Dr. Norman Peitek

Postdoctoral Researcher

Education

2016–2022 **Dr. rer. nat.**, *University of Technology Chemnitz*, Germany, *Summa cum laude*
Thesis: A Neuro-Cognitive Perspective of Program Comprehension

2012–2014 **Master of Science**, *Otto von Guericke University Magdeburg*, Germany, *1.5 (Very Good)*
Major: Business Information Systems
Thesis: Exploration of Competitive Market Behavior Using Near-Real-Time Sentiment Analysis (1.1, Very Good)

2011 **Exchange Semester**, *University of Wisconsin—Stevens Point*, USA

2009–2012 **Bachelor of Science**, *Otto von Guericke University Magdeburg*, Germany, *1.7 (Good)*
Major: Business Information Systems
Thesis: Using the Orientation Sensor for GeoPointing on Indoor Maps (1.0, Very Good)

2009 **Exchange Student**, *Thompson Rivers University*, Canada

Experience

Vocational

Since 2022 **Postdoctoral Researcher**, *Saarland University, Saarland Informatics Campus*, Saarbrücken, Germany
Continuing and broadening our research on program comprehension with neuro- and physio-psychological methods.

2016–2021 **Doctoral Researcher**, *Leibniz Institute for Neurobiology*, Magdeburg, Germany
Researching program comprehension and programmer expertise with a novel perspective of fMRI and eye tracking.

Since 2014 **Co-Founder**, *futurestud.io*
Teaching developers technical skills on Android and web development.

2014–2016 **Software Consultant**, *Ultra Tendency*, Magdeburg, Germany
I worked as an IT Consultant on projects for medium to large businesses. My focus areas were mobile apps, especially Android, node.js and large business applications with C# .NET.

+49 391 6263 92152 • *norman@peitek.com* • *peitek.com*
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Student Assistance

2013–2014 **Student Intern**, *University of Wisconsin—Stevens Point*, USA
Year-long internship at the department of Web and Media Services. I was responsible of transferring old legacy software systems to new standard software in an advisory and technical role. The majority was re-implemented on SharePoint 2010.

2011, 2013 **Research Assistant**, *Otto von Guericke University Magdeburg*, Germany

2012 **Research Assistant**, *Berlin School of Economics and Law*, Germany

Other

2009 **Alternative Civilian Service**, *University Clinic Magdeburg*, Germany

Teaching

Lecturer

2022 **Software Engineering Research in the Neuroage (Seminar)**, *Saarland University*, Germany

2015, 2016 **Mobile and Distributed Systems**, *Bingen University of Applied Sciences*, Germany

Guest Lecture

2019, 2020 **Program Comprehension Research with Neuroscience Methods**, *University of Technology Chemnitz*, Germany

2019 **Program Comprehension Research with Neuroscience Methods**, *Saarland University*, Germany

Professional Service

Since 2022 Steering Committee: International Workshop on Eye Movements in Programming (EMIP)

2019–2021 Organizer: International Workshop on Eye Movements in Programming (EMIP)

Program Committees

2019, 2022 International Workshop on Eye Movements in Programming (EMIP)

2019 ACM Symposium on Eye Tracking Research & Applications (ETRA-ET4S)

2018 IEEE/ACM International Conference on Program Comprehension (ICPC)

Reviewer

2018–2022 Empirical Software Engineering (EMSE), Springer

2020–2022 Transactions on Software Engineering and Methodology (TOSEM), ACM

2022 Automated Software Engineering, Springer

2021 APSIPA Transactions on Signal and Information Processing

2020 eNeuro, Society for Neuroscience

2020 Computer Science Education, Taylor & Francis

2020 Cognitive Science, Wiley

2019 Transactions on Software Engineering (TSE), IEEE

2019 Human Brain Mapping, Wiley

2019 PLOS ONE, Public Library of Science

Awards

2021 **ACM SIGSOFT Distinguished Paper Award**, *International Conference on Software Engineering (ICSE)*

2019 **Best Tool Demo Award**, *International Conference on Program Comprehension (ICPC)*

2011–2014 **Full Study Scholarship**, *Friedrich Naumann Foundation for Freedom*

2012 **DASMA future award 2012 (nominated)**, *German speaking user association for software metrics and effort estimation (DASMA)*

2008 **Award for Excellent School Performance in Physics**, *German Physical Society*

2008 **Award for Outstanding Achievements in Physics**, *German Physical Society*

Languages

German Native proficiency

English Full professional proficiency

French Elementary proficiency

Publications

Total: 26, h-index: 9 (based on Google Scholar)

Dissertation

Norman Peitek. *A Neuro-Cognitive Perspective of Program Comprehension*. PhD thesis, University of Technology Chemnitz, 2022.

Book Chapters

Michael Hanke, Sebastiaan Mathôt, Eduard Ort, Norman Peitek, Jörg Stadler, and Adina Wagner. A Practical Guide to Functional Magnetic Resonance Imaging with Simultaneous Eye Tracking for Cognitive Neuroimaging Research. In *Spatial Learning and Attention Guidance*, pages 291–305. Springer US, 2020.

Refereed Journal Articles

Janet Siegmund, Norman Peitek, Sven Apel, and Norbert Siegmund. Mastering Variation in Human Studies: The Role of Aggregation. *Trans. Softw. Eng. Methodol.*, 30(1), December 2021.

Janet Siegmund, Norman Peitek, André Brechmann, Chris Parnin, and Sven Apel. Studying Programming in the Neuroage: Just a Crazy Idea? *Communications of the ACM*, 63(6):30–34, 2020.

