Alexander Nolte

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Research interest

My research focuses on understanding and supporting collaboration in the context of corporations, communities, (IT) entrepreneurship, higher education and civic engagement. To that end, I combine AI driven quantitative analytics and qualitative methods to analyze and support collaborative settings. My work takes place at the intersection between human computer interaction, business informatics and software engineering and is grounded in socio-technical systems theory. It extends to the following two main interconnected areas:

Computational methods to analyze and support human collaboration: I employ artificial intelligence (AI) to study and support collaboration in organizational settings, open source communities and time-bounded events such as hackathons. Related to organizational settings, I utilize machine-learning to analyze collaboratively created artifacts such as process models to provide automated feedback about the current collaboration state in a workshop setting. In the context of open source, I employ AI driven analytics to study the tenure of contributors on GitHub utilizing socio-capital theory as a lens. With respect to hackathons, I focus on fostering their impact beyond singular events organized in a specific context. To that end I use a mixed method approach conducting qualitative case studies to identify individual and team related aspects that are associated with the sustainability of hackathon outcomes in the context of corporate, entrepreneurial and scientific events before utilizing quantitative methods, such as big data analytics, to identify quantitative factors that indicate project continuation. Based on these studies I have developed a multi-level methodological open-source framework to help hackathon planners navigate design decisions to make their event a success (https://hackathon-planning-kit.org/). I am currently working to expand this framework towards online and hybrid settings by adding socio-technical support for hackathon organizers and participants.

Human-AI-collaboration: In this area I study and develop systems that facilitate human-vehicle interaction in the context of autonomous vehicles. Focusing on the aspect of trust from a planned behavior perspective I conduct studies with systems in a ride-hailing context that cover the vehicle approaching the user, allowing the user to control various parameters during the ride and the user disembarking. I also co-develop RuM (https://rulemining.org/), an open source toolkit for analysts that utilizes AI to visualize (business) processes based on event logs and that provides advanced analytics to identify issues and bottlenecks.

Teaching method

In my courses, my aim is to support students in acquiring much-needed skills for the 21st century learner, such as critical thinking, problem solving and data literacy skills. At the same time, I encourage students to learn from and with each other in a social arena. To that end, I follow a project-based learning approach where students form teams and apply methods they learned during their respective course to a project of their choice. For each step students received feedback from the teaching staff. In addition, students present their current project stages to their peers at multiple workshops during the semester where they also receive feedback from their peers. For teaching, I combine formal lectures for transferring information and hands-on workshops to foster communication and knowledge building on common ground. During the pandemic, I applied an online first approach which focuses on short instruction videos about the different topics and methods covered in each course combined with additional self-study material and online workshops during which students can ask questions and engage in discussion about the topic of the lecture and their current project progress.

Education

2009 – 2014	University of Duisburg-Essen **Dr. rer. nat. (PhD in Information Systems)** Thesis: Flexibilisierung kollaborativer Prozessmodellierung durch den Einsatz webbasierter Modellierungswerkzeuge (German) The thesis is about a socio-technical approach to allow stakeholders to continuously participate in business process analysis and design. The approach intertwines co-located workshops with asynchronous annotation phases.
1999 – 2008	Technical University Dortmund **Dipl.-Inform. (MSc equivalent in Computer Science)** Thesis: Konzept und Prototyp eines Usability orientierten webbasierten Editors für semi-strukturierte Modellierung (German) The thesis is about the development and evaluation of one of the first, purely web-based process modeling editors. The evaluation focused on usability aspects of transferring desktop- into web applications.

Work experience

2020 – present	Associate Professor	University of Tartu, Estonia
2020 – present	Adjunct Associate Professor	Carnegie Mellon University, Pittsburgh, USA
2018 – 2020	Lecturer (Assistant Professor)	University of Tartu, Estonia
2018 – 2020	Adjunct Assistant Professor	Carnegie Mellon University, Pittsburgh, USA
2017 – 2018	Research Associate	Carnegie Mellon University, Pittsburgh, USA
2017 – 2018	Postdoctoral Fellow	University of Pittsburgh, USA
2017	Adjunct Faculty	University of Pittsburgh, USA
2016 – 2017	Visiting Research Fellow	University of Pittsburgh, USA
2016 – 2017	Temporary Research Programmer	Carnegie Mellon University, Pittsburgh, USA
2016 – 2017	Online Tutor	EURO-FH University of Applied Sciences, Hamburg, Germany
2014 – 2016	Postdoctoral Research Fellow	Ruhr-Universität Bochum, Germany
2009 – 2014	Researcher	Ruhr-Universität Bochum, Germany
2013	Visiting Research Fellow	Queensland University of Technology, Brisbane, Australia
2011 – 2018	Process Management Consultant and Coach	
2008 – 2009	Co-founder and Front-end Developer	fromatob.com

