



DeJiu Chen

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Background and experience

- Jan 2013 – Present, Associate Professor, KTH Royal Institute of Technology, Sweden.
- Oct 2007 – Dec 2012, Assistant Professor, KTH Royal Institute of Technology, Sweden.
- Oct 2007 – Jun 2009, Senior Technical Instructor, ENEA Data AB, Sweden.
- Oct 2004 – Oct 2007, Researcher, KTH Royal Institute of Technology, Sweden.

DeJiu Chen received his MSc degree in Mechatronics from KTH in 1998 and his PhD degree with a research on embedded computer control system architecture also from KTH in 2004.

Main research profile

The research of Chen is characterized by an interdisciplinary approach to the engineering and management of **Embedded Control Systems (ECS)** as an integral part of **Cyber-Physical Systems (CPS)**. It is centered on the development of novel methods and technologies for the modeling, analysis, design and management of ECS facing the challenge of spatial and temporal uncertainties (relating to the emergent properties and anomalies). The research is driven by the societal and industrial needs to have an increasing amount of intelligent features (e.g. relating to autonomous driving and smart manufacturing) and heterogeneous techniques (e.g. relating to digitalization, communication and distribution) in safety- and time-critical products. Over the years, the research has contributed to the progresses in the following areas:

- **Smart embedded systems**
 - Run-time services for situation-awareness and planning
 - Design of algorithms for state estimation and control (Model-based and Data-centric)



- **Safety engineering**
 - Models and analysis methods for safety and performance
 - Control for safety and performance
- **Model-based development**
 - Ontologies and formalisms for the specification and management of system architecture and knowledge.
 - Domain specific language for modeling frameworks and traceability
- **Infrastructure and technologies**
 - Platforms and services for dependable distributed embedded systems.

International Research Projects in the Latest Five Years

- **2017.01 – 2019.12**, KTH PI (Project Co-PI), ESPLANADE, FFI Vinnova, The Swedish national project. (<https://esplanade-project.se/>)
- **2016.01 – 2018.12**, KTH PI (Project Co-PI), EU Project TRACE, EUREKA (European research and development funding and coordination), Catrene. (<https://www.edacentrum.de/trace/>)
- **2014.01 – 2015.12**, KTH PI (Project Co-PI), CPS for Smart Factories 2014, EIT Digital, European Institute of Innovation and Technology. (<http://www.dfki.de/smartfactories/>)
- **2010.09 – 2013.09**, KTH PI (Project Co-PI), EU FP7 MAENAD (Model-based Analysis & Engineering of Novel Architectures for Dependable Electric Vehicles), EU FP7, Specific Targeted Research or Innovation Project (STREP). (<http://www.maenad.eu/>)
- **2009.03 – 2012.06**, KTH PI (Project Co-PI), EU ARTEMIS CESAR (Cost-efficient methods and processes for safety relevant), ARTEMIS JU. (<https://artemis-ia.eu/project/1-cesar.html>)

For the upcoming years, DeJiu Chen will be KTH PI (Project Co-PI) for the EU research project EUREKA PONORAMA (2019-2022) on compositionality for intelligent automotive vehicles: and KTH PI (Project PI) for EU research H2020 SocketSense (2019-2021) on intelligent medical IoT.

Publications

DeJiu Chen has over 80 peer-reviewed scientific papers being published in the Recent Years. See

- <<https://scholar.google.se/citations?user=SE9ruMUAAAAJ&hl=sv>>
- <<https://www.kth.se/profile/chendj/publications/?l=en>>

Selected papers:



