

Doc. RNDr. Tomáš Bureš, Ph.D.

Curriculum Vitae – October 2018

Personal data:

Born: 31.8.1978

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Degrees and titles

2013 Doc. (associate professor) – Charles University, Faculty of Mathematics and Physics

2006 Ph.D. – Charles University, Faculty of Mathematics and Physics

2004 RNDr. (similar to Ph.D. candidate) – Charles University, Faculty of Mathematics and Physics

2002 Mgr. (MSc. equivalent) – Charles University, Faculty of Mathematics and Physics

Employment

2014 – now Associate professor, Chair of Department of Distributed and Dependable Systems, Faculty of Mathematics and Physics, Charles University

2011 – 2016 Researcher (part time), Institute of Computer Sciences, Academy of Sciences of the Czech Republic

2013 – 2015 Visiting Professor, Department of Programming and Software Engineering, Ludwig-Maximilian University, Munich

2010 – 2014 Assistant professor, Department of Distributed and Dependable Systems, Faculty of Mathematics and Physics, Charles University

2007 – 2008 Postdoc, PROGRESS Centre for Predictable Embedded Software Systems, Mälardalen University, Västerås

2006 – 2011 Postdoc (part time), Institute of Computer Sciences, Academy of Sciences of the Czech Republic

2007 – 2010 Assistant Professor, Department of Software Engineering, Faculty of Mathematics and Physics, Charles University

2005 – 2006 Research Assistant, Department of Software Engineering, Faculty of Mathematics and Physics, Charles University

2002 – 2006 Research Assistant (part time), Institute of Computer Sciences, Academy of Sciences of the Czech Republic

Stays at other institutions

October 2013 – March 2015 Visiting Professor at the Department of Programming and Software Engineering, Ludwig-Maximilian University, Munich, Germany

September 2007 – August 2008 Postdoctoral stay at the PROGRESS Centre for Predictable Embedded Software Systems, Mälardalen University, Västerås, Sweden

June 2004 – September 2004 Internship at NASA Ames Research Center

Research focus

Past – software components and services

Since 2011 – head of a research group focused on:

- Multi-paradigm modeling of smart cyber-physical systems (sCPS) and internet of things systems (IoT)
- Dynamic architectures of collective self-adaptive systems and edge-cloud based systems
- Full list of topics (along with related software artifacts) available at:
 - <http://www.smartarch.cz/> – website of the research group
 - <http://d3s.mff.cuni.cz/research/> – website of the department

Principal (partner) investigator in EU and national projects

- 2018 – 2020 From the cloud to the edge - smart IntegraTion and OPTimisation Technologies for highly efficient Image and Video processing Systems (FitOptiVis), ECSEL
- 2018 – 2020 Aggregate Farming in the Cloud (AFarCloud), ECSEL
- 2018 – 2019 Trust 4.0: Dataflow-based Privacy and Trust Modelling and Analysis in Industry 4.0, TAČR DELTA
- 2017 – 2019 Environmental Sensing To Act for a Better quality of Life: Smart Health (ESTABLISH), ITEA3/EUREKA project
- 2017 – 2018 xRAN architecture with edge-cloud, Industrial research project – Deutsche Telekom
- 2015 – 2017 Multi-Paradigm Modelling for Cyber-Physical Systems (COST IC 1404, supported by parallel national grant of Ministry of Education and Sports of the Czech Republic)
- 2011 – 2015 Trans-European Research Training Network on Engineering and Provisioning of Service Based Cloud Applications (RELATE), FP7 Marie Curie Initial Training Network
- 2012 – 2014 DEECo modeling and implementation of EVs in an Intelligent Infrastructure, Industrial research project – Volkswagen AG
- 2011 – 2014 On-Board software reference architecture consolidation, European Space Agency tender

Project involvement as team member in EU and national projects

- 2011 – 2015 Autonomic Service Component Ensembles (ASCENS), FP7 IP project
- 2011 – 2013 Metody pro tvorbu a ověřování komponentových systémů ze specifikací v přirozeném jazyce, Grant Agency of the Czech Republic project no. P103/11/1489
- 2011 – 2013 Vývoj a verifikace softwarových komponent v zapouzdřených systémech, Grant Agency of the Czech Republic project no. P202/11/0312
- 2011 Inovace studijního programu Informatika na MFF UK: výuka tvorby simulací s edukativními prvky a prohloubení praktického aspektu výuky, Operational Programme Prague – Adaptability project no. CZ.2.17/3.1.00/33274
- 2010 – 2013 Model-Driven Evaluation of Design Decision Impacts in Software Engineering, Grant Agency of the Czech Republic project no. P202/10/J042
- 2011 SW a HW zajištění nové výuky modelem řízeného návrhu embedded a real-time systémů s použitím Matlab/Simulink, Subproject of university development programme “Rozvoj HW a SW vybavení pro informační a komunikační technologie na MFF UK Praha”
- 2008 – 2010 Quality Impact Prediction for Evolving Service-Oriented Software (Q-ImPrESS), FP7 STREP project
- 2008 – 2010 Metody a modely pro ověřování konzistence aplikací založených na pokročilých komponentových modelech, Grant Agency of the Czech Republic project no. 201/08/0266

