



Vipin Singh

Data Science Researcher & Machine Learning Engineer

PhD Candidate in Data Science, Berliner Hochschule für Technik (BHT)

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Profile

Data science researcher with a background in mathematics and industrial software development. Experienced in building holistic evaluation protocols for machine learning models and managing research projects.

Experience

Research Associate (PhD Candidate), Data Science

Feb 2025 – present

Berliner Hochschule für Technik (BHT) • Berlin, Germany

- Multimodal deep learning models for automatic soil horizon description from profile images and metadata, with BGR.
- Spatiotemporal groundwater level prediction at unmonitored locations, with BGR.
- Continuation of the RIWWER work packages on time series modeling for urban wastewater management.

Student Research Assistant, Data Science

Dec 2023 – Jan 2025

Berliner Hochschule für Technik (BHT) • Berlin, Germany

- Machine learning models for time series forecasting in urban wastewater management.
- Evaluation protocols for predictive performance, model complexity and robustness to data perturbations.
- Coordination of the AI work package in the RIWWER research project.

Software Developer, Industrial Image Processing

Oct 2018 – Aug 2022

NeuroCheck GmbH • Stuttgart, Germany

- Image processing and computer vision algorithms for industrial quality inspection systems (C#, .NET).
- Custom image processing modules and plugins for the NeuroCheck software.
- Tailored solutions for clients together with engineers and quality assurance specialists.

Intern, System Integration

May 2016

Thinking Objects GmbH • Stuttgart, Germany

Education

PhD in Data Science (ongoing)

Feb 2025 – present

Berliner Hochschule für Technik (BHT)

- Supervisor: Prof. Dr. Felix Bießmann

M.Sc. Data Science

Oct 2022 – Jan 2025

Berliner Hochschule für Technik (BHT)

- Thesis: *Time Series Modeling for Urban Water Management*
- Final grade: 1.0 (German scale, 1.0 is best)

B.Sc. Mathematics

Sep 2018 – Aug 2022

Hochschule für Technik Stuttgart

- Thesis: *Development of a Deflectometry-based Inspection System for Reflective Surfaces*
- Final grade: 1.3 (German scale, 1.0 is best)

Research Projects

Groundwater level prediction at unmonitored locations (2025–present, with BGR)

SoilNet, AI-assisted soil horizon description (2025–present, with BGR)

[Live demo](#) • [Code](#) • [BGR](#)

RIWWER, resilient forecasting for urban sewer systems (2023–present, with University of Duisburg-Essen and partners)

[Live demo](#) • [Code](#) • [Project](#)

Publications

1. **Vipin Singh**, Joey Prüssing, Teodor Chiaburu, Einar Eberhardt, Sina Hesse, Stefan Broda, Frank Haußer, Felix Bießmann. *SoilNet App: AI-Assisted Expert-level Annotations of Soil Horizons*. IJCAI-ECAI 2026, Demo Track, 2026. [doi:10.24963/ijcai.2026/993](#)
2. **Vipin Singh**, Tianheng Ling, Peter Ghaly, Felix Grimmeisen, Gregor Schiele, Felix Bießmann. *A Resilient Solution for Sewer Overflow Monitoring Across Cloud and Edge*. IJCAI-ECAI 2026, Demo Track, 2026. [doi:10.24963/ijcai.2026/994](#)
3. **Vipin Singh***, Teodor Chiaburu*, Einar Eberhardt, Stefan Broda, Joey Prüssing, Frank Haußer[†], Felix Bießmann[†]. *SoilNet: A multimodal multitask model for hierarchical classification of soil horizons*. Geoderma, 2026. [doi:10.1016/j.geoderma.2026.117684](#) (*equal contribution; [†]equal supervision)
4. Teodor Chiaburu, **Vipin Singh**, Frank Haußer[†], Felix Bießmann[†]. *Uncertainty-Guided Expert-AI Collaboration for Efficient Soil Horizon Annotation*. ECAI 2025 Workshop, 2025. [arXiv:2509.24873](#) ([†]equal supervision)
5. Tianheng Ling*, **Vipin Singh***, Chao Qian, Felix Bießmann, Gregor Schiele. *Automated Energy-Aware Time-Series Model Deployment on Embedded FPGAs for Resilient Combined Sewer Overflow Management*. IEEE ISC2 2025, 2025. [doi:10.1109/ISC266238.2025.11293267](#) (*equal contribution)
6. **Vipin Singh**, Tianheng Ling, Teodor Chiaburu, Felix Bießmann. *Evaluating Time Series Models for Urban Wastewater Management: Predictive Performance, Model Complexity and Resilience*. SpliTech 2025, 2025. [doi:10.23919/SpliTech65624.2025.11091801](#)
7. **Vipin Singh**, Tianheng Ling, Teodor Chiaburu, Felix Bießmann. *Data-driven Modeling of Combined Sewer Systems for Urban Sustainability: An Empirical Evaluation*. KI 2024 Workshop, 2024. [arXiv:2408.11619](#)

Skills and Languages

Programming: Python, C#, Java

Machine learning: PyTorch, scikit-learn, OpenCV, pandas, NumPy

Tools: Git, Linux, Docker, Kubernetes

Languages: German (native), English (fluent), Hindi (proficient)