Selected publications

Journals	**Nolte, A.**, Chounta, I. - A.. & Herbsleb, J. D. (2020). What Happens to All These Hackathon Projects? - Identifying Factors to Promote Hackathon Project Continuation. *Proc. ACM Hum.-Comput. Interact. 4*, CSCW2, Article 145 (October 2020), 26 pages.
	Nolte, A., Hayden, L. B. & Herbsleb, J. D. (2020). How to Support Newcomers in Scientific Hackathons - An Action Research Study on Expert Mentoring. *Proc. ACM Hum.-Comput. Interact. 4*, CSCW1, Article 25 (May 2020), 23 pages.
	Jahnke, I., Meinke-Kroll, M., Todd, M., & **Nolte, A.** (2020). Exploring Artifact-Generated Learning with Digital Technologies: Advancing Active Learning with Co-design in Higher Education Across Disciplines. *Technology, Knowledge and Learning*.
	Pe-Than, E. P. P., **Nolte, A.**, Filippova, A., Bird, C., Scallen, S. & Herbsleb, J. D. (2020). Corporate Hackathons, How and Why? A multiple case study of motivation, project proposal and selection, goal setting, coordination, and project continuation. *Human-Computer Interaction*.
	Pe-Than, E. P. P., **Nolte, A.**, Filippova, A., Bird, C., Scallen, S. & Herbsleb, J. D. (2019). Designing Corporate Hackathons With a Purpose. *IEEE Software 36*. 1, 15–22.
	Nolte, A., Pe-Than, E. P. P., Filippova, A., Bird, C., Scallen, S. & Herbsleb, J. D. (2018). You Hacked and Now What? - Exploring Outcomes of a Corporate Hackathon. *Proc. ACM Hum.-Comput. Interact. 2*, CSCW, 129:1-129:23.
	Chounta, I. A., **Nolte, A.**, Hecking, T., Farzan, R., & Herrmann, T. (2017). When to Say "Enough is Enough!": A Study on the Evolution of Collaboratively Created Process Models. *Proc. ACM Hum.-Comput. Interact 1.*, CSCW, 33:1-33:21.
	Nolte, A., Bernhard, E., Recker, J., Pittke, F., & Mendling, J. (2016). Repeated Use of Process Models: The Impact of Artifact, Technological and Individual Factors. *Decision Support Systems*, 88, 98–111.
Conferences	van der Aa, H., Balder, K. J., Maggi, F. M., & **Nolte, A.** (2020). Say It in Your Own Words: Defining Declarative Process Models Using Speech Recognition. In: *Business Process Management Forum. BPM 2020* (pp. 51-67). Springer.
	Alman, A., Di Ciccio, C., Haas, D., Maggi, F. M., & **Nolte, A.** (2020) Rule Mining with RuM. In: *2nd International Conference on Process Mining* (pp. 114-121). Springer.
	Medina Angarita, M. A., & **Nolte, A.** (2020). What do we know about hackathon outcomes and how to support them? – A systematic literature review. In: *Collaboration Technologies and Social Computing* (pp. 50-64). Springer.
	Affia, A. O., **Nolte, A.**, & Matulevičius, R. (2020). Developing and Evaluating a Hackathon Approach to Foster Security Learning. In: *Collaboration Technologies and Social Computing* (pp. 3-19). Springer.
	Qiu, H. S., **Nolte, A.**, Brown, A., Serebrenik, A., & Vasilescu, B. (2019). Going farther together: The impact of social capital on sustained participation in open source. In: *International Conference on Software Engineering*. IEEE (**ACM SIGSOFT Distinguished Paper Award**).
	Sirgmets, M., Milani, F., **Nolte, A.**, & Pungas, T. (2018). Designing Process Diagrams – A Framework for Making Design Choices When Visualizing Process Mining Outputs. In: *Proceedings of the 26th International Conference on Cooperative Information Systems*. Springer.
	Herrmann, T., **Nolte, A.**, & Prilla, M. (2016). Socio-technical Process Design—The Case of Coordinated Service Delivery for Elderly People. In: *Blurring the Boundaries Through Digital Innovation* (pp. 217-229). Springer (**Special award Sandro D'Atri**).
Workshops and reports	**Nolte, A.**, Pe-Than, E. P. P., Affia, A. O., Chaihirunkarn, C., Filippova, A., Kalyanasundaram, A., Medina Angarita, M. A., Trainer, E., & Herbsleb, J. D. (2020). How to organize a hackathon - A planning kit. *arXiv preprint arXiv:2008.08025*.
	Nolte, A. (2019). Touched by the Hackathon: A Study on the Connection between Hackathon Participants and Start-Up Founders. In: *International Workshop on Software-intensive Business 2019: Start-ups, Ecosystems and Platforms* (pp. 31-36). ACM.