Norman Peitek, Janet Siegmund, Sven Apel, Christian Kästner, Chris Parnin, Anja Bethmann, Thomas Leich, Gunter Saake, and André Brechmann. A Look into Programmers' Heads. *IEEE Transactions on Software Engineering (TSE)*, 46(4):442–462, 2020.

Refereed Conference Papers

Norman Peitek, Annabelle Bergum, Maurice Rekrut, Jonas Mucke, Matthias Nadig, Chris Parnin, Janet Siegmund, and Sven Apel. Correlates of Programmer Efficacy

and their Link to Experience: A Combined EEG and Eye-Tracking Study. In *Proc. Joint Meeting on Foundations of Software Engineering*, ESEC/FSE. ACM, 2022.

Norman Peitek, Sven Apel, Chris Parnin, André Brechmann, and Janet Siegmund. Program Comprehension and Code Complexity Metrics: An fMRI Study. **ACM SIGSOFT Distinguished Paper Award**. In *Proc. Int'l Conf. Software Engineering (ICSE)*. ACM, 2021. ACM SIGSOFT Distinguished Paper Award.

Norman Peitek, Janet Siegmund, and Sven Apel. What Drives the Reading Order of Programmers? An Eye Tracking Study. In *Proc. Int'l Conference Program Comprehension (ICPC)*, page 342–353. IEEE, 2020.

Norman Peitek, Sven Apel, André Brechmann, Chris Parnin, and Janet Siegmund. CodersMUSE: Multi-Modal Data Exploration of Program-Comprehension Experiments. **Best Tool Demo Award**. In *Proc. Int'l Conference Program Comprehension (ICPC)*, pages 126–129. IEEE, 2019.

Jennifer Bauer, Janet Siegmund, Norman Peitek, Johannes Hofmeister, and Sven Apel. Indentation: Simply a Matter of Style or Support for Program Comprehension? In *Proc. Int'l Conference Program Comprehension (ICPC)*, pages 154–164. IEEE, 2019.

Norman Peitek, Janet Siegmund, Chris Parnin, Sven Apel, Johannes Hofmeister, and André Brechmann. Simultaneous Measurement of Program Comprehension with fMRI and Eye Tracking: A Case Study. In *Proc. Int'l Symposium Empirical Software Engineering and Measurement (ESEM)*, pages 24:1–24:10. ACM, 2018.

Norman Peitek, Janet Siegmund, Chris Parnin, Sven Apel, and André Brechmann. Toward Conjoint Analysis of Simultaneous Eye-Tracking and fMRI Data for Program-Comprehension Studies. In *Proc. Int'l Workshop on Eye Movements in Programming*, pages 1:1–1:5. ACM, 2018.

Norman Peitek, Janet Siegmund, Chris Parnin, Sven Apel, and André Brechmann. Beyond Gaze: Preliminary Analysis of Pupil Dilation and Blink Rates in an fMRI Study of Program Comprehension. In *Proc. Int'l Workshop on Eye Movements in Programming*, pages 4:1–4:5. ACM, 2018.

Norman Peitek. A Neuro-Cognitive Perspective of Program Comprehension. In *Companion Proc. of Int'l Conf. on Software Engineering*, ICSE 2018, pages 496–499. IEEE, 2018.

Janet Siegmund, Norman Peitek, Chris Parnin, Sven Apel, Johannes Hofmeister, Christian Kästner, Andrew Begel, Anja Bethmann, and André Brechmann. Measuring Neural Efficiency of Program Comprehension. In *Proc. Joint Meeting on Foundations of Software Engineering*, ESEC/FSE, pages 140–150. ACM, 2017.

Others

André Neumann, Norman Peitek, André Brechmann, Karsten Tabelow, and Thorsten Dickhaus. Utilizing Anatomical Information for Signal Detection in Functional Magnetic Resonance Imaging. *WIAS Preprints*, 2021.

Arooba Aqeel, Norman Peitek, Sven Apel, Jonas Muche, and Janet Siegmund. Understanding Comprehension of Iterative and Recursive Programs with Remote Eye Tracking. In *Proc. Annual Conf. Psychology of Programming Interest Group (PPIG)*, page 17, 2021.

Norman Peitek, Janet Siegmund, Chris Parnin, Sven Apel, Johannes Hofmeister, Christian Kästner, Andrew Begel, Anja Bethmann, and André Brechmann. Neural Efficiency of Top-Down Program Comprehension. In *Proc. of Software Engineering (SE)*, pages 151–152. GI, 2018.

Norman Peitek, Janet Siegmund, and André Brechmann. Enhancing fMRI Studies of Program Comprehension with Eye-Tracking. In *Proc. Int'l Workshop on Eye Movements in Programming*, pages 22–23. Freie Universität Berlin, 2017.

Chris Parnin, Janet Siegmund, and Norman Peitek. On the Nature of Programmer Expertise. In *Proc. Annual Conf. Psychology of Programming Interest Group (PPIG)*, pages 109–118, 2017.

Johannes Hofmeister, Jennifer Bauer, Janet Siegmund, Sven Apel, and Norman Peitek. Comparing Novice and Expert Eye Movements during Program Comprehension. In *Proc. Int'l Workshop on Eye Movements in Programming*, pages 17–18. Freie Universität Berlin, 2017.

Robert Neumann, Norman Peitek, and Juan José Cuadrado-Gallego. Geopointing on Indoor Maps: Enhancing Compass Sensor Accuracy to Enable Interactive Digital Object Selection in Smartphone-Based Map Applications. In *Proc. Int'l symposium on Mobility Management and Wireless Access*, pages 63–70. ACM, 2012.