

# Derck Prinzhorn

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## Profile

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Co-founder of Wisr, an education technology start-up focused on empowering teachers and students. Additionally, I work as AI Architect with a strong technical background and 2 years of experience designing and implementing AI reference architectures, particularly for AI, MLOps and AI security. Gained diverse research experience through several research internships, including work on conformal prediction, which led to a publication in PMLR.

## Education

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| <b>University of Amsterdam</b><br><i>Master of Science in Artificial Intelligence (Grade: 8.0/10)</i>  | 2023 - 2026<br>Amsterdam |
| <ul style="list-style-type: none"><li>• <b>Relevant Coursework:</b> Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Information Retrieval, Interpretability &amp; Explainability.</li></ul>       |                          |
| <b>University of Amsterdam</b><br><i>Bachelor of Science in Artificial Intelligence (Grade: 8.2/10)</i>  | 2020 - 2023<br>Amsterdam |
| <ul style="list-style-type: none"><li>• <b>Relevant Coursework:</b> Programming, Linear Algebra, Calculus, Bayesian Statistics, Machine Learning, Reinforcement Learning, Computer Vision, Natural Language Processing, Information Retrieval.</li></ul> |                          |
| <b>Het Amsterdams Lyceum</b><br><i>VWO Gymnasium</i>   | 2014 - 2020<br>Amsterdam |

## Industry experience

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| <b>Co-Founder</b><br><i>Wisr</i>   | Sep 2024 – present<br>Amsterdam  |
| <ul style="list-style-type: none"><li>• Building Wisr, an AI-driven platform that helps students prepare for exams through personalized learning and adaptive training.</li></ul>  |                                  |
| <b>AI Architect</b><br><i>Politie Nederland</i>  | Apr 2023 – present<br>Utrecht    |
| <ul style="list-style-type: none"><li>• Developed a strategy for defining topics in AI reference architecture.</li><li>• Created detailed reference architectures for AI, MLOps and AI security, incorporating industry best practices.</li><li>• Worked with TOGAF and SAFe frameworks to guide architecture design and implementation.</li><li>• Collaborated with cross-functional teams, including the Cloud &amp; Big Data team (CBD), the Hub for Advanced Analytics and AI (HAAI), the Quality and Risk Management System for Algorithms and AI (KRAAI) and the Police AI Lab (NPAI), to integrate platform considerations, maintain quality and risk standards, and align AI solutions with organizational objectives.</li></ul> |                                  |
| <b>Software Engineer</b><br><i>LeerLevels</i>  | Oct 2021 – Jan 2023<br>Amsterdam |
| <ul style="list-style-type: none"><li>• Developed grading algorithms, search engines, and recommendation systems.</li><li>• Supervised an app development project, resulting in an MVP mobile app.</li></ul>   |                                  |

## Research experience

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| <b>Research Intern</b><br><i>The Netherlands Cancer Institute</i>   | Oct 2024 – Feb 2025<br>Amsterdam |
| <ul style="list-style-type: none"><li>• Worked on AI for radiotherapy, supervised by Stefanos Achlatis.</li></ul> |                                  |
| <b>Research Intern</b><br><i>University of Amsterdam</i>  | Oct 2024 – Feb 2025<br>Amsterdam |
| <ul style="list-style-type: none"><li>• Worked on benchmarking physics in video generation models.</li></ul>      |                                  |
| <b>Research Intern</b><br><i>Supervised Program for Alignment Research (SPAR)</i>                                 | Jul 2024 – Oct 2024<br>Remote    |

- Worked on AI Control, focusing on safety techniques to detect and mitigate suspicious outputs using trusted and untrusted models, supervised by Aryan Bhatt, alignment researcher at Redwood Research.
- Worked with red and blue teaming strategies to identify and mitigate backdoors.
- Gained experience in caching strategies, cost-effective prompting methods, and reproducing academic papers.

### Research Intern

Mar 2024 – Jun 2024

*Deltares*

*Utrecht*

- Researched conformal prediction methods for discharge forecasting, supervised by Jing Deng and Hans Korving.
- This involved implementing appropriate methods, evaluating their performance and explaining them to meteorologists.

### Research Intern

Jan 2024 – May 2024

*University of Amsterdam*

*Amsterdam*

- Researched uncertainty quantification methods, supervised by Putri van der Linden and Alexander Timans. Specifically, we introduced a novel perspective on conformal prediction for time series.
- Paper got accepted to COPA, a workshop with a focus on conformal prediction and published in PMLR.

## Academic work

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### NeurIPS Poster

Oct 2024

*Reproducibility Study of FairAC*

- Presenting as a poster at the Neural Information Processing Systems (NeurIPS) 2024 conference.

### Workshop Paper

June 2024

*Conformal time series decomposition with component-wise exchangeability*

- Accepted to the 13th Symposium on Conformal and Probabilistic Prediction with Applications (COPA 2024) and published in the Proceedings of Machine Learning Research (PMLR 2024).

### Journal Paper

June 2024

*Reproducibility study of FairAC*

- Published in the Transactions on Machine Learning Research (TMLR 2024) and accepted to the Machine Learning Reproduction Challenge (MLRC2023).

### Bachelor Thesis

June 2023

*Benchmarking conformal prediction methods for time series regression*

## Honors and awards

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### AmsterdamAI Thesis Award Winner

- Awarded for outstanding bachelor thesis on conformal prediction for time series.

