Kuan-Hsun Chen

Dr.-Ing.

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Present Work

Sep. 2021 – Present
Assistant Professor (tenured since 01.05.2022), *Department of Computer Science, University of Twente, Enschede, the Netherlands*.
Service:
Elected member of faculty council (since July 2022) for the faculty of electrical engineering, mathematics and computer science (EEMCS)

Education

2015 – 2019
Dr.-Ing. in Computer Science, *Technical University Dortmund, Dortmund, Germany*.
Dissertation: Optimization and Analysis for Dependable Application Software on Unreliable Hardware Platforms, defended on 22.05.2019
Evaluation: auszeichnung (a.k.a. summa cum laude)
Examiners: Prof. Dr. Jian-Jia Chen and Prof. Dr.-Ing. Rolf Ernst

2011 – 2013
M.Sc in Computer Science, *National Tsing Hua University, Hsinchu, Taiwan*.
GPA 4.2/4.3, Top 1%
Master Thesis: Support of Just-in-Time Compiler for Android on Indigenous Platforms

2007 – 2011
BA in Computer Science/Humanities and Social Sciences, *National Taiwan Tsing Hua University, Hsinchu, Taiwan*.
Major: Gender and Culture Researches, GPA 3.49
Minor: Computer Science, 43 Credits, GPA 3.8

Work Experience

Aug. 2019 – Aug. 2021
Postdoctoral Researcher, *at Chair XII: Design Automation for Embedded Systems with Prof. Dr. Jian-Jia Chen, Technical University Dortmund, Dortmund, Germany*.

Apr. 2014 – Jul. 2019
Research Associate, *at Chair XII: Design Automation for Embedded Systems supervised by Prof. Dr. Jian-Jia Chen, Technical University Dortmund, Dortmund, Germany*.

Mar. 2013 – Mar. 2014
Research Associate, *at Chair of Micro Hardware Technologies for Automation supervised by Prof. Dr. Jian-Jia Chen, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany*.

2011 – 2012
Research Assistant for Android project funded by National Science Council, *Prof. Dr. Jenq-Kuen Lee, National Taiwan Tsing Hua University (NTHU)*, Hsinchu, Taiwan.

2007 – 2012
Intern for Web Development on Water Resources Agency Project, *National Center for High-Performance Computing (NCHC)*, Hsinchu, Taiwan.

Honors / Awards / Grants

2023   **Best Paper Award** in Euromicro Conference on Real-Time Systems (ECRTS'23), Vienna, Austria

2023   **Outstanding Paper Award** in Euromicro Conference on Real-Time Systems (ECRTS'23), Vienna, Austria

2023   **ASCI Research School Grant** for "Design and Implementation of Real-Time Systems", Recipient

2022   **4TU.NIRICT Community Funding** for "Dutch Real-Time Systems", Recipient

2022   **Promotion on "Who's who"** by ACM SIGDA

2021   **Best Paper Nomination** in Design, Automation & Test in Europe Conference (DATE)

2021   **Postdoctoral Fellowship**, Summer Programme, Japan Society for the Promotion of Science (JSPS) and German Academic Exchange Service (DAAD), Recipient

2020   **Programme for Project-Related Personal Exchange (PPP)** (2021-2022), German Academic Exchange Service (DAAD), Principal Investigator

2020   **P^5-Project Group Practice Award**, Alumni of Computer Science in Technical University Dortmund, Supervisor

2019   **Ph.D. Dissertation Award**, Technical University Dortmund

2019   **SIGDA Student Travel Grant** for Design Automation Conference (DAC), Las Vegas, Nevada, United States

2018   **Best Student Paper Award** in IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), Hakodate, Japan

2018   **Outstanding Paper Award** in IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA), Hakodate, Japan

2018   **SIGBED Student Travel Grant** for International Conference on Cyber-Physical Systems week (CPSWEEK), Porto, Portugal

2016   **SIGPLAN PAC Grant** for Languages, Compilers, and Tools for Embedded Systems (LCTES), Santa Barbara, California, United States

Publications

Ten Selected Publications

[1] **Kuan-Hsun Chen**, Mario Günzel, Boguslaw Jablkowski, Markus Buschhoff, Jian-Jia Chen, *Unikernel-Based Real-Time Virtualization under Deferrable Servers: Analysis and Realization*, In Euromicro Conference on Real-Time Systems (ECRTS), 2022, pp. 6:1–6:22

[2] Christian Hakert, **Kuan-Hsun Chen**, Horst Schirmeier, Lars Bauer, Paul R. Genssler, Georg von der Brüggen, Hussam Amrouch, Jörg Henkel, Jian-Jia Chen. *Software-Managed Read and Write Wear-Leveling for Non-Volatile Main Memory*, In ACM Trans. Embed. Comput. Syst. (2022) 21, 1, Article 5, 24 pages.

