Alexander Brady

bradya [at] ethz [dot] ch | github.com/alexander-brady | Zurich, Switzerland (C-Permit) | US Citizen

Education

ETH Zurich — Zurich, Switzerland
Master of Science, Computer Science — *Expected Feb 2027*
Bachelor of Science, Computer Science — *Sep 2021 - Aug 2024*

Purdue University — West Lafayette, IN, USA
Graduate Exchange, Computer Science — *Aug 2024 - Dec 2024*

Experience

ETH AI Center — Zurich, Switzerland
Affiliate Graduate Researcher | LRE Lab — *Jun 2025 - Present*
- Built scalable pipeline to evaluate vision-language models on 100K+ multimodal counting tasks
- Parallelized benchmarking on a GPU cluster, maximizing throughput with efficient input batching
- Developed Python library to visualize text to image attention patterns in vision-language models

Purdue University — West Lafayette, IN, USA
Graduate Researcher | Purdue NLP Group — *Sep 2024 - May 2025*
- Developed LLM-guided framework for large-scale political ad annotation with no manual labels
- Synthesized an interpretable topic taxonomy, improving human-rated label quality by 2.3x
- Trained downstream models to uncover demographic-level messaging patterns on 8k electoral ads

Research & Industry Projects

ETH Zurich | *Uncertainty-Driven Reasoning for Test-Time Scaling* — *Mar 2025 - Jul 2025*
- Investigated uncertainty as a metric to dynamically continue reasoning in large language models
- Implemented step-wise entropy tracking for adaptive test-time scaling and targeted reevaluation
- Benchmarked approaches across reasoning tasks to assess performance and efficiency trade-offs

Boiler Quant | *Adaptive Forecasting of Energy Market Dynamics* — *Sep 2024 - Dec 2024*
- Led team of 9 in applying online learning techniques to forecast Texas energy market prices
- Engineered robust Python backend for data cleansing, feature extraction, and model training
- Designed dynamic dashboard for visualizing predictive accuracy and running backtests

Credit Suisse | *Probability of Default Quantification Model* — *Sep 2023 - Dec 2023*
- Developed loan default prediction model that outperformed industry baselines by 14.5% accuracy
- Combined ensemble methods with threshold optimization to improve robustness and transparency
- Integrated geographical and historical data through feature engineering for increased performance

Awards & Honors

1st Place, ETH Datathon - Sentient Foundation Challenge — *Apr 2025*
1st Runner-Up of 4200+ Participants, IBM WatsonX Hackathon — *Aug 2024*
1st of 35 Teams, Technical Excellence Award, Hertie School Hackathon — *Apr 2024*

Skills & Technologies

Programming: Python, C++, OCaml, Java, C#, C, JavaScript, TypeScript
Machine Learning: PyTorch, Transformers, XGBoost, Pandas, NumPy, Scikit-Learn
Workflow: Git, Slurm, Docker, Unix, LaTeX, Hydra, Jupyter, Bash, Markdown
Languages: English (Native), German (Fluent), Spanish (Proficient), French (Basic)