Kuan-Hsun Chen

Dr.-Ing.

✉ *twkuanhsun.chen@gmail.com*
✍ *https://khchen.eu/*
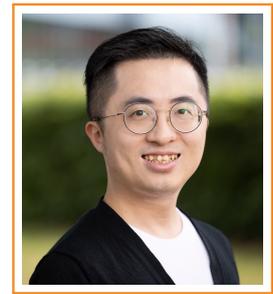
Present Work

Sep. 2021 – Present
Assistant Professor (tenured since 01.05.2022), *Computer Architecture for Embedded Systems (CAES) group*, *University of Twente, the Netherlands*.
- Elected member and research committee chair of faculty council for the faculty of electrical engineering, mathematics and computer science (2022-2024)
- Appointed member of Young Academy Twente (YAT) since 2024

Courses:
- Operating Systems, for Technical Computer Science Bachelor
- Programming in C, for Electronic Engineering Bachelor

Education

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

2011 – 2013
M.Sc in Computer Science, *National Tsing Hua University, Taiwan*.
GPA 4.2 (Max 4.3)
Thesis: Support of Just-in-Time Compiler for Android on Indigenous Platforms
Supervisor: Prof. Jenq-Kuen Lee

2007 – 2011
B.A. in Humanities and Social Sciences, *National Tsing Hua University, Taiwan*.
Minor: Computer Science, 43 Credits

Professional Experience

Aug. 2019 – Aug. 2021
Postdoctoral Researcher, *at the Chair of Design Automation for Embedded Systems*, *TU Dortmund University, Germany*.
DFG Projects:
- Collaborative Research Center (SFB 876): Providing Information by Resource-Constrained Data Analysis
- DFG-MOST Project: Non-Volatile One Memory Architecture (NVM-OMA)

Apr. 2014 – Jul. 2019
Research Associate, *at the Chair of Design Automation for Embedded Systems*, *TU Dortmund University, Germany*.
- Collaborative Research Center (SFB 876): Providing Information by Resource-Constrained Data Analysis
- DFG Priority Program (SPP 1500) : Dependable Embedded Systems: Generating and Executing Dependable Application Software on Unreliable Embedded Systems

Mar. 2013 – Mar. 2014	**Research Associate**, *at the Chair of Micro Hardware Technologies for Automation, Karlsruhe Institute of Technology, Germany*.

Projects:
- DFG Priority Program (SPP 1500): Dependable Embedded Systems: Generating and Executing Dependable Application Software on Unreliable Embedded Systems

2011 – 2012	**Research Assistant**, *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.

Awards and Honors

Community Related

Member of Young Academy Twente, University of Twente, since 2024

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

Invited Article by ACM Special Interest Group on Embedded Systems for SIGBED Blog (Latest updates from the SIGBED community), May 2024

Promotion by ACM Special Interest Group on Design Automation on "Who's who", May 2022

Research Related

Ph.D. Dissertation Award, TU Dortmund University, Germany, 2019

Ph.D. was distinguished as "**Summa cum Laude**", Dortmund, Germany, May 2019

Best Paper Award in Euromicro Conference on Real-Time Systems (ECRTS), 2023

Best Paper Candidate in ACM/IEEE Design, Automation & Test in Europe Conference (DATE), 2021

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

Postdoctoral Fellowship, Summer Programme, Japan Society for the Promotion of Science (JSPS) and German Academic Exchange Service (DAAD), 2021, Due to COVID, the visa was not granted.

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

Teaching Related

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

University of Teaching Qualification, 4TU.Education, the Netherlands, 2022

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

Best Projektgruppe (based on teaching evaluation) for the Projektgruppe "PG629: F1/10-Autonomous Racing: Head-To-Head Racing Capabilities", 2020

Best Projektgruppe (based on teaching evaluation) for the Projektgruppe "F1/10-Autonomous Racing", 2019

Ten Selected Publications (google scholar | scopus)

[1] Bruno Endres Forlin, **Kuan-Hsun Chen**, Nikolaos Alachiotis, Luca Cassano, Marco Ottavi, *Lightweight Instrumentation for Accurate Performance Monitoring in RTOSes*, In Design, Automation & Test in Europe Conference & Exhibition (DATE), 2024

[2] Junjie Shi, Niklas Ueter, Jian-Jia Chen, **Kuan-Hsun Chen**. *Average Task Execution Time Minimization under (m,k) Soft-Error Constraint*. In IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2023