## Teaching

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### Information Visualization

Spring 2023

*Teaching assistant for BSc course at UvA*

### Cognitive Modeling (Reinforcement Learning)

Spring 2023

*Teaching assistant for BSc course at UvA*

### Datastructures and Algorithms

Winter 2022

*Teaching assistant for BSc course at UvA*

### Machine Learning Project

Winter 2022

*Teaching assistant for BSc course at UvA*

### Introduction to Machine Learning

Fall 2022

*Teaching assistant for BSc course at UvA*

### Bayesian Statistics for Machine Learning

Fall 2022

*Teaching assistant for BSc course at UvA*

## Volunteering and organizing

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<b>Stichting Hoormij</b> <i>Board member</i>	Mar 2025 – present Houten
<ul style="list-style-type: none"><li>Focusing on implementing innovations in way of working, brand, offerings and use of technology.</li></ul>	
<b>Forward Incubator</b> <i>Startup Consultant</i>	Dec 2024 – present Amsterdam
<ul style="list-style-type: none"><li>Forward-Inc is an Amsterdam-based, internationally operating organization devoted to supporting newcomers in pursuing their entrepreneurial ambitions.</li><li>As a consultant, I support the participating entrepreneur during the incubator program.</li></ul>	
<b>AI Safety Amsterdam (AISA)</b> <i>Member</i>	Sep 2023 – present Amsterdam
<b>Google Developer Student Clubs UvA</b> <i>Member</i>	Dec 2023 – Jun 2024 Amsterdam
<b>Foundation Dutch Nao Team</b> <i>Vice chair</i>	Jul 2023 – Mar 2024 Amsterdam
<ul style="list-style-type: none"><li>Refined board processes, managed recruitment, and developed partnerships</li></ul>	
<b>Foundation Dutch Nao Team</b> <i>Machine Learning Engineer</i>	Sep 2022 – Jan 2024 Amsterdam
<ul style="list-style-type: none"><li>Developed AI models for pose classification, object detection, sound detection and reinforcement learning, supervised by Arnoud Visser.</li><li>Managed team activities, project backlogs and led scrum teams, resulting in 5x more members and a novel robot framework built from scratch in Rust.</li></ul>	
<b>Programme Committee AI UvA</b> <i>Member</i>	Sep 2021 – Apr 2023 Amsterdam
<ul style="list-style-type: none"><li>Contributed to AI program discussions, course evaluations, and resolving student-teacher issues</li></ul>	
<b>Stichting Hoormij</b> <i>Board Advisor</i>	Jun 2021 – May 2023 Houten
<ul style="list-style-type: none"><li>Focused on tinnitus and innovation strategies within the organization.</li></ul>	
<b>Tinnitus Jong Netwerk, Stichting Hoormij</b> <i>Secretary</i>	Jan 2021 – Apr 2022 Houten
<ul style="list-style-type: none"><li>Established a committee for young people with tinnitus.</li></ul>	
<b>Stichting Studiezalen</b> <i>Mentor</i>	Feb 2020 – Oct 2021 Amsterdam
<ul style="list-style-type: none"><li>Mentored high school students in coaching and homework tutoring.</li></ul>	
<b>School's cool</b> <i>Mentor</i>	Oct 2020 – Aug 2021 Amsterdam
<ul style="list-style-type: none"><li>Mentored primary school students during their transition to high school, while managing language and arithmetic backlogs and home situation.</li></ul>	

## Projects

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<b>GPT-4 Bash Shell Scaffold</b>   <i>Python, GPT-4, Bash</i>	June 2024
<ul style="list-style-type: none"><li>Developed a Python scaffold integrating GPT-4 to generate and execute bash commands based on user prompts, with safety monitoring and result interpretation.</li><li>Implemented a <code>Generator</code> and <code>Monitor</code>, supporting both streaming and non-streaming responses, with options for command validation and cancellation.</li></ul>	
<b>Interpreting Vision Transformers Under Attack</b>   <i>Python, ViT Prisma, AutoCircuit</i>	June 2024
<ul style="list-style-type: none"><li>Conducted an analysis of Vision Transformers (ViTs) under adversarial attacks, including attribution analysis and circuit extraction for image classification tasks.</li><li>Implemented Edge Attribution Patching (EAP) and explored logit attribution, revealing significant differences in activation patterns between clean and adversarial images.</li></ul>	

**AI Safety Hackathon, 2nd place** | *LLMs, SAEs, TransformerLens*

November 2023

- Developed a novel method to inspect, reverse engineering and steer Large Language Models.
- Our team achieved second place out of 8 teams.

**Robotics Hackathon ERF2022, 2nd place** | *Python, ROS2, Robotics*

June 2022

- Created software for Lely Juno robot, achieving second place among robotics master students.

## Skills

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**Languages:** Dutch (Native), English (Professional)

**Programming Languages:** Python

**Data Science and Machine Learning:** Scientific Libraries - Numpy, Pandas, Scipy, Matplotlib, Astropy; ML Frameworks - Scikit-learn, PyTorch, TensorFlow, OpenCV, Jax, Statsforecast

**Databases:** SQL - PostgreSQL, MySQL, SQLite; NoSQL - JSON, Firebase (Cloud Firestore); Graph - Neo4j

**Development and API Tools:** API Development - Flask, Fastapi, Postman; Development Tools - Jupyter, GitHub, Git, Bash shell, Docker, Kubernetes

**MLOps:** Experiment Tracking - MLflow, Weights & Biases, Neptune; Orchestration - Metaflow, Kubeflow, Airflow