Nikolaus Holzer

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EDUCATION

Columbia University	New York, US
M.S. in Computer Science,	Exp May 2025
Columbia University	New York, US
B.A. in Computer Science, **GPA: 3.73**	May 2024

- <u>Honors:</u> Academic scholarship, Dean's List

Institut d'études Politiques (IEP) de Paris	Paris, FR
B.A. in Economics, **GPA: 4.00**	May 2024

TECHNICAL SKILLS

Languages: C/C++, Python, R, Java, JavaScript, Haskell
Learning: RL, EoE/ MoE, Formal Verification, Code Generation, Network Architecture, DL Agents
Vision and Graphics: 3D Reconstruction, Point Cloud Generation, Mirror Segmentation, Detection

EXPERIENCE

IBM Research, Research Assistant	New York, US
Co-design of resistive processing units (RPU) Configuration and Deep Learning Architecture	Oct 2024 – Present

- Improving analog in-memory compute capabilities by designing RPUs to create robust energy-efficient high-performance AI solutions
- Co-designing deep learning architecture and RPUs using neural architecture search (NAS) and IBM AIHWKit to account for inherent nonlinearities of analog computing

Columbia University, Research Assistant	New York, US
Formal Verification, Program Synthesis, and AI	Jan 2024 – Present

- Used formal synthesis methods to increase the safety and predictability of LLM-generated code
- Facilitated using natural language to generate complex arbiters with LLMs

Columbia University, Research Assistant	New York, US
Deep Reinforcement Learning for Finance	Aug 2023 – Present

- Leading RA on a SIRS/STAR-funded research project exploring methods for enhancing understanding of code and tabular data representations in LLMs
- Developing massive parallelization framework for RL trading algorithms, improving the stability of RL methods
- Managing a team of 6 researchers to develop and run a competition for financial AI at ICAIF 24

Columbia University, Course Assistant, Data Structures and Algorithms	New York, US
CA/TA	Sep 2023 – May 2024

- Helped administer a class for 400 students; communicated important information between students and professors
- Taught students in review sessions during weekly office hours and led recitations

Baqend, Full Stack Developer	Hamburg, DE
Back / Front End Developer Intern	Aug 2020 – Sep 2021

- Created proof of concept full stack applications for 5 large enterprise clients
- Assisted and communicated with 10 enterprise clients, serving millions of users weekly