[3] Frank Ridder, **Kuan-Hsun Chen**, Nikolaos Alachiotis. *Accelerated Real-Time Classification of Evolving Data Streams using Adaptive Random Forests*, In International Conference on Field Programmable Technology (FPT), 2023

[4] **Kuan-Hsun Chen**, Mario Günzel, Georg von der Brüggen, Jian-Jia Chen. *Critical Instant for Probabilistic Timing Guarantees: Refuted and Revisited*, In IEEE Real-Time Systems Symposium (RTSS), 2022

[5] 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 Transactions Embedded Computing Systems (TECS), 2022

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

[7] Niklas Ueter, **Kuan-Hsun Chen**, Jian-Jia Chen. *Project-Based CPS Education: A Case Study of an Autonomous Driving Student Project*, in IEEE Design & Test (D&T), vol. 37, no. 6, pp. 39-46, 2020

[8] Marco Dürr, Georg von der Brüggen, **Kuan-Hsun Chen**, Jian-Jia Chen. *End-to-End Timing Analysis of Sporadic Cause-Effect Chains in Distributed Systems*, In ACM Transactions Embedded Computing Systems (TECS), 2019

[9] 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

[10] **Kuan-Hsun Chen**, Björn Bönninghoff, Jian-Jia Chen, Peter Marwedel. *Compensate or ignore? Meeting control robustness requirements through adaptive soft-error handling*. In 17th ACM SIGPLAN/SIGBED Conference on Languages, Compilers, Tools, and Theory for Embedded Systems (LCTES), 2016

Invited Talks / Forums

July. 2024
(Invited Talk)
Costly and Unsafe? A good case for Reinforcement Learning, in ML-RT Agenda Towards a research agenda for learning-enabled safety-critical real-time systems, France

May. 2024
(Invited Talk)
Timely vs. In Time: A perspective in real-time systems, at "Special Day On Sustainable Computing", in Design, Automation & Test in Europe Conference, Valencia, Spain

May. 2023
(Keynote)
Good Old Trees along with Emerging Memories, in 28th Workshop on Compiler Techniques and System Software for High-Performance and Embedding Computing

Sep. 2021
(Invited Lecture)
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

Journal Editors

Associate Editor, IEEE Nanotechnology Magazine (since 2024)

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

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

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

Guest Editor, Special Issue on Systems Optimizations for DSP and AI Applications in Springer Journal of Signal Processing Systems (JSPS)

Conference/Workshop Chairs

2024	Co-Chair, Workshop on Operating Systems Platforms for Embedded Real-Time Applications
2024	Publicity Chair, Euromicro Conference on Real-Time Systems (ECRTS)
2024	Webchair, IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2024	Webchair, IEEE Real-Time Systems Symposium (RTSS)
2024	Submission Chair, ACM/IEEE International Conference on Hardware/Software Codesign and System Synthesis (CODES+ISSS)
2023	Multimedia Chair, IEEE Real-Time Systems Symposium (RTSS)
2023	Co-Chair, ASCI CompSys (National Conference for Dutch Computer Systems)
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)
2021	Multimedia Chair, IEEE Real-Time Systems Symposium (RTSS)

Technical Program Committees, Member of

2024	ACM/USENIX/IFIP Middleware Conference (MIDDLEWARE)
2022	IEEE International Conference on High Performance Computing, Data, & Analytics (HiPC)
2021,2024	IEEE Real-Time Systems Symposium (RTSS)
2023-2024	IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
2021-2024	IEEE International Conference on Embedded and Real-Time Computing Systems and Application (RTCSA)
2024	IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)
2024	ACM/IEEE Design, Automation & Test in Europe Conference & Exhibition (DATE)
2023-2024	ACM/IEEE International Conference on Computer-Aided Design (ICCAD)
2024	ACM/IEEE International Conference on Compilers, Architectures, and Synthesis for Embedded Systems (CASES)
2024	ACM/IEEE International Conference on Hardware/Software Codesign and System Synthesis
2023-2024	IEEE International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology
2023-2025	Asia and South Pacific Design Automation Conference (ASP-DAC)
2023	IEEE Real-Time Systems Symposium Artifact Evaluation (RTSS-AE)
2024	Euromicro Conference on Real-Time Systems Artifact Evaluation (ECRTS-AE)
2023-2024	European Conference on Machine Learning and Knowledge Discovery in Databases (ECML-PKDD)
2024	ACM/IEEE International Symposium on Machine Learning for CAD (MLCAD)
2023, 2022, 2020	ACM/IEEE Workshop on Machine Learning for CAD (MLCAD)