Heiko Klare

Dr.-Ing.

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Personal Data

Birthdates	26.06.1990 in Höxter, Germany
Civil Status	Single

Professional Data

Position	Postdoctoral Researcher
Institution	Karlsruhe Institute of Technology (KIT)
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University Education and Academic Degrees

07/2016 – 05/2021 **Dr.-Ing. in Informatics**, *Karlsruhe Institute of Technology*,
Field: Software Engineering, Grade: 1.0 with distinction (summa cum laude).
Thesis: Building Transformation Networks for Consistent Evolution of Interrelated Models (Referees: Prof. Reussner / Prof. Atkinson, University of Mannheim)

04/2014 – 06/2016 **M.Sc. in Informatics**, *Karlsruhe Institute of Technology*,
Focus: Software Engineering and Parallelization, Grade: 1.0 with distinction.
Thesis: Designing a Change-Driven Language for Model Consistency Repair Routines (Software Engineering, Referee: Prof. Reussner)

10/2010 – 03/2014 **B.Sc. in Informatics**, *Karlsruhe Institute of Technology*,
Focus: Software Engineering and Algorithmics, Grade: 1.1 with distinction.
Thesis: Personentracking und Gelenkwinkelschätzung in der Laparoskopie (Medical Informatics, Referee: Prof. Dillmann)

Professional Experience

06/2021 – today **Postdoctoral Researcher**, *Karlsruhe Institute of Technology, KASTEL – Institute of Information Security and Dependability*.
In addition to prior tasks as a doctoral researcher:
- Development and publication of role-based mechanisms for access control, intellectual property protection and responsibility derivation in view-based development
- Strategic and operative assistance in the KASTEL mobility lab executive board
- Coordination and conduction of developer meetings, creation and supervision of a minimum viable product roadmap for the VITRUVIUS framework

07/2016 – 05/2021 **Doctoral Researcher**, *Karlsruhe Institute of Technology, KASTEL – Institute of Information Security and Dependability (from 01/2021) Institute for Program Structures and Data Organization (IPD) (until 12/2020)*.
- Development and publication of mechanisms for preserving consistency of multiple models by composing modular, reusable transformations
- Lead development of the VITRUVIUS framework for view-based development: architectural design, implementation, automation (CI/CD), quality assurance
- Supervision of students and training of students and colleagues
- Coordination and creation of cross-institutional research proposals: document creation and management, workshop preparation, collaboration platform maintenance, quality assurance
- Teaching Assistance for various courses as guest lecturer, trainer and coordinator

07/2005 – 06/2016 **Technical Drafter and Software Developer**, *Ingenieurbüro Klare*, Marienmünster.
- Creation of CAD drawings for structural engineering
- Development of AutoCAD extensions
- Administration of office IT infrastructure

Scientific Community Activities

09/2019 **Program Committee Member**,
1st International Workshop on View-Oriented Software Engineering (VoSE) co-located with ACM/IEEE 22nd International Conference on Model Driven Engineering Languages and Systems (MODELS).

05/2019 **Dagstuhl Seminar Participant and Report Co-Author**,
Dagstuhl Seminar 19191: "Software Evolution in Time and Space: Unifying Version and Variability Management".

11/2018 **Dagstuhl Seminar Participant and Report Co-Author**,
Dagstuhl Seminar 18491: "Multidirectional Transformations and Synchronisations".

Teaching Experience

10/2017 – today **Guest Lecturer**, *Karlsruhe Institute of Technology*,
Course: Model-Driven Software Engineering (annual guest lecture).

07/2016 – today **Student Advisor**, *Karlsruhe Institute of Technology*,
Practical Courses: Software Quality Engineering with Eclipse,
Engineering Software Development
Seminar Courses: Software Disasters,
Data in Software-Intensive, Technical Systems

- 13 bachelor's and master's theses
- 6 intern students
- 5 seminar students

10/2016 – 03/2021 **Teaching Assistant**, *Karlsruhe Institute of Technology*,
Course: Programming Paradigms.

