwertfeger**, and Ravi Rathnam. Efficient representation in 3d environment modeling for planetary robotic exploration. *Advanced Robotics*, 24(8-9):1169–1197, 2010. `http://dx.doi.org/10.1163/016918610X501291`

PUBLICATIONS · Peer Reviewed Conferences

1. Yijun Yuan, Qingwen Xu, and **Sören Schwertfeger**. Configuration-space flipper planning on 3d terrain. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, IEEE Press, 2020. `https://doi.org/10.1109/SSRR50563.2020.9292598`

2. Jianxiong Cai, Jiawei Hou, Yiren Lu, Hongyu Chen, Laurent Kneip, and **Sören Schwertfeger**. Improving cnn-based planar object detection with geometric prior knowledge. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, IEEE Press, 2020. `https://doi.org/10.1109/SSRR50563.2020.9292601`

3. Xiting Zhao, Zhijie Yang, and **Sören Schwertfeger**. Mapping with reflection - detection and utilization of reflection in 3d lidar scans. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, IEEE Press, 2020. `https://doi.org/10.1109/SSRR50563.2020.9292595`

4. Xiaoling Long, Qingwen Xu, Yijun Yuan, Zhenpeng He, and **Sören Schwertfeger**. Improved visual-inertial localization for low-cost rescue robots. In *21st World Congress of the International Federation of Automatic Control (IFAC)*. International Federation of Automatic Control, 2020. `https://doi.org/10.1016/j.ifacol.2020.12.2624`

5. Haofei Kuang, Qingwen Xu, Xiaoling Long, and **Sören Schwertfeger**. Pose estimation for omni-directional cameras using sinusoid fitting. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE Press, 2019. `https://arxiv.org/abs/1910.00882`

6. Arturo Gomez Chavez, Qingwen Xu, Christian Atanas Mueller, **Sören Schwertfeger**, and Andreas Birk. Adaptive navigation scheme for optimal deep-sea localization using multimodal perception cues. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE Press, 2019. `https://arxiv.org/abs/1906.04888`

7. Jiawei Hou, Yijun Yuan, and **Sören Schwertfeger**. Area graph: Generation of topological maps using the voronoi diagram. In *19th International Conference on Advanced Robotics (ICAR)*. IEEE Press, IEEE Press, 2019. `https://doi.org/10.1109/ICAR46387.2019.8981588`

8. Jiawei Hou, Haofei Kuang, and **Sören Schwertfeger**. Fast 2d map matching based on area graphs. In *2019 IEEE International Conference on Robotics and Biomimetics (ROBIO)*. IEEE, IEEE, 2019. `https://doi.org/10.1109/ROBIO49542.2019.8961732`

9. Zhenpeng He, Jiawei Hou, and **Sören Schwertfeger**. Furniture free mapping using 3d lidars. In *2019 IEEE International Conference on Robotics and Biomimetics (ROBIO)*. IEEE, IEEE, 2019. `https://doi.org/10.1109/ROBIO49542.2019.8961806`. **Finalist for the Best Paper Award**

10. Yijun Yuan, Letong Wang, and **Sören Schwertfeger**. Configuration-space flipper planning for rescue robots. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, 2019. `https://doi.org/10.1109/SSRR.2019.8848978`

11. Xiaoling Long and **Sören Schwertfeger**. Path planning tolerant to degraded locomotion conditions. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, 2019. `https://doi.org/10.1109/SSRR.2019.8848980`

12. Qingwen Xu, Arturo Gomez Chavez, Heiko Bülow, Andreas Birk, and **Sören Schwertfeger**. Improved fourier mellin invariant for robust rotation estimation with omni-cameras. In *26th IEEE International Conference on Image Processing*. IEEE, 2019. `https://doi.org/10.1109/ICIP.2019.8802933`

13. Hongyu Chen and **Sören Schwertfeger**. Heterogeneous multi-sensor calibration based on graph optimization. In *2019 IEEE International Conference on Real-time Computing and Robotics (RCAR)*. IEEE, 2019. `https://arxiv.org/abs/1905.11167`

14. Yijun Yuan and **Sören Schwertfeger**. Incrementally building topology graphs via distance maps. In *2019 IEEE International Conference on Real-time Computing and Robotics (RCAR)*. IEEE, 2019. `https://arxiv.org/abs/1811.01547`

15. Xiangyang Zhi, Xuming He, and **Sören Schwertfeger**. Learning autonomous exploration and mapping with semantic vision. In *International Conference on Image, Video and Signal Processing. IVSP*. ACM, ACM, 02/2019 2019. `https://doi.org/10.1145/3317640.3317652`