Teaching experience (from 2015)

Lecturer:

2019 – 2020	Human Computer Interaction (undergraduate)	University of Tartu
2018 – 2020	Human Computer Interaction (graduate)	University of Tartu
2018 – 2020	Digital Product Management Industry Project (graduate)	University of Tartu
2018 – 2020	Digital Product Design Introductory Project (graduate)	University of Tartu
2017	Implementation of information systems (undergraduate)	University of Pittsburgh
2014 – 2016	Process management and innovation (graduate)	Ruhr-Universität Bochum

Co-lecturer:

2014 – 2015	Project management (undergraduate)	Ruhr- Universität Bochum
2015	Software engineering (undergraduate)	Ruhr- Universität Bochum
2015	Groupware and knowledge management (graduate)	Ruhr- Universität Bochum

Seminars and individual lectures:

2019	"Qualitative Research – The Interview" for the course "Research in Educational Technology" (graduate)	University of Tartu
2013 – 2014	"Subject-Driven Role-Guided Externalization of Organizational Models" for the SURGEOM ERASMUS summer school	JKU Linz

Online tutor:

2016	Information management (graduate)	EURO-FH University of Applied Sciences
2016	Business engineering (graduate)	EURO-FH University of Applied Sciences

Student supervision (PhD and master level, from 2015)

2019	Anne Jääger – PhD student (ongoing), University of Tartu, Estonia
2019	Maria Angelica Medina Angarita – PhD student (ongoing), University of Tartu, Estonia
2019	Abasi-Amefon Obot Affia – PhD student (ongoing), University of Tartu, Estonia
2020	Hanna Tagen (Master, ongoing, University of Tartu, Estonia), Kadri Fink (Master, ongoing, University of Tartu, Estonia), Tähe-Kai Tillo (Master, ongoing, University of Tartu, Estonia), Ahmed Samir Imam Mahmoud (Master, ongoing, University of Tartu, Estonia), Andrew Bennett (Master, ongoing, University of Tartu, Estonia), Abdul Wahab (Master, ongoing, University of Tartu, Estonia)
2019	Alar Leemet (Master, University of Tartu, Estonia), Timo Soiunen (Master, University of Tartu, Estonia), Sofiya Demchuk (Master, University of Tartu, Estonia), Karl-Martin Uiga (Master, University of Tartu, Estonia)
2016	Isabella Rüsing (Master, Ruhr- Universität Bochum, Germany), Malte Brokkötter (Master, Ruhr- Universität Bochum, Germany)
2015	Darius Wolodzko (Master, Ruhr- Universität Bochum, Germany)

Professional services

Committees (from 2015):

2021	Mining Software Repositories Conference (hackathon track co-chair)
2021	26th International Conference on Collaboration Technologies and Social Computing (conference co-chair)
2020	25th International Conference on Collaboration Technologies and Social Computing (program co-chair)
2020	28th European Conference on Information Systems (program committee)
2020	15th International Conference on Global Software Engineering (program committee)
2020	6th Workshop on Socio-Technical Perspective in IS development @ CAiSE (program chair)
2020	12th International Conference on Subject-Oriented Business Process Management (program committee)
2020	Special Issue on Selected Topics on Socio-technical Perspective in Information Systems @ CSIMQ (guest editor)
2019	27th European Conference on Information Systems (program committee)
2019	27th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (registration chair)
2019	25th International Conference on Collaboration Technologies and Social Computing (program committee)
2019	14th International Conference on Global Software Engineering (program committee)
2019	20th Conference on Business Process Modeling, Development and Support (program committee)
2019	11th International Conference on Subject-Oriented Business Process Management (program committee)
2019	5th Workshop on Socio-Technical Perspective in IS development @ ECIS (program committee)
2018	International Workshop on Software-intensive Business 2019: Start-ups, Platforms and Ecosystems @ ESEC/FSE (program committee)
2018	ACM Conference on Supporting Groupwork (program committee)
2018	26th European Conference on Information Systems (program committee)
2018	30th International Conference on Advanced Information Systems Engineering (webmaster and social media chair)
2018	13th International Conference on Global Software Engineering (program committee)
2018	10th International Conference on Subject-Oriented Business Process Management (program committee)
2018	2nd Workshop on Hacking and Making at Time-Bounded Events: Current Trends and Next Steps in Research and Event Design @ CHI (organizer)
2018	4th Workshop on Socio-Technical Perspective in IS development @ CAiSE (program committee)
2017	Track on A sociotechnical approach for 21st century problems @ ECIS (associate editor)
2017	12th International Conference on Global Software Engineering (program committee)
2017	3rd Workshop on Socio-Technical Perspective in IS development @ CAiSE (program committee)
2016	11th International Conference on Global Software Engineering (publicity chair and program committee)
2015	Workshop on Collaboration Meets Interaction Surfaces @ ITS (program committee)