- Planning the curriculum
- Instruction of tutors
- Creation of teaching materials
- Creation of practice sheets and exams

07/2016 – 09/2017 **Teaching Assistant**, *Karlsruhe Institute of Technology*,
Course: Practice of Software Engineering.

- Conception of software engineering tasks
- Supervision and grading of 8 student groups

04/2012 – 07/2015 **Tutor**, *Karlsruhe Institute of Technology*,
Course: Software Engineering I (annually from April until July).

- Preparation, conduction and moderation of bi-weekly tutorials
- Grading of practice sheets

10/2013 – 02/2014 **Tutor**, *Karlsruhe Institute of Technology*,
Course: Operating Systems.

- Preparation, conduction and moderation of weekly tutorials
- Grading of practice sheets

School Education and Civil Service

07/2009 – 07/2010 **Extended Basic Military Service**, *ABC-Abwehrbataillon 7*, Höxter,
Human Resources Department.

- Management of personal files
- Creation of personal documents
- Automation of document generation processes

07/2000 – 06/2009 **General Qualification for University Entrance**, *Petrus-Legge-Gymnasium*,
Brakel,
Abitur, Grade: 1.3.

Projects

2016 – today **Vitruvius**, *Framework for View-Based Software Development (GitHub)*,
Open-Source Research Projects at KASTEL – Institute of Information Security and Dependability, KIT.

- Content: Eclipse-based software development framework preserving consistency of development artifacts
- Responsibilities: Organization and project lead – architecture, design, implementation, automation (CI/CD), developer meetings
- Technologies/Tools: Java, Xtend, Eclipse Modeling Framework, Xtext, Maven, GitHub Actions, Docker

2012 – today **AutoCAD Plugins**, *Tools for Structural Engineering*,
Single-Person Project for Ingenieurbüro Klare.

- Content: Set of AutoCAD extensions for recurring drawing and plotting tasks
- Responsibilities: Overall development
- Technologies/Tools: C#, VBA, Visual Studio, MySQL/MariaDB

2012 – 2015 **SudoQ**, *Android Sudoko App (GitHub, Google Play Store)*,
Open-Source Student Group Project at Institute for Program Structures and Data Organization (IPD), KIT.

- Content: Sudoku app for Android devices with flexible generation of variants
- Responsibilities: Design and implementation
- Technologies/Tools: Java, Eclipse, Android Development

2014 – 2015 **Prometheus**, *Minimal Java Compiler*,
Student Group Project at Institute for Program Structures and Data Organization (IPD), KIT.

- Content: Compiler for an object-oriented subset of Java with code optimizations
- Responsibilities: Design and implementation
- Technologies/Tools: Java, Eclipse, Maven

2013 **Mediassist**, *Surgery Assistance with Augmented Reality*,
Research Project at Institute for Anthropomatics and Robots (IAR), KIT.

- Content: Tools for computer-aided surgery and training using augmented reality
- Responsibilities: Development of skeleton tracking with Microsoft Kinect
- Technologies/Tools: C++, Eclipse, Qt, OpenCV, Image Processing (Kinect)

Certificates and Qualifications

05/2021 **Certified Professional Scrum Product Owner (PSPO)**, *Scrum.org*.
Training "Professional Scrum Master and Product Owner" at *andrena objects ag*

05/2021 **Certified Professional Scrum Master (PSM)**, *Scrum.org*.
Training "Professional Scrum Master and Product Owner" at *andrena objects ag*

10/2020 **Baden-Württemberg Zertifikat für Hochschuldidaktik**, *Hochschuldidaktikzentrum Baden-Württemberg (HDZ)*, Certificate for university didactics.
Focus: E-learning and E-assessments, 200 units of work

09/2014 **Agile Software Engineering Training**, *andrena objects ag*, Karlsruhe,
One-week student training for agile software development.
Topics: Scrum, test-driven development, clean code, refactoring

04/2012 – 09/2012 **Tutor Training**, *Karlsruhe Institute of Technology*,
Training for first-time tutors.
Topics: Presentation, moderation and conversation techniques, teamwork, conflict resolution

Awards

05/2021 **Distinction for Dissertation**, *Karlsruhe Institute of Technology*.