16. Yijun Yuan, Haofei Kuang, and **Sören Schwertfeger**. Fast gaussian process occupancy maps. In *Control Automation Robotics & Vision (ICARCV), 2018 15th International Conference on*. IEEE, IEEE, 2018. `https://doi.org/10.1109/ICARCV.2018.8581356`

17. Xiangyang Zhi and **Sören Schwertfeger**. Simultaneous hand-eye calibration and reconstruction. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE Press, 2017. `https://doi.org/10.1109/IROS.2017.8205949`

18. **Sören Schwertfeger** and Tianyan Yu. Matching paths in topological maps. In *9th Symposium on Intelligent Autonomous Vehicles (IAV), IFAC*. IFAC, 2016. `http://dx.doi.org/10.1016/j.ifacol.2016.07.736`

19. **Sören Schwertfeger** and Andreas Birk. Using fiducials in 3d map evaluation. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, 2015. `http://dx.doi.org/10.1109/SSRR.2015.7442997` **Finalist for the Best Paper Award**

20. **Sören Schwertfeger** and Andreas Birk. Evaluation of map quality by matching and scoring high-level, topological map structures. In *Robotics and Automation (ICRA), 2013 IEEE International Conference on*, 2013. `http://dx.doi.org/10.1109/ICRA.2013.6630876`

21. **Sören Schwertfeger** and Andreas Birk. A short overview of recent advances in map evaluation. In *IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR)*. IEEE Press, 2012. `http://dx.doi.org/10.1109/SSRR.2012.6523906`

22. Adam Jacoff, Raymond Sheh, Ann-Marie Virts, Tetsuya Kimura, Johannes Pellenz, **Sören Schwertfeger**, and Jackrit Suthakorn. Using competitions to advance the development of standard test methods for response robots. In *Proceedings of the Workshop on Performance Metrics for Intelligent Systems*, pages 182–189. ACM, 2012. `http://dx.doi.org/10.1145/2393091.2393126`

23. Raymond Sheh, Adam Jacoff, Ann-Marie Virts, Tetsuya Kimura, Johannes Pellenz, **Sören Schwertfeger**, and Jackrit Suthakorn. Advancing the state of urban search and rescue robotics through the robocuprescue robot league competition. *8th International Conference on Field and Service Robotics*, 2012. `http://dx.doi.org/10.1007/978-3-642-40686-7_9`

24. Raymond Sheh, Tetsuya Kimura, Ehsan Mihankhah, Johannes Pellenz, **Sören Schwertfeger**, and Jackrit Suthakorn. The robocuprescue robot league: Guiding robots towards fieldable capabilities. In *Advanced Robotics and its Social Impacts (ARSO), 2011 IEEE Workshop on*, pages 31–34. IEEE, 2011. `http://dx.doi.org/10.1109/ARSO.2011.6301977`

25. **Sören Schwertfeger**, Adam Jacoff, Johannes Pellenz, and Andreas Birk. Using a fiducial map metric for assessing map quality in the context of robocup rescue. In *International Workshop on Safety, Security, and Rescue Robotics (SSRR)*. IEEE Press, 2011. `http://dx.doi.org/10.1109/SSRR.2011.6106762`

26. **Sören Schwertfeger**, Andreas Birk, and Heiko Buelow. Using ifmi spectral registration for video stabilization and motion detection by an unmanned aerial vehicle (uav). In *International Workshop on Safety, Security, and Rescue Robotics (SSRR)*. IEEE Press, 2011. `http://dx.doi.org/10.1109/SSRR.2011.6106770` **Best Paper Award**

27. Max Pfingsthorn, Andreas Birk, **Sören Schwertfeger**, Heiko Bülow, and Kaustubh Pathak. Maximum likelihood mapping with spectral image registration. In *Robotics and Automation, 2010. ICRA 2010. Proceedings of the 2010 IEEE International Conference on*, 2010. `http://dx.doi.org/10.1109/ROBOT.2010.5509366`

28. **Schwertfeger, Sören**, Heio Bülow, and Andreas Birk. On the effects of Sampling Resolution in Improved Fourier Mellin based Registration for Underwater Mapping. In *7th International Symposium on Intelligent*

Autonomous Vehicles (IAV 2010). IFAC, 2010. `http://dx.doi.org/10.3182/20100906-3-IT-2019.00106`

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Chinese Patent Applications

15. 一种基于正弦曲线拟合的全景视觉罗盘估计方法及其应用
A panoramic visual compass estimation method based on sine curve fitting and its application
Inventors: 师泽仁 (Sören Schwertfeger); 徐晴雯; 龙肖灵; 旷皓飞
Number: CN111354044A

16. 一种应用于多深度场景的扩展傅里叶梅林定位算法
An Extended Fourier Merlin Location Algorithm Applied to Multi-depth Scenes
Inventors: 徐晴雯; 师泽仁 (Sören Schwertfeger)
Number: CN111951318A