- 2007 – 2008 PROGRESS project, Swedish Foundation for Strategic Research
- 2006 – 2008 Formální metody prakticky použitelné pro vývoj systémů složených ze softwarových komponent, Grant Agency of the Czech Republic project no. 201/06/0770
- 2005 – 2008 Open Source Infrastructure for Run-time Integration of Services (OSIRIS), ITEA EUREKA
- 2005 – 2006 Component Reliability Extensions (CRE) to the Fractal Component Model, Joint project with France Telecom (France Telecom external research contract number 46127110)
- 2005 – 2011 Moderní metody, struktury a systémy informatiky, project of a university research framework
- 2005 – 2009 Realistic Application of Formal Methods in Component Systems, Grant Agency of the Academy of Sciences of the Czech Republic project no. 1ET400300504
- 2003 – 2005 Open Source Middleware for Open Systems in Europe (OSMOSE), ITEA EUREKA project
- 2003 – 2005 Development of Advanced Software Components and Models, Grant Agency of the Academy of Sciences of the Czech Republic project no. 201/03/0911
- 2003 – 2005 Research of methods and tools for verification of embedded computer systems fault tolerance, Grant Agency of the Academy of Sciences of the Czech Republic project no. 102/03/0672

Awards

- ICSA 2018 Most Influential Paper Award for *Sentilles S., Vulgarakis A., Bureš T., Carlson J., Crnković I.: A Component Model for Control-Intensive Distributed Embedded Systems, In Proceedings of 11th International Symposium, CBSE 2008, Karlsruhe, Germany pp. 310-317, 2008*
- Best Research Paper Award for *Bureš T., Gerostathopoulos I., Hnětynka P., Keznikl J., Kit M., Plášil F.: Gossiping Components for Cyber-Physical Systems, In Proceedings of the 8th European Conference on Software Architecture (ECSA 2014), Vienna, Austria. Springer, pp. 250-266., August 2014 (CORE A conference – based on CORE2014)*
- ACM Distinguished Paper Award for *Keznikl J., Bureš T., Plášil F., Gerostathopoulos I., Hnětynka P., Hoch N.: Design of Ensemble-Based Component Systems by Invariant Refinement, In Proceedings of 16th International ACM Sigsoft Symposium on Component-Based Software Engineering (CBSE 2013), Vancouver, Canada. ACM, pp. 91-100., June 2013 (CORE A conference – based on CORE2013)*

Invited talks / Panels

- Bureš, T.: Towards evolving architectures of collaborating cyber-physical systems, Invited speaker at the 4th Workshop on Sustainable Architecture collocated with the 12th European Conference on Software Architecture 24-28 September, 2018, Madrid, Spain
- Bureš, T.: Autonomic component ensembles for dynamic evolving architectures of context aware smart systems, Invited speaker at Context-aware, Autonomous and Smart Architecture Workshop co-located with the 11th European Conference on Software Architecture 11-15 September, 2017, Canterbury, UK
- Bureš, T.: Towards dynamic architectures of smart cyber-physical systems, 14th International Workshop on Formal Engineering approaches to Software Components and Architectures Satellite event of ETAPS, April 22, 2017, Uppsala, Sweden
- Weyns, D., Bureš, T.: Engineering Smart Cyber Physical Systems, SIGSOFT / ACM Webinar, September 8, 2015, <https://www.sigsoft.org/resources/webinars.html>
- Plášil, F., Bureš, T.: Software Components in Computer Assisted Living? Invited speaker at SOFSEM 2013

- Participation in panel at CBSE2010, June 24th 2010, together with Judy Stafford, Ivica Crnkovic, George Heineman, Jens Happe – moderated by Ralf Reussner

Other Professional Activities (Conferences, Workshops, ...)