- **DeJiu Chen**, Kenneth Östberg, Matthias Becker, Håkan Sivencrona, Fredrik Warg: **Design of a Knowledge-Base Strategy for Capability-Aware Treatment of Uncertainties of Automated Driving Systems**. In: Gallina B., Skavhaug A., Schoitsch E., Bitsch F. (eds) Computer Safety, Reliability, and Security. SAFECOMP 2018. Lecture Notes in Computer Science, vol 11094. Springer, Cham
- **DeJiu Chen** and Zhonghai Lu: **A Model-based Approach to Dynamic Self-Assessment for Automated Performance and Safety Awareness of Cyber-Physical Systems**. In: Bozzano M., Papadopoulos Y. (eds) Model-Based Safety and Assessment. IMBSA 2017. Lecture Notes in Computer Science, vol 10437. Springer, Cham. **2017**. DOI https://doi.org/10.1007/978-3-319-64119-5_15
- **DeJiu Chen**, Dmitri Valeri Panfilenko, Mahmood R. Khabazzi, Daniel Sonntag: **A Model-Based Approach to Qualified Process Automation for Anomaly Detection and Treatment**. 21st IEEE International Conference on Emerging Technology & Factory Automation, ETFA 2016, Berlin, Germany, September 6 - 9, IEEE. **2016**. DOI: 10.1109/ETFA.2016.7733731
- **DeJiu Chen**, Karl Meinke, Kenneth Östberg, Fredrik Asplund, Christoph Baumann. **A Knowledge-in-the-Loop Approach to Integrated Safety&Security for Cooperative System-of-Systems**. International Symposium on Knowledge Engineering for Decision Support Systems, IEEE Seventh International Conference on Intelligent Computing and Information Systems, ICICIS'15, Cairo, Egypt. December 12-14, IEEE, **2015**. DOI: 10.1109/IntelCIS.2015.7397237
- Sara Tucci-Piergiovanni, **DeJiu Chen**, Chokri Mraidha, Henrik Lönn, Nidhal Mahmud, Mark-Oliver Reiser, Ramin Tavakoli Kolagari, Nataliya Yakymets, Renato Librino, Sandra Torchiaro, Agnes Lanusse. **Model-Based Analysis and Engineering of Automotive Architectures with EAST-ADL**. In Handbook of Research on Embedded Systems Design, A volume in the Advances in Systems Analysis, Software Engineering, and High Performance Computing (ASASEHPC) Book Serie. A. Bagnato et. al. (Eds). IGI Global. **2014**. ISBN 978-1-4666-6194-3 (hardcover) -- ISBN 978-1-4666-6195-0 (ebook).
- **DeJiu Chen**, Lei Feng, Tahir Naseer Qureshi, Henrik Lönn, Frank Hagl. **An Architectural Approach to the Analysis, Verification and Validation of Software Intensive Embedded Systems**. In Journal: Computing, Springer. **2013**. DOI: 10.1007/s00607-013-0314-4.
- Tahir Naseer Qureshi, **DeJiu Chen**, Martin Törngren. **A Timed Automata-Based Method to Analyze EAST-ADL Timing Constraint Specifications**. In: Vallecillo A., Tolvanen JP., Kindler E., Störrle H., Kolovos D. (eds) Modelling Foundations and Applications. ECMFA 2012. Lecture Notes in Computer Science, vol 7349. Springer, Berlin, Heidelberg. **2012**. DOI: https://doi.org/10.1007/978-3-642-31491-9_23
- **DeJiu Chen**, Rolf Johansson, Henrik Lönn, Hans Blom, Martin Walker, Yiannis Papadopoulos, Sandra Torchiaro, Fulvio Tagliabo, Anders Sandberg. **Integrated Safety and Architecture Modeling for Automotive Embedded Systems**. e&i - elektrotechnik und informationstechnik, Volume 128,



Number 6, Automotive Embedded Systems. Springer Wien, **2011**. ISSN 0932-383X / 1613-7620. DOI 10.1007/s00502-011-0007-7.

