Zachary Eichenberger

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Education

University of Michigan, Ann Arbor Expected Graduation: May 2024
Master of Science in Computer Science *GPA 4.0*

- Relevant Coursework: Information Retrieval, Databases, Advanced Computer Vision, Cryptography, Generative AI systems, Ethics in AI and Robotics, Algorithms, Machine learning theory, Compilers

University of Michigan, Ann Arbor Graduated: May 2023
Bachelor of Science in Computer Science, Minor in Mathematics *GPA: 3.9*

- Relevant Coursework: Natural Language Processing, Differential Equations, Machine Learning, Computer Science Theory, Numerical Methods, Compilers, Discrete Mathematics, Linear Algebra, Software Engineering

Experience

Undergraduate & Graduate Researcher Sept. 2022 – Present
University of Michigan, LAUNCH lab *Ann Arbor, MI*

- Lead year–long project to boost Large Language Model coherence and fluency via novel decoding algorithms.
- Analyzed data, developed hypotheses and experiments using GPT 2 and 3, communicated these results within research group on weekly basis.

Research Intern May. 2022 – Aug. 2022
IBM Research, Scalable Knowledge Intelligence Team *San Jose, CA*

- Worked closely with adjacent research teams, producing biweekly reports to identify and patch weaknesses in IBM PDF understanding tech.
- Created novel text-image-fusion algorithms for IBM table identification and extraction, reducing error rate within IBM Table Extraction by 60%.

Undergraduate & Graduate Researcher Jan. 2022 – Present
University of Michigan, Future of Programming Lab *Ann Arbor, MI*

- Invented novel methods for code generation, operating directly on abstract syntax tree (AST) for improved robustness and enforcing correctness invariants using reinforcement learning model and graph neural nets
- Created weekly reports using WanB, presented findings updates and recommendations at biweekly meeting.
- Engineered strongly typed interpreter from the ground up in OCaml, with recursive editing system.

Intern & Intern Cohort Leader May. 2021 – Aug. 2021
IBM Research *San Jose, CA (Remote)*

- Designed and ran months-long experiment evaluating noise-robust learning and dataset cleaning algorithms using Pytorch and Scikit-learn; trained and evaluated 100+ models on NLP datasets
- Created dataset cleaning module for Open-source project, Text Extensions for Pandas. Made 100+ commits, and became #4 contributor on project
- Created state of the art dataset error detection algorithms using novel clustering approach to detect systematic errors present in dataset labels, resulting in significant boost over previous methods.

Research Assistant January 2021 – June 2021
Smart and Sustainable Automation Lab *Ann Arbor, MI*

- Developed low-cost 3d printer fault detection sensor. Co-inventor on pending patent, and Co-author on paper.

Intern May. 2020 – Aug. 2020
IBM Research *Ann Arbor, MI*

- Independently developed portion of Open-source library (in Python) to ingest data from scanned tables
- Automated regression testing using Travis CI and documentation using Sphinx Auto documentation

Technical Skills

Programming Languages: Python, C++, OCaml, Golang, SQL, Java, JavaScript, Matlab, Rust
Skills: Unix Systems, Docker, Git, Sphinx Auto-documentation, Travis CI, JUnit, Pytest, PyTorch, Tensorflow, Huggingface transformers, Spark, Gym, Scikit-learn, Langchain
Languages: Bilingual proficiency in French