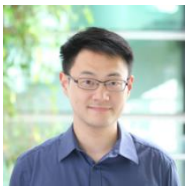
XIAO, Jiajian 肖佳健



IEEE member since 2016 | +(65) 8381 8875 | jiajian.xiao@outlook.com

Birthday: 30.08.1990

EDUCATION

2016.04 – 2022.10 **Technical University of Munich (TUM)**, Munich, Germany
- Ph.D. A Framework to Generate High-Performance Time Stepped Agent-based Simulations on Heterogeneous Hardware (Supervisors: Prof. Alois Knoll (TUM) and Prof. Wentong Cai (NTU))

2011.10 – 2013.12 **Technical University of Munich (TUM)**, Munich, Germany
- M. Sc. Computer Science *(Graduated with distinction)*

2007.09 – 2011.07 **Shanghai Jiao Tong University**, Shanghai, China
- B. Eng. Computer Science

2010.09 – 2011.02 **Hochschule für Technik Rapperswil**, Rapperswil, Swiss
- Exchange Student

SELECTED PUBLICATIONS

Full list on Google Scholar: https://scholar.google.com.sg/citations?user=UJknDkwAAAAJ&hl=en or scan

- *A survey on agent-based simulation using hardware accelerators*. Xiao, J., Andelfinger, P., Eckhoff, D., Cai, W. and Knoll, A., 2019. ACM Computing Surveys (CSUR), 51(6) **(IF: 14.324, top computer science journal)**
- *Exploring execution schemes for agent-based traffic simulation on heterogeneous hardware*. Xiao, J., Andelfinger, P., Eckhoff, D., Cai, W., & Knoll, A.; In 2018 IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications **(Best Paper Award)**
- *A Partition-Based Match Making Algorithm for Dynamic Ridesharing*. Pelzer, D., Xiao, J., Zehe, D., Lees, M.H., Knoll, A.C., Aydt, H.; 2015. IEEE Transactions on Intelligent Transportation Systems **(IF 9.551, top transportation journal)**
- *Pedal to the Bare Metal: Road Traffic Simulation on FPGAs Using High-Level Synthesis*. Xiao, J., Kilinç, G., Andelfinger, P., Eckhoff, D., Cai, W., & Knoll, A. In Proceedings of the 2020 ACM SIGSIM Conference on Principles of Advanced Discrete Simulation **(1st known effort for agent-based traffic simulations using HLS)**
- *OpenABLext: An automatic code generation framework for agent-based simulations on CPU-GPU-FPGA heterogeneous platforms*. Xiao, J., Andelfinger, P., Cai, W., Richmond, P., Knoll, A., & Eckhoff, D. 2020. Concurrency and Computation: Practice and Experience, e5807
- *OptCL: A Middleware to Optimise Performance for High Performance Domain-Specific Languages on Heterogeneous Platforms*. Xiao, J., Andelfinger, P., Cai, W., Eckhoff, D., & Knoll, A. In 2021 International Conference on Algorithms and Architectures for Parallel Processing **(A middleware accelerates not only agent-based simulation but also general arithmetic e.g., machine learning algorithms)**

WORK EXPERIENCE

2014.03 – present **TUMCREATE (Research Institute under National Research Foundation)** Singapore

Research Fellow (Sep 2020 - present)
- Oversaw the simulation and modeling efforts on TUMCREATE side for the Singapore Integrated Transport Energy Model (SITEM) project, collaborating with IHPC A*STAR Singapore.
- Used a **simulation approach to create a digital twin** for conducting a comprehensive analysis of projected electric vehicle charging patterns and energy demand of Singapore in the future.
- All project members were awarded **2022 FireFly Silver Borderless Award** by Ministry of Trade and Industry, Singapore.

Research Associate (Apr 2016 - Aug 2020)
- Researched high-performance computing with a special focus on **hardware acceleration of agent-based simulations**.
- Created a general compiler framework to automate the acceleration of agent-based simulations on heterogenous hardware (a mixed hardware setting with CPUs, GPUs, FPGAs, and others).

Software Developer (Mar 2014 - Mar 2016)
- One of the major C++ developers of a microscopic agent-based traffic simulator – CityMoS *(citymos.net/)*.

2013.07 – 2013.12 **Siemens AG** Munich, Germany

Student Intern / Software developer for the data assurance department

- Conducted visualizing and maintaining of the business operational data.

2012.10 – 2013.04 **TUMCREATE** Singapore

Master Thesis Student

- Invented a novel partition-based matching making algorithm for taxi-sharing and **published a paper at 2013 IEEE Conference on Intelligent Transportation Systems**.

2011.02 – 2011.06 **Bühler Group AG** Shenzhen, China

Bachelor Thesis Student

- Designed and developed a Management Scale System (MSS) for controlling product line in real-time.

TECHNICAL SKILLS & LANGUAGES

- Programming Languages: C, C++, Objective-C, Java, JavaScript, NodeJS, Python, VB.NET, HTML+CSS, Assembly language (Intel/ARM), CUDA, OpenCL, OpenMP, MPI
- Databases: MySQL, Oracle DB, NoSQL e.g., MongoDB
- Operating systems: Windows / Linux / Mac OS
- Others: SAP ERP System, MS Office, Adobe Photoshop/Premiere
- Chinese (Native) / English (Full professional proficiency) / German (Working Level proficiency, CEFR B2)