03/2021 **Best Paper Award Nomination**, *European Association for the Study of Science and Technology (EASST)*, Nomination for EASST best paper award at *European Joint Conferences on Theory & Practice of Software (ETAPS)* for the paper "Finding a Universal Execution Strategy for Model Transformation Networks" presented at *Fundamental Approaches to Software Engineering (FASE)* conference.

06/2018 **Best Compulsory Lecture**, *KIT Department of Informatics*,
Award for best computer science compulsory lecture "Programming Paradigms" in summer term 2017 and winter term 2017/2018.

06/2016 **Distinction for Master's Degree**, *Karlsruhe Institute of Technology*.

10/2014 – 09/2015 **Scholarship (Deutschlandstipendium)**, *Karlsruhe Institute of Technology*,
Awarded for outstanding academic performance.

03/2014 **Distinction for Bachelor's Degree**, *Karlsruhe Institute of Technology*.

06/2009 **German Physical Society Prize**, *Deutsche Physikalische Gesellschaft*,
Complement for very good performance in advanced physics course at school.

Skills

Levels: +++ = Expert, ++ = Advanced, + = Basic

Software Development

Languages	Java (+++), Xtend (+++), C# (++), C/C++ (+), VBA (+)	Frameworks	Eclipse Modeling Framework (+++), Xtext (++), JavaEE/Spring (+), JUnit (++)
IDEs	Eclipse (+++), Visual Studio Code (++), Visual Studio (+)	Process	Git/SVN (+++), Maven (+++), GitHub Actions (++), Docker (+)
Databases	MySQL/MariaDB (++)	Others	Agile Development, Test-Driven Development, Android Development

Software Application

OS	Windows 7/10 (++), Linux (++)	Webserver	Apache (++), Nginx (+)
Office	Microsoft Word/Excel (++), LaTeX (+++), Microsoft PowerPoint (+++), Exchange Administration (+)	Others	AutoCAD (++)

Languages

German	Native	
English	Proficient	*Everyday use at work (spoken and written)*
French	Elementary	*Two-year advanced course at school*
Chinese	Beginner	*One-semester course at university*

Publications

Journal Articles

[1] Heiko Klare, Max E Kramer, Michael Langhammer, Dominik Werle, Erik Burger, and Ralf Reussner. "Enabling consistency in view-based system development – The Vitruvius approach". In: *Journal of Systems and Software* 171 (2021). DOI: 10.1016/j.jss.2020.110815.

[2] Heiko Klare, Torsten Syma, Erik Burger, and Ralf Reussner. "A Categorization of Interoperability Issues in Networks of Transformations". In: *Journal of Object Technology* 18.3 (2019). The 12th International Conference on Model Transformations (ICMT 2019), 4:1–20. DOI: 10.5381/jot.2019.18.3.a4.

Conference and Workshop Proceedings

[3] Sofia Ananieva, Sandra Greiner, Thomas Kühn, Jacob Krüger, Lukas Linsbauer, Sten Grüner, Timo Kehrer, Heiko Klare, Anne Koziolek, Henrik Lönn, Sebastian Krieter, Christoph Seidl, Sethu Ramesh, Ralf Reussner, and Bernhard Westfechtel. "A conceptual model for unifying variability in space and time". In: *24th ACM Conference on Systems and Software Product Line (SPLC 2020)*. Vol. A. ACM, 2020, pp. 1–12. DOI: 10.1145/3382025.3414955.

[4] Sofia Ananieva, Timo Kehrer, Heiko Klare, Anne Koziolek, Henrik Lönn, Ramesh Sethu, Andreas Burger, Gabriele Taentzer, and Bernhard Westfechtel. "Towards a Conceptual Model for Unifying Variability in Space and Time". In: *23rd International Systems and Software Product Line Conference (SPLC 2019)*. Vol. B. ACM, 2019. DOI: 10.1145/3307630.3342412.

