

# Melissa (Mel) Umble

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## EDUCATION

### University of Utah, College of Engineering

Salt Lake City, UT

Bachelor of Science in **Computer Science | Artificial Intelligence Track**

August 2021-December 2025

**GPA:** 3.782    **Awards:** 1st Place Senior Capstone Project, Dean's List

**Coursework:** Machine Learning, Natural Language Processing, Image Processing, Data Structures and Algorithms, Database Systems, Computer Security

### Vrije Universiteit Amsterdam

Amsterdam, Netherlands

Learning Abroad Exchange Program, History Minor

2022-2023 Academic Year

## PROJECTS

### Roof: Property Management Mobile App

Senior Capstone Project | Dart/Flutter | 2025

- **Awarded 1st Place at the School of Computing Senior Capstone Demo Day (1st of 25+ teams, December 2025).**
- Built a **full-stack**, cross-platform Flutter application with a **4-person team**, integrating responsive front-end UI, **backend APIs, Stripe payments, and Firebase storage.**
- Implemented LLM-powered document summarization and chat features, enabling automated analysis of property and tenant documents.
- Led development of **40+ features** across **10 Agile sprints**, owning feature design and end-to-end implementation in a production-grade mobile application.

## EXPERIENCE

### Huntsman Cancer Institute, Knoechel-Lohr Lab

Salt Lake City, UT

AI & Bioinformatics Research Assistant

Summer 2025- Present

- Built **scalable Python data pipelines** for AI-driven protein design inference and structure prediction, supporting up to **60,000 candidate designs.**
- Engineered inference, preprocessing, and evaluation frameworks to automate model execution across large datasets, **narrowing 1,000+ initial designs to the top 10 candidates.**
- Presented model and result breakdowns using analytics and visualizations, delivering insights that accelerated inference validation and experiment planning.

### Kahlert School of Computing, Security and Learning Threats (SaLT) Lab

Salt Lake City, UT

Machine Learning Security Research Assistant

Summer 2025- Present

- Built evaluation workflows to test robustness of **8+ LLM configurations** against prompt-injection attacks **across 6 NLP tasks** (summarization, hate-speech detection, spam classification, etc.) executing **thousands of adversarial prompts.**
- Engineered experiments using prompt engineering, soft-prompt embeddings, and tokenization strategies to analyze intellectual property infringement risks and evaluate the effectiveness of mitigation techniques.
- Leveraged **high-performance computing (HPC) clusters** to run and isolate large-scale experiments; optimized ML pipelines to improve reproducibility, scalability, and execution throughput.

### USANA Health Sciences

Salt Lake City, UT

Software Engineering Intern (Cybersecurity)

Summer 2024

- **Automated 20+ security workload management processes** in **Python** using **REST APIs and cloud integrations**, reducing manual operations and improving integration between security systems.

## SKILLS

**Programming:** Python, Java, C++, C#, C, SQL, Dart, Javascript

**AI/ML Frameworks:** PyTorch, TensorFlow, Hugging Face, AlphaFold2, RoseTTAFold2, Scikit-learn, NumPy, Matplotlib

**Data & Development Tools:** MySQL, Firebase, VS Code, Xcode, Flutter, Jupyter Notebook, Google Colab, Slurm, Docker

**Version Control & Collaboration:** Git (GitHub, GitLab, Bitbucket), Slack, Jira

## INTERESTS

Alpine skiing, mountain biking, tennis, reading, Tour de France, racquetball, running