Jacob Fein-Ashley

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PROFESSIONAL EXPERIENCE

Data Science Lab, USC — Los Angeles, CA
Graduate Research Assistant — May 2023 – Present
- Developed efficient architectures for long-context language models and vision transformers.
- Published first-author papers on attention mechanisms, mixture-of-experts, and vision models.
- Designed and implemented FFT-based attention replacement achieving logarithmic complexity in sequence length.

EDUCATION

University of Southern California — Los Angeles, CA
Ph.D. in Electrical Engineering — Jan 2025 – May 2028
- Research Focus: Machine Learning.

University of Southern California — Los Angeles, CA
M.S. in Electrical Engineering — Aug 2023 – Dec 2024

Colorado School of Mines — Golden, CO
B.S. in Computer Science — Aug 2020 – Dec 2022
- GPA: 3.80/4.00.

TECHNICAL SKILLS

- **Languages:** Julia, Python, C++, Java, SQL.
- **Technologies:** PyTorch, Scikit-learn, NumPy, Pandas, Matplotlib, Git, Docker.
- **Operating Systems:** Linux, Windows.

AWARDS

Palantir C-MAPP Scholar

2021 – 2022

PUBLICATIONS

- **Mixture of Thoughts: Learning to Aggregate What Experts Think, Not Just What They Say**. Under submission, 2025. arXiv:2509.21164
- **SPECTRE: An FFT-Based Efficient Drop-In Replacement to Self-Attention for Long Contexts**. Under submission, 2025. arXiv:2502.18394
- **ClusterViG**. *IEEE MCNA 2025* (Best Paper Award). arXiv:2501.10640