[5] Sofia Ananieva, Heiko Klare, Erik Burger, and Ralf Reussner. "Variants and Versions Management for Models with Integrated Consistency Preservation". In: *12th International Workshop on Variability Modelling of Software-Intensive Systems (VAMOS 2018)*. ACM, 2018, pp. 3–10. DOI: 10.1145/3168365.3168377.

[6] Joshua Gleitze, Heiko Klare, and Erik Burger. "Finding a Universal Execution Strategy for Model Transformation Networks". In: *24th International Conference on Fundamental Approaches to Software Engineering (FASE 2021)*. Nominated for EASST best paper award. Springer International Publishing, 2021, pp. 87–107. DOI: 10.1007/978-3-030-71500-7_5.

[7] Houssem Guissouma, Heiko Klare, Eric Sax, and Erik Burger. "An Empirical Study on the Current and Future Challenges of Automotive Software Release and Configuration Management". In: *44th Euromicro Conference on Software Engineering and Advanced Applications (SEAA 2018)*. IEEE, 2018, pp. 298–305. DOI: 10.1109/SEAA.2018.00056.

[8] Robert Heinrich, Dominik Werle, Heiko Klare, Ralf Reussner, Max Kramer, Steffen Becker, Jens Happe, Heiko Koziolek, and Klaus Krogmann. "The Palladio-Bench for Modeling and Simulating Software Architectures". In: *40th International Conference on Software Engineering: Companion Proceedings (ICSE 2018)*. ACM, 2018, pp. 37–40. DOI: 10.1145/3183440.3183474.

[9] Heiko Klare. "Multi-Model Consistency Preservation". In: *21st ACM/IEEE International Conference on Model Driven Engineering Languages and Systems: Companion Proceedings (MODELS 2018)*. ACM, 2018, pp. 156–161. DOI: 10.1145/3270112.3275335.

[10] Heiko Klare, Erik Burger, Max E Kramer, Michael Langhammer, Timur Saglam, and Ralf Reussner. "Ecoreification: Making Arbitrary Java Code Accessible to Metamodel-Based Tools". In: *20th ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MODELS 2017)*. IEEE, 2017. DOI: 10.1109/MODELS.2017.30.

[11] Heiko Klare and Joshua Gleitze. "Commonalities for Preserving Consistency of Multiple Models". In: *22nd ACM/IEEE International Conference on Model Driven Engineering Languages and Systems Companion (MODELS 2019)*. IEEE, 2019, pp. 371–378. DOI: 10.1109/MODELS-C.2019.00058.

[12] Heiko Klare, Michael Langhammer, and Max E Kramer. "Projecting UML Class Diagrams from Java Code Models". In: *4th Workshop on View-Based, Aspect-Oriented and Orthographic Software Modelling (VAO 2016)*. Vol. 2016. Karlsruhe Reports in Informatics 7. Karlsruhe Institute of Technology (KIT). 2016, pp. 11–18. DOI: 10.5445/IR/1000053686.

[13] Heiko Klare, Timur Saglam, Erik Burger, and Ralf Reussner. "Applying Metamodel-based Tooling to Object-oriented Code". In: *7th International Conference on Model-Driven Engineering and Software Development (MODELSWARD 2019)*. INSTICC. SCiTePress, 2019, pp. 219–230. DOI: 10.5220/0007246202190230.

[14] Max E Kramer, Georg Hinkel, Heiko Klare, Michael Langhammer, and Erik Burger. "A Controlled Experiment Template for Evaluating the Understandability of Model Transformation Languages". In: *2nd International Workshop on Human Factors in Modeling (HuFaMo) co-located with 19th ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MODELS 2016)*. Vol. 1805. CEUR Workshop Proceedings. CEUR-WS.org, 2016, pp. 11–18.

[15] Johannes Meier, Heiko Klare, Christian Tunjic, Colin Atkinson, Erik Burger, Ralf Reussner, and Andreas Winter. "Single Underlying Models for Projectional, Multi-View Environments". In: *7th International Conference on Model-Driven Engineering and Software Development (MODELSWARD 2019)*. INSTICC. SCiTePress, 2019, pp. 119–130. DOI: 10.5220/0007396401190130.