[3] Yen-Ting Tsou, **Kuan-Hsun Chen**, Chia-Lin Yang, Hsiang-Yun Cheng, Jian-Jia Chen, Der-Yu Tsai. *This is SPATEM! A Spatial-Temporal Optimization Framework for Efficient Inference on ReRAM-based CNN Accelerator*, In Asia and South Pacific Design Automation Conference (ASP-DAC), 2022, pp. 702-707

[4] Mario Günzel, Christian Hakert, **Kuan-Hsun Chen**, Jian-Jia Chen. *HEART: Hybrid Memory and Energy-Aware Real-Time Scheduling for Multi-Processor Systems*, In ACM Trans. Embed. Comput. Syst. (2021) 20, 5s, Article 88, 23 pages, presented in International Conference on Embedded Software (EMSOFT)

[5] Mikail Yayla, Sebastian Buschjager, Aniket Gupta, Jian-Jia Chen, Jorg Henkel, Katharina Morik, **Kuan-Hsun Chen**, Hussam Amrouch, *FeFET-based Binarized Neural Networks Under Temperature-dependent Bit Errors*, In IEEE Transactions on Computers (2021), 71:7, pp. 1681-1695

[6] Christian Hakert, Asif-Ali Khan, **Kuan-Hsun Chen**, Fazal Hameed, Jeronimo Castrillon, Jian-Jia Chen. *BLOwing Trees to the Ground: Layout Optimization of Decision Trees on Racetrack Memory*, In ACM/IEEE Design Automation Conference (DAC), 2021, pp. 1111-1116

[7] Sebastian Buschjäger, **Kuan-Hsun Chen**, Jian-Jia Chen, Katharina Morik. Realization of Random Forest for Real-Time Evaluation through Tree Framing. In IEEE International Conference on Data Mining (ICDM), 2018, pp. 19-28

[8] **Kuan-Hsun Chen**, Jian-Jia Chen, Florian Kriebel, Semeen Rehman, Muhammad Shafique, Jörg Henkel. *Task Mapping for Redundant Multi-threading in Multi-Cores with Reliability and Performance Heterogeneity*. In IEEE Transactions on Computers (2016), 65:11, pp. 3441-3455

[9] Semeen Rehman, **Kuan-Hsun Chen**, Florian Kriebel, Anas Toma, Muhammad Shafique, Jian-Jia Chen, Jörg Henkel. *Cross-Layer Software Dependability on Unreliable Hardware*. In IEEE Transactions on Computers (2016), 65:1, pp. 80-94

[10] **Kuan-Hsun Chen**, Björn Bönninghoff, Jian-Jia Chen, Peter Marwedel. *Compensate or ignore? meeting control robustness requirements through adaptive soft-error handling*. In ACM Conference on Languages, Compilers, Tools, and Theory for Embedded Systems (LCTES), 2016, pp. 82-91

Academic and Professional Activities

Journal Editors

2023 Review Editor of Integrated Circuits and VLSI, specialty section of Frontiers in Electronics

2022 - 2023 Guest Editor of Special Issue on In/Near Memory and Storage Computing for Embedded Systems in ACM Transctions on Embedded Computing Systems (TECS)

2022 - 2023 Guest Editor of Special Issue on Fault-Resilient Cyber-Physical Systems in ACM Transctions on Cyber-Physical Systems (TCPS)

2022 - Present Associate Editor of Applied Computing and Intelligence, AIMS Press

2021 - 2022 Guest Editor of Special Issue on System Optimizations for DSP and AI Applications in Springer Journal of Signal Processing Systems

Conference/Workshop Chairs

2024 Publicity Chair for Euromicro Conference on Real-Time Systems (ECRTS)

2024 Web Chair for IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)

2024 Program Chair for Annual workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT)

2023 Multimedia Chair for IEEE Real-Time Systems Symposium (RTSS)

2023	Co-Chair for CompSys (National Conference for Dutch Computer Systems)
2023	Session Chair for IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2023	Social-Media Chair for Euromicro Conference on Real-Time Systems (ECRTS)
2023	Multimedia Chair for International Conference on Real-Time Networks and Systems (RTNS)
2022	Session Chair for Euromicro Conference on Real-Time Systems (ECRTS)
2021	Multimedia Chair / Session Chair for IEEE Real-Time Systems Symposium (RTSS)