- Steering committee member of ECSA (Core A conference – based on CORE2018 ranking)
- Conference program co-chair of ECSA 2019 (Core A conference – based on CORE2018 ranking)
- Conference program co-chair of SEAA 2018 (Core B conference with multiple tracks – based on CORE2017 ranking)
- Conference program co-chair QoSA 2014 (Core A conference – based on CORE2013 ranking)
- Workshop program co-chair of SEsCPS 2015, 2016, 2017, 2018 (workshop on Software Engineering for Smart Cyber-Physical Systems at ICSE – Core A* conference)
- Tool Demonstrations Co-Chair ICSA 2019
- Artifact track chair SEAMS 2018
- Track chair (together with K.-K. Lau) EUROMICRO SEAA 2013, 2014, 2015, 2016, 2017 Model-Based Development, Components and Services (MOCS)
- Track chair (together with I. Crnkovic) EUROMICRO SEAA 2009, Service and Component Based Software Engineering track (SCBSE)
- Guest editor Software Quality Journal, Springer (special issue on “Software Quality of Advanced Software Applications”)
- Guest editor Information And Software Technologies, Elsevier (special issue on “Software Architectures for Context-Aware Smart Systems”)
- PC Member of ECSA (2011, 2013, 2016, 2017, 2018), ICSA (2017, 2018), SEAMS (2017), CLOSER (2011-2018), PEC (2016-2018), S4CIP (2017-2018), SCC (2013-2018), EDCC (2015-2017), SERENE (2016), SOFSEM (2016), QoSA (2015), SANCS (2015), WCOP (2014), EUROMICRO SEAA (2010-2013), EWDC (2011), EWDC (2011), SOCE (2010), GPCE (2009), ...
- Reviewer for various journals with an impact factor (TSE, JSS, Computing, Software: Practice and Experience, JNCA, IEEE Software, ...)
- Steering committee member of AIP4IoT workshop at iFM

Activities related to teaching

- Responsible (garant) for the “Informatika” (Computer Science) master study program, Charles University
- Member of the committee for “Softwarové systémy” (Software Systems) branch of the “Informatika” (Computer Science) doctoral study program, Charles University. Member of “Státní rigorozní komise pro obor Softwarové systémy”.
- Final exam committee vice-chairman of “Komise pro státní závěrečné zkoušky bakalářského studijního programu Informatika”, “Komise pro státní závěrečné zkoušky magisterského studijního programu Informatika”, final exam committee vice chairman of “Státní rigorozní komise pro obor Softwarové systémy studijního programu Informatika”, Charles University
- Member of the Software Project committee for course NPRG023
- External member of the “Rada oblasti vzdělávání Informatika”, University of West Bohemia, Pilsen, Czech Republic.

Teaching at the Faculty of Mathematics and Physics, Charles University

- Teaching courses/labs since academic year 2002/2003. The teaching focuses on development of dependable systems and advanced concepts of object systems and languages
- The most important courses are:
 - Embedded and real-time systems
 - Taught since 2009
 - Elective course in MSc. study plan Software Systems
 - Object and Component Systems
 - Taught in 2007 – 2016, then replaced by an extension of the course on Concepts of Modern Programming Languages and by a new course on Model-driven Development
 - Elective course in MSc. study plan Software Systems
 - Concepts of Modern Programming Languages
 - Taught since 2012
 - Elective course in MSc. study plan Software Systems
- The teaching is evaluated very favorably the students (systematically between 1-2 on the scale 1...5 where 1 is the best)

Supervision of PhD, MSc, and Bc Theses and of Group Software Projects (i.e. software projects within the course Software Project – NPRG023)

- 9 PhD students, out of which 4 successfully defended (Michal Malohlava – 2012, Jaroslav Keznikl – 2014, Michal Kit – 2016, Vladimír Matěna – 2018), 2 are in progress
- 37 MSc theses (out of which 32 successfully defended, 2 are in progress)
- 10 Bc these (out of which 9 successfully defended, 1 is in progress)
- 2 successfully defended group software projects

Teaching activities outside MFF UK

- Teaching at LMU Munich as a visiting professor
 - 3 semesters – fall 2013 ... fall 2014
 - Software Engineering - obligatory course for bachelors (2 semesters)
 - Research Work – elective course for masters (1 semester)
- Individual lectures at summer schools and universities abroad
 - ASCENS Spring School on Engineering Collective Autonomic Systems, Lucca, Italy, March 2015
 - Gran Sasso Science Institute, L'Aquila, Italy - 2 lectures in the frame of advanced courses for PhD students, June 2017
 - Mälardalen University, Västerås, Sweden – lectures on component architectures and distributed SW development in the frame of postdoctoral stay, 2008