Reviews:

Journals	Business Information Systems Engineering (BISE), IEEE Software, Group Decision and Negotiation, Journal of Systems and Software, Software and Systems Modeling, Complex Systems Informatics and Modeling Quarterly, Information Systems Frontiers
Conferences	ACM Conference on Human Factors in Computing Systems (CHI), ACM Conference on Computer-Supported Cooperative Work (CSCW), ACM International Conference on Supporting Group Work (Group), IEEE International Conference on Global Software Engineering (ICGSE), International Conference on Information Systems (ICIS), European Conference on Information Systems (ECIS), International Conference on Subject-Oriented Business Process Management (S-BPM-ONE), International Symposium on End-User Development (IS-EUD)

Invited talks

2020	Social aspects of computing: Supporting sustainable collaboration in hybrid settings (venia legendi) University of Tartu, Tartu, Estonia (27.01.)
2019	Hackathons – Current practice and missed opportunities University of Tennessee, Knoxville, TN, USA (15.11.)
2019	Hackathon outcomes and event design Oak Ridge National Laboratory (ORNL), Oak Ridge, TN, USA (14.11.)
2019	Hackathons – Current practice and missed opportunities IEEE Estonia Section Summer Seminar 2019, Roosta, Estonia (22.08.)
2019	Hackathons – Current practice and missed opportunities Johannes Kepler University Linz, Linz, Austria (23.05.)
2018	Designing hackathons with a purpose IEEE Estonia Section Summer Seminar 2018, Jäneda, Estonia (20.08.)
2016	Supporting sustained collaboration over time – A socio-technical approach University of Missouri, Columbia, MO, USA (28.10.)
2015	Collaboration on and interaction with models of socio-technical processes Middlesex University, London, UK (03.11.)

Academic self-administration

2019 – present	Erasmus+ Intereuropean Student Migration Coordinator for Partnership Agreements
2019 – present	Head of the executive Master specialization module "Product Design and Management"

Non-academic activities / outreach

2020	SC in the City Hackathon, online (05.11. – 09.11,,.) – co-organizer
2020	Cybersecurity Hackathon, online (23.10. – 25.10.) – co-organizer and mentor
2020	HACK@PEARC2020 hackathon, online (27.07. – 29.07.) – co-organizer
2020	Hello Future_ hackathon, USA and Arabat, Syria (23.05. – 30.05.) – juror
2020	The Global Hack, online (09.04. – 12.04.) – mentor
2019	Cloud HPC Hackathon @ SC19, Denver, CO, USA (18.11. – 20.11.) – co-organizer
2019	World of Code Hackathon, Pittsburgh, PA, USA (01.11. – 03.11.) – co-organizer and facilitator
2019	Cybersecurity Hackathon, Tartu, Estonia (11.10. – 13.10.) – co-organizer and mentor
2019	SGCI Hackathon @ PEARC18, Chicago, IL, USA (28.07. – 31.07.) – co-organizer
2018	Cloud HPC Hackathon @ SC18, Dallas, TX, USA (12.11. – 14.11.) – co-organizer
2018	SGCI Hackathon @ PEARC18, Pittsburgh, PA, USA (26.07. – 27.07.) – co-organizer

Open resources

2020	Hackathon Planning Kit – A web-based multi-level methodological framework to help prospective hackathon planners navigate the numerous design and planning decisions to make their event a success (https://hackathon-planning-kit.org/)
2020	RuM – An open source desktop application that provides a comprehensive set of declarative process mining tools in a single unified package that is easy to use for process mining novices and experts (https://rulemining.org/)

Grants and scholarships

2019	NUTIKAS program (Estonian Research Council)
	Applied research project *"Applied Research on Development of Autonomous Driving Lab for Level 4 Autonomy"* (Co-PI, WP7 – human vehicle interaction, 1.201.000 €)
2017	University of Pittsburgh
	Applied research project "*We are strong! Leveraging Information Technology to Empower Marginalized Communities"* (Co-PI, 28.000,00 $)
2017	Deutsche Forschungsgemeinschaft (DFG)
	Research fellowship for the project *Supporting sustained collaboration over time in hybrid collocated and online settings* at the University of Pittsburgh, PA, USA (PI, 103.249,80 €)
2013	German Academic Exchange Service (DAAD)
	Scholarship for a short-term research visit, Queensland University of Technology, Brisbane, Australia (PI, 5.256 €)
2008	German Federal Ministry for Economic Affairs and Energy (BMWi)
	eXist Business Start-up Grant, RWTH Aachen University, Germany (Co-PI, 11.600 €)

Languages

German – native language

English – speak fluently and read/write with high proficiency (C2)