- **Dejiu Chen**, Martin Törngren, Magnus Persson, Lei Feng, Tahir Naseer Qureshi. **Towards Model-Based Engineering of Self-configuring Embedded Systems**. In: Giese H., Karsai G., Lee E., Rumpe B., Schätz B. (eds) Model-Based Engineering of Embedded Real-Time Systems. Lecture Notes in Computer Science, vol 6100. Springer, Berlin, Heidelberg. **2010**. DOI: 10.1007/978-3-642-16277-0, ISBN: 978-3-642-16276-3, ISSN: 0302-9743.
- Richard Anthony, **Dejiu Chen**, Mariusz Pelc, Magnus Persson, Martin Törngren: **Context-Aware Adaptation in DySCAS**. Electronic Communications of the EASST, Volume 19: Context-Aware Adaptation Mechanism for Pervasive and Ubiquitous Services (CAMPUS). European Association of Software Science and Technology (EASST), **2009**. ISSN 1863-2122.
- **Dejiu Chen**, Rolf Johansson, Henrik Lönn, Yiannis Papadopoulos, Anders Sandberg, Fredrik Törner, Martin Törngren. **Modelling Support for Design of Safety-Critical Automotive Embedded Systems**. In: Harrison M.D., Sujana MA. (eds) Computer Safety, Reliability, and Security. SAFECOMP **2008**. Lecture Notes in Computer Science, vol 5219. Springer, Berlin, Heidelberg. 2008. DOI 10.1007/978-3-540-87698-4, ISBN 978-3-540-87697-7, ISSN 0302-9743.

Peer reviewers in International Journals

- Journal of Software & Systems Modeling, Springer. ISSN: 1619-1366
- Journal of Systems Science and Systems Engineering, Springer. ISSN: 1004-3756
- Journal Chinese science bulletin, Springer. ISSN: 2095-9273.
- Journal Science of Computer Programming, Elsevier. ISSN: 0167-6423.
- Journal Reliability Engineering & System Safety, Elsevier. ISSN: 0951-8320.
- Journal of Approximate Reasoning, Elsevier. ISSN: 0888-613X.
- IEEE EMBEDDED SYSTEM LETTERS. ISSN: 1943-0663
- IEEE Transactions on Industrial Informatics. ISSN: 1551-3203
- Journal of Concurrency and Computation: Practice and Experience, Wiley. ISSN: 1532-0634
- Journal of Systems Engineering, Wiley. ISSN: 1098-1241



- Journal of Risk and Reliability, Sage.

Membership in International Conference Committee (Selected)

- ACM/IEEE International Conference on Cyber-Physical Systems 2016, 2017, 2018.
- PECCS International Joint Conference on Pervasive and Embedded Computing and Communication Systems 2014, 2015, 2016, 2017, 2018
- International Workshop on Model-based Architecting of Cyber-Physical and Embedded Systems 2015, 2016, 2017, 2018

Participation in Academic and Industrial Organizations

Swedish:

- **ICES Safety Group Coordinator** - Competence Group Safety, ICES Innovative Centre for Embedded Systems, KTH Royal Institute of Technology, Sweden. <<http://www.ices.kth.se/>>
- **SAFER Safety Competence Group Member** - Competence Group Functional Safety, SAFER – Vehicle and Traffic Safety Centre at Chalmers, Sweden.< <https://www.saferresearch.com/>>

International:

- **IEEE Senior Member** - IEEE, IEEE Vehicular Technology Society, IEEE Systems, Man, and Cybernetics Society, IEEE Intelligent Transportation Systems Society.
- **OMG Member, Member of OMG PSUM** (Uncertainty Modeling) Submission Group - Object Management Group, <http://www.omgwiki.org/uncertainty/doku.php?id=start>

Main Cooperators

- Sweden: Volvo Groups Trucks Technology, Volvo Cars, Zenuity, Autoliv, RISE, etc.
- German: Siemens, Bosch, VW, Daimler, DFKI, etc.
- France: CEA Tech (French Alternative Energies and Atomic Energy Commission), etc.
- U.K.: University of Hull, University of Greenwich, etc.
- American: The Mathworks, etc.