

# Melissa (Mel) Umble

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## EDUCATION

### University of Utah, College of Engineering

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

Salt Lake City, UT

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

Learning Abroad Exchange Program, History Minor

Amsterdam, Netherlands

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

AI & Bioinformatics Research Assistant

Salt Lake City, UT

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.

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

Machine Learning Security Research Assistant

Salt Lake City, UT

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

Software Engineering Intern (Cybersecurity)

Salt Lake City, UT

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