Program Committees, Member of

2024	ACM/IEEE Design, Automation, & Test in Europe (DATE)
2023, 2021	IEEE Real-Time Systems Symposium (RTSS) & Artifact Evaluation
2023	IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2024, 2023	Asia and South Pacific Design Automation Conference (ASP-DAC)
2023	ACM/IEEE International Conference on Computer-Aided Design (ICCAD)
2023	ACM/IEEE International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS)
2023	IEEE International Conference on Computer Design (ICCD)
2023	International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology (DFTS)
2023 - 2021	IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)
2023, 2022, 2020	ACM/IEEE Workshop on Machine Learning for CAD (MLCAD)
2022	IEEE International Conference on High Performance Computing, Data, & Analytics (HiPC)
2021	Junior Researcher Workshop on Real-Time Computing
2020	IEEE Real-Time and Embedded Technology and Applications Symposium, Brief Presentation Track (RTAS-BP)

Peer Reviewer (Primary or Secondary)

Journal

2023 - 2021, 2019	ACM Transactions on Embedded Computing Systems (TECS)
2023	IEEE Transactions on Internet of Things (TIOT)
2023	IEEE Transactions on Computer Aided Design of Integrated Circuits & Systems (TCAD)
2023	IEEE Transactions on Big Data (TBD)
2023	IEEE Transaction on Dependable and Secure Computing (TDSC)
2023, 2021	ACM Transactions on Cyber-Physical Systems (TCPS)
2023	ACM Transactions on Design Automation of Electronic Systems (TODAES)
2023	IEEE Transactions on Vehicular Technology (TVT)
2023 - 2022	IEEE Transactions on Emerging Topics in Computing (TETC)
2022, 2017	IEEE Transactions on Computer (TC)

2021	IEEE Transactions on Automatic Control (TAC)
2021	IEEE Embedded Systems Letters
2020	IEEE Access
2021	Springer Journal of Signal Processing Systems
2021	Springer Journal of VLSI (Integration)
2021	Springer Journal of Sustainable Computing
2021	Springer Journal of Time-Critical Computing Systems
2018	Springer Journal of Scheduling

Conference

2023 - 2021	IEEE Real Time Technology and Applications Symposium (RTAS)
2022	European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)
2022	Euromicro Conference on Digital Systems Design (DSD)
2022	International Conference on Real-Time Networks and Systems (RTNS)
2022	IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
2021 - 2020, 2017	IEEE Real-Time Systems Symposium (RTSS)
2021, 2018, 2016	ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)
2017	ACM/IEEE Design, Automation, & Test in Europe (DATE)
2016 - 2015	ACM/IEEE Design Automation Conference (DAC)

Invited Talks / Forums

Nov. 2023	(Invited Talk) Dependable Real-Time System Designs, in National Taiwan University of Science and Technology, Taiwan
Sep. 2023	(Panellist) Academia in Europe, in The 2nd European-Taiwanese Conference for Science and Technology, ETH Zürich, Swiss
June. 2023	(Invited Talk) Memory-Centric Embedded System Designs, in National Yang Ming Chiao Tung University, Taiwan
May. 2023	(Invited Talk) Efficient Support of Decision Tree Models on Embedded Systemss, in National Tsing Hua University, Taiwan
May. 2023	(Keynote) Good Old Trees along with Emerging Memories, in The 28th Workshop on Compiler Techniques and System Software for High-Performance and Embedding Computing (CTHPC), Taiwan
Dec. 2022	(Invited Talk) Support of RISC-V Instructions for LIM on Gem5 (link), in National Tsing Hua University, Taiwan
Sep. 2022	(Invited Talk) Doing UTQ as Doing Research, UTQ Ceremony 2022, in University of Twente, the Netherlands
Sep. 2021	(Invited Talk) Dependable Real-Time Embedded Systems, Conference of Taiwan Elite in DACH-region on Advanced Engineering and Biomedical Technologies, Germany
Dec. 2019	(Invited Talk) Compensate or Ignore? Meeting Control Robustness Requirements through Adaptive Soft-Error Handling, in Diskussionskreis Fehlertoleranz at TU Dortmund, Germany

Jun. 2019	(Forums) Optimization and Analysis for Dependable Software on Unreliable Hardware Platforms, in ACM/SIGDA Ph.D. Forum at the IEEE/ACM 55th Design Automation Conference (DAC), USA
Mar. 2019	(Invited Talk) Optimization and Analysis for Dependable Application Software on Unreliable Hardware Platforms (link), in National Tsing Hua University, Taiwan
Mar. 2019	(Forums) Optimization and Analysis for Dependable Software on Unreliable Hardware Platforms, in ACM/SIGDA Ph.D. Forum at the IEEE/ACM 22th Design Automation and Test in Europe Conference (DATE), Italy

Language

Mandarin Chinese	Native
English	Full Professional Proficiency (C1/C2), assessed by UT Language Centre
German	Limited Working Proficiency (A2/B1)
Dutch	Elementary (A1)