[16] Johannes Meier, Christopher Werner, Heiko Klare, Christian Tunjic, Uwe Aßmann, Colin Atkinson, Erik Burger, Ralf Reussner, and Andreas Winter. "Classifying Approaches for Constructing Single Underlying Models". In: *7th International Conference on Model-Driven Engineering and Software Development (MODELSWARD 2019)*. Vol. 1161. Communications in Computer and Information Science. Springer International Publishing, 2020, pp. 350–375. DOI: 10.1007/978-3-030-37873-8_15.

[17] Kateryna Yurchenko, Moritz Behr, Heiko Klare, Max Kramer, and Ralf Reussner. "Architecture-Driven Reduction of Specification Overhead for Verifying Confidentiality in Component-Based Software Systems". In: *14th Workshop on Model Driven Engineering, Verification and Validation (MoDeVVa) co-located with 20th ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MODELS 2017)*. Vol. 2019. CEUR Workshop Proceedings. CEUR-WS, 2017, pp. 321–323.

Technical and Other Reports

[18] Sofia Ananieva, Thorsten Berger, Andreas Burger, Timo Kehrer, Heiko Klare, Anne Koziolek, Henrik Lönn, Ramesh Sethu, Gabriele Taentzer, and Bernhard Westfechtel. "Conceptual Modeling Group". In: *Software Evolution in Time and Space: Unifying Version and Variability Management (Dagstuhl Seminar 19191)*. Vol. 9. Dagstuhl Reports 5. Dagstuhl, Germany: Schloss Dagstuhl–Leibniz-Zentrum für Informatik, 2019, pp. 21–24. DOI: 10.4230/DagRep.9.5.1.

[19] Heiko Klare, Aurélien Pepin, Erik Burger, and Ralf Reussner. *A Formal Approach to Prove Compatibility in Transformation Networks*. Tech. rep. 3. Karlsruhe Reports in Informatics. Karlsruhe: Karlsruhe Institute of Technology (KIT), 2020. DOI: 10.5445/IR/1000121444.

[20] Eric Sax, Ralf Reussner, Houssemeddine Guissouma, and Heiko Klare. *A Survey on the State and Future of Automotive Software Release and Configuration Management*. Tech. rep. 11. Karlsruhe Reports in Informatics. Karlsruhe: Karlsruhe Institute of Technology (KIT), 2017. DOI: 10.5445/IR/1000075673.

[21] Matthias Tichy and Heiko Klare. "Human Factors: Interests of Transformation Developers and Users". In: *Multidirectional Transformations and Synchronisations (Dagstuhl Seminar 18491)*. Vol. 8. Dagstuhl Reports 12. Dagstuhl, Germany: Schloss Dagstuhl–Leibniz-Zentrum für Informatik, 2019, pp. 16–20. DOI: 10.4230/DagRep.8.12.1.

Theses

[22] Heiko Klare. "Building Transformation Networks for Consistent Evolution of Interrelated Models". PhD thesis. Karlsruhe, Germany: Karlsruhe Institute of Technology (KIT), 2021. DOI: 10.5445/IR/1000133724.

[23] Heiko Klare. "Designing a Change-Driven Language for Model Consistency Repair Routines". Master's Thesis. Karlsruhe: Karlsruhe Institute of Technology (KIT), 2016. DOI: 10.5445/IR/1000080138.

[24] Heiko Klare. "Personentracking und Gelenkwinkelschätzung in der Laparoskopie". Bachelor's Thesis. Karlsruhe Institute of Technology (KIT), 2013.

Artifacts

[25] Heiko Klare. *Reproduction Package for Evaluating the Vitruvius Approach*. 2020. DOI: 10.5445/IR/1000123568.

[26] Heiko Klare. *Reproduction Package for the Dissertation on Building Transformation Networks for Consistent Evolution of Interrelated Models*. 2021. DOI: 10.5445/IR/1000129603.

Version: 28th November 2021