

# Michael Borkowski

## Public Curriculum Vitæ

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### Profile

Residence	Braunschweig, Germany	Degrees	Dipl.-Ing. (equivalent to MSc), BSc
Nationality	Austrian	Experience	5 years in professional software development, 3 years in research and teaching
Field	Enterprise and Distributed Systems Engineering		

### Skillset

Concepts	Distributed information systems Cloud computing, decentralized consensus DevOps, continuous integration, testing Embedded systems, RISC programming	Technologies (Selection)	Java, C#/.NET, Maven, Git, Docker Linux system administration, C/C++ AVR-GCC, AVR-ASM, Arduino JavaScript, Python, HTML/CSS, L <sup>A</sup> T <sub>E</sub> X
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### Languages

**English:** Proficient (C1/C2)

**German:** Native

**Polish:** Native

**French:** Intermediate (A2)

**Austrian Sign Language:** Elementary (A1)

### Professional Activities

- 2019/05 – ongoing **Research Scientist**, *German Aerospace Center (DLR), Institute of Flight Guidance, Unmanned Aircraft Systems*, Braunschweig, Germany.  
Research and development in the following projects:
- "Novel Integrated Solution of Operating a Fleet of Drones with Multiple Synchronized Missions for Disaster Responses" (RESPONDRONE) within the European Commission *Horizon 2020 Research and Innovation Actions* (H2020 RIA) Programme
  - "Demonstration of Traffic Management in Urban Airspace" (City-ATM), institutionally funded project
- 2015/11 – 2019/04 **Research Assistant**, *Technische Universität Wien, Information Systems Institute*, Vienna, Austria.  
Research and development in various projects, teaching
- Project "Token Atomic Swap Technology" (TAST) commissioned by Pantos GmbH
    - Research and development of atomic cross-blockchain token transfers (Solidity)
    - Operational research project lead
  - Project "Cloud-Based Rapid Elastic Manufacturing" (CREMA) within the European Commission *Horizon 2020 Research and Innovation Actions* (H2020 RIA) Programme
    - Co-lead of component implementation and validation (Java/Spring, Docker)
    - Scientific dissemination, deliverables
    - Technical administration of component infrastructure (DevOps)
  - Project "SIMPLI-CITY – The Road User Information System of the Future" within the European Commission *7<sup>th</sup> Framework Programme for Research and Innovation* (FP7): dissemination, implementation (Java, OSGi)
  - Project "VISP – An Ecosystem for Elastic Data Stream Processing for the Internet of Things"
  - Assistance supervision of two master theses, teaching assistance in three graduate courses
- 2015/05 – 2015/10 **Software Developer**, *EclipseSource Services GmbH*, Vienna, Austria.  
Development within the Eclipse Modeling Framework (EMF)
- 2013/12 – 2015/04 **Systems Architect & DevOps**, *Flatout Technologies GmbH*, Vienna, Austria.  
Technical project management, coordination and interlocking of development and business aspects  
Software architecture and design  
Development and operations, continuous integration, management of testing and deployment lifecycles  
Backend development within a cloud-based smart home system (Java, Z-Wave)
- 2010/10 – 2014/02 **Tutor**, *Technische Universität Wien, Institute of Computer Aided Automation*, Vienna, Austria.  
Teaching assistance in two undergraduate courses, lab supervision, support and assistance for students

- 2010/08 – 2010/09 **Software Developer Internship**, *ASFINAG Service GmbH*, Vienna, Austria.  
Two-month summer internship during my Bachelor's studies. Development of an integrated data consolidation solution and various other technical tasks (.NET/C#, WPF, Big Data and Algorithmics)
- 2007/07, 2008/07 **Software Developer Internships**, *Siemens AG Österreich*, Vienna, Austria.  
Development, testing, and rollout of software projects (.NET/C#, WPF, WCF, Java, Velocity, JSP)
- Training
- Project Management for Scientists (PMA/IPMA, Peter Birnstingl, MSc, MSD, zSPM, CMC, 2018)
  - Certified Tester Foundation Level (ISTQB, iSQI GmbH – International Software Quality Institute, 2014)

