Prof. Dr.-Ing. André Borrmann

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Director, TUM Georg Nemetschek Institute - AI for the Built World, Technical University of Munich

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Profile

André Borrmann develops artificial intelligence methods for the built environment: multi-agent frameworks built on large language models for generative design, deep learning for point cloud and image interpretation, machine learning for construction process analysis and, most recently, learned world models and agentic AI for robotized construction. He holds the Chair of Computing in Civil and Building Engineering at the Technical University of Munich and directs the TUM Georg Nemetschek Institute - AI for the Built World, TUM's central institute for artificial intelligence in the built environment. He is spokesperson of the DFG Research Unit 5672 on the information backbone of robotized construction and originator of the Fabrication Information Modeling (FIM) concept. He coauthored the 2015 BIM roadmap of the German Federal Ministry of Transport and is technical lead of ISO 7517 Level of Information Need.

Academic positions

since 2025	Director, TUM Georg Nemetschek Institute - AI for the Built World; Full Professor (W3) for Computing in Civil and Building Engineering, Technical University of Munich
2021 - 2022	Interim Director, TUM Georg Nemetschek Institute, Technical University of Munich
2014 - 2025	Chairman, TUM Center of Digital Methods for the Built Environment, Technical University of Munich
2012 - 2025	Full Professor (W3) for Computational Modeling and Simulation, Technical University of Munich
2011 - 2012	Associate Professor (W2) for Computational Modeling and Simulation, Technical University of Munich
2007 - 2011	Postdoc and head of the research group Construction Informatics, Chair of Computation in Engineering, Technical University of Munich

Education

2007	Dr.-Ing. (PhD), summa cum laude, Technical University of Munich. Dissertation: Computer Support for Collaborative Construction Engineering by Integration of Interactive Simulations and Spatial Databases
2003 - 2007	PhD scholarship, Chair of Construction Informatics, Technical University of Munich
2000 - 2001	Visiting student, Department of Computer Science, Universidad Politécnica de Madrid, Spain
1997 - 2003	Diploma in Civil Engineering, focus Construction Informatics (very good), Bauhaus-Universität Weimar, Germany

Awards and recognition

2026	SCP Excellence in Collaboration Award, International Society for Smart Construction and Production (SCP), for fostering collaboration and advancing innovation in the construction industry
2024 - 2026	World's Top 2% Scientists, Stanford University/Elsevier ranking, subfield Building & Construction (2026: top 1.2% career-long, top 0.8% single-year)
2026	Thorpe Medal, European Council of Computing in Construction (coauthor)
2024	Konrad Zuse Medal, German Construction Industry Federation (ZDB), for contributions to information technology in construction
2022	Smith Prize, European Council of Computing in Construction
2021	Thorpe Medal, European Council of Computing in Construction
2007	PhD Award, Technical University of Munich
	15 best-paper awards at international conferences and journals (2008 - 2026), among them ICCCBE, ECPPM, EG-ICE, CIB-W78, the European Conference on Computing in Construction, eSIM, the ISPRS TC I Mid-term Symposium and the ASCE Journal of Computing in Civil Engineering, mostly as coauthor.

Research areas

Artificial intelligence for the built environment (large language models and multi-agent frameworks, deep learning for point clouds and images, machine learning for construction processes, world models and robot learning); Building

Information Modeling and Fabrication Information Modeling; geometric modeling and processing; construction process modeling, monitoring and optimization; spatio-temporal query languages; Linked Data; pedestrian dynamics.

Publication record and selected publications

117 peer-reviewed journal papers, 332 peer-reviewed conference papers, 41 book chapters and 4 books (2006 - 2026).

1. Du, C.; Esser, S.; Nousias, S.; Borrmann, A. (2026): Text2BIM: Generating Building Models Using a Large Language Model-Based Multiagent Framework. *Journal of Computing in Civil Engineering* 40(2), 04025142. doi:10.1061/jccee5.cpeng-6386
2. Mehranfar, M.; Braun, A.; Borrmann, A. (2024): From dense point clouds to semantic digital models: End-to-end AI-based automation procedure for Manhattan-world structures. *Automation in Construction* 162, 105392. doi:10.1016/j.autcon.2024.105392
3. Pfitzner, F.; Braun, A.; Borrmann, A. (2024): From data to knowledge: Construction process analysis through continuous image capturing, object detection, and knowledge graph creation. *Automation in Construction* 164, 105451. doi:10.1016/j.autcon.2024.105451
4. Wu, J.; Nousias, S.; Borrmann, A. (2025): Design Healing framework for automated code compliance. *Automation in Construction* 171, 106004. doi:10.1016/j.autcon.2025.106004
5. Du, C.; Deng, Z.; Nousias, S.; Borrmann, A. (2025): Predictive modeling: BIM command recommendation based on large-scale usage logs. *Advanced Engineering Informatics* 68, 103574. doi:10.1016/j.aei.2025.103574

Current projects

More than 15 million euros raised in more than 30 competitively awarded projects since 2011, funded by the German Research Foundation (DFG), the European Union, German federal ministries, the Bavarian Research Foundation and industry.

2024 - 2028	**FOR 5672**: The information backbone of robotized construction. German Research Foundation (DFG), Research Unit. Spokesperson and lead of subproject A.
2024 - 2028	**AM2PM**: Additive to Predictive Manufacturing for Multistorey Construction Using Learning by Printing and Networked Robotics. EU, EIC Pathfinder. Principal investigator (TUM).
2020 - 2028	**TRR 277**: Additive Manufacturing in Construction. German Research Foundation (DFG), Transregio 277. Lead of subproject C04 on digital design, decision support and digital twin methods.
2023 - 2027	**PredictiveModeling**: AI-based automation of repetitive design steps in BIM modeling. Nemetschek SE. Principal investigator (TUM).
2024 - 2027	**AI4CADCAM**: AI-based processing of CAD models for automated planning of computer-aided manufacturing. Bavarian Ministry of Economic Affairs. Principal investigator (TUM).

Doctoral supervision

28 doctorates supervised to completion (2013 - 2025); 15 doctoral researchers under current supervision.

Service and standardization

2016 - 2021	Chair, German Association for Computing in Civil Engineering (GACCE)
2012 - 2015	Chair, European Group for Intelligent Computing in Engineering (EG-ICE)
Member	International Association for Automation and Robotics in Construction (IAARC); CIB Working Group 78: IT in Construction
Editorial	Advanced Engineering Informatics (Elsevier); International Journal of 3-D Information Modeling (IGI Global)
Standards	Technical lead, ISO 7517 Level of Information Need; ISO/TC 59/SC 13: Organization and digitization of information about buildings and civil engineering works; CEN/TC 442: Building Information Modeling; DIN working group NA 005-01-39 and VDI working group 2552: Building Information Modeling; buildingSMART International: Infra Room standards development, extending IFC for infrastructure
Policy	Coauthor of the BIM roadmap of the German Federal Ministry of Transport (2015); BIM4INFRA2020 project; National BIM competence center BIM Deutschland, since 2019; Member of the DIN Technical Council Building Information Modeling