## Research

- Fields
- Cost and performance optimization in cloud computing, cloud manufacturing, Industry 4.0
  - Prediction-based proactive solutions, machine learning, blockchain technologies
- Projects
- One industry project, three EU projects, various research projects; see *Professional Activities*
- Publications
- 26 publications (19 peer-reviewed), including four journal articles and 13 conference/workshop papers; see *Selected Publications* for details
- Selected Activities
- Central European Workshop on Services and their Composition (ZEUS): Program Committee Member in 2019 and 2020
  - ACM Transactions on the Web (TWEB): Reviewer
  - IEEE Transactions on Cloud Computing (TCC): Reviewer
  - IEEE Transactions on Services Computing (TSC): Reviewer
  - Assistance supervision of students' theses (two master theses, one bachelor thesis)

## Education

- 2015/11 – ongoing **Doctoral (Ph.D.) Studies in Computer Science**, *Technische Universität Wien*, Vienna, Austria.  
Thesis Predictive Approaches for Resource Provisioning in Distributed Systems  
Supervisor Associate Prof. Dr.-Ing. Stefan Schulte
- 2012/09 – 2015/10 **Master Studies in Software Engineering**, *Technische Universität Wien*, Vienna, Austria.  
Degree Diplomingenieur (Dipl.-Ing.), equivalent to Master of Science (MSc)  
Thesis Smart Prefetching for Mobile Users under Volatile Network Conditions (Grade: 1 – Excellent)  
Supervisor Associate Prof. Dr.-Ing. Stefan Schulte
- 2009/10 – 2012/09 **Bachelor Studies in Software Engineering**, *Technische Universität Wien*, Vienna, Austria.  
Degree Bachelor of Science (BSc)  
Thesis ACTA in a Nutshell: Das Handelsabkommen ACTA in seinen wichtigsten Zügen (Grade: 1 – Excellent)  
Supervisor Ao. Univ.-Prof. Dr. Markus Haslinger

## Personal

- Background
- No remaining military service duties
  - Driver's license categories: B, B/111 (Austria: Motorcycles  $\leq$  11 kW), AM
  - Unmarried
- Interests
- Aviation and spaceflight, development of flight control systems for RC model airplanes and drones
  - Photography, videography, audio-visual editing
  - Music (piano, guitar, electric bass, singing), sports (tennis, skiing, running)

## Selected Publications

### Journal Articles

- [Michael Borkowski](#), Marten Sigwart, Philipp Frauenthaler, Taneli Hukkinen, Stefan Schulte. “DeXTT: Deterministic Cross-Blockchain Token Transfers”. In: *IEEE Access* 7 (2019), pp. 111030–111042. DOI: 10.1109/ACCESS.2019.2934707.
- [Michael Borkowski](#), Christoph Hochreiner, Stefan Schulte. “Minimizing Cost by Reducing Scaling Operations in Distributed Stream Processing”. In: *PVLDB* 12.7 (2019), pp. 724–737. DOI: 10.14778/3317315.3317316.
- [Michael Borkowski](#), Walid Fdhila, Matteo Nardelli, Stefanie Rinderle-Ma, Stefan Schulte. “Event-based Failure Prediction in Distributed Business Processes”. In: *Information Systems* 81 (2019), pp. 220–235. DOI: 10.1016/j.is.2017.12.005.
- Olena Skarlat, Matteo Nardelli, Stefan Schulte, [Michael Borkowski](#), Philipp Leitner. “Optimized IoT Service Placement in the Fog”. In: *Service Oriented Computing and Applications (SOCA) Journal* 11.4 (2017), pp. 427–443. DOI: 10.1007/s11761-017-0219-8.

### Conference and Workshop Proceedings

- Sabine Weninger, [Michael Borkowski](#). “Data Prefetching in Smart Systems”. In: *22nd IEEE International Enterprise Distributed Object Computing Conference (EDOC 2018), Stockholm, Sweden*. 2018, pp. 204–207. DOI: 10.1109/EDOCW.2018.00037. Demo paper.
- Christian Schubert, [Michael Borkowski](#), Stefan Schulte. “Trustworthy Detection and Arbitration of SLA Violations in the Cloud”. In: *7th European Conference on Service-Oriented and Cloud Computing (ESOCC 2018), Como, Italy*. LNCS vol. 11116. 2018, pp. 5–16. DOI: 10.1007/978-3-319-99819-0\_7.
- Philipp Waibel, Svetoslav Videnov, [Michael Borkowski](#), Christoph Hochreiner, Stefan Schulte, Jan Mendling. “Process Simulation for Machine Reservation in Cloud Manufacturing”. In: *16th IEEE International Conference on Industrial Informatics (INDIN 2018), Porto, Portugal*. 2018, pp. 270–277. DOI: 10.1109/INDIN.2018.8472038.
- [Michael Borkowski](#), Christoph Hochreiner, Stefan Schulte. “Moderated Resource Elasticity for Stream Processing Applications”. In: *Euro-Par 2017: Parallel Processing Workshops, Santiago de Compostela, Spain*. LNCS vol. 10659. 2017, pp. 5–16. DOI: 10.1007/978-3-319-75178-8\_1.
- [Michael Borkowski](#), Stefan Schulte, Christoph Hochreiner. “Predicting Cloud Resource Utilization”. In: *9th IEEE/ACM International Conference on Utility and Cloud Computing (UCC), Shanghai, China*. 2016, pp. 37–42. DOI: 10.1145/2996890.2996907.
- Olena Skarlat, Stefan Schulte, [Michael Borkowski](#), Philipp Leitner. “Resource Provisioning for IoT Services in the Fog”. In: *9th IEEE International Conference on Service-Oriented Computing and Applications, SOCA 2016, Macau, China*. 2016, pp. 32–39. DOI: 10.1109/SOCA.2016.10.
- [Michael Borkowski](#), Olena Skarlat, Stefan Schulte, Schahram Dustdar. “Prediction-Based Prefetch Scheduling in Mobile Service Applications”. In: *2016 IEEE International Conference on Mobile Services, MS 2016, San Francisco, USA*. 2016, pp. 41–48. DOI: 10.1109/MobServ.2016.17.
- Christoph Hochreiner, Philipp Waibel, [Michael Borkowski](#). “Bridging gaps in cloud manufacturing with 3D printing”. In: *Informatik 2016, 46. Jahrestagung der Gesellschaft für Informatik*. Lecture Notes in Informatics vol. 259. 2016, pp. 1623–1626.
- Olena Skarlat, [Michael Borkowski](#), Stefan Schulte. “Towards a methodology and instrumentation toolset for cloud manufacturing”. In: *1st International Workshop on Cyber-Physical Production Systems (CPPS), Vienna, Austria*. IEEE. 2016, pp. 1–4.

### Unrefereed Papers

- [Michael Borkowski](#), Christoph Ritzer, Stefan Schulte. *Deterministic Witnesses for Claim-First Transactions*. 2018. DOI: 10.13140/RG.2.2.17480.37123. White Paper, Technische Universität Wien.
- Marten Sigwart, Christoph Hochreiner, [Michael Borkowski](#), Stefan Schulte. *FakeLoad: An Open-Source Load Generator*. Tech. rep. TUV-1942-2018-01. Distributed Systems Group, Technische Universität Wien, 2018.
- [Michael Borkowski](#), Christoph Ritzer, Daniel McDonald, Stefan Schulte. *Caught in Chains: Claim-First Transactions for Cross-Blockchain Asset Transfers*. 2018. DOI: 10.13140/RG.2.2.24191.25769. White Paper, Technische Universität Wien.