

# SRAVAN KUMAR ANKIREDDY

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## Education

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<b>Ph.D., The University of Texas at Austin</b> Electrical and Computer Engineering	Aug 21 – May 26 (expected) GPA: 4.0/4.0
<b>B.Tech &amp; M.Tech, Indian Institute of Technology Madras</b> Electrical Engineering	Aug 14 – May 19 Bachelor's: 8.52/10   Master's: 9.45/10

## Research Interests

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- **Machine Learning:** Foundation Models, Representation Learning, Time Series Forecasting
- **Information Theory:** Source Coding, Channel Coding, Distributed Compression

## Industry Experience

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<b>Capital One</b> , New York City, NY - <i>Applied Research Intern</i> Scalable architectures for long-context time-series foundation models.	Jun – Aug 25
<b>Apple Inc.</b> , Cupertino, CA - <i>Machine Learning Intern</i> Tabular generative models for synthetic data generation to model rare scenarios.	May – Aug 24
<b>Samsung Research America</b> , Plano, TX - <i>AI Research Intern</i> Sequence modeling for design of polar codes with Transformers using policy gradient methods.	May – Aug 23
<b>Qualcomm Research India</b> , Bangalore, India - <i>Research Engineer</i> Developed and deployed multiple transceiver algorithms for next-generation WiFi chipsets.	Jul 19 – Jul 21

## Selected Research Projects

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<b>Efficient foundation models for long-context time-series forecasting</b> – Developed a dynamic context-compression scheme using Mamba encoder and adaptive patching. – Achieved 8× improvement in pretraining data efficiency and up to 20× reduction in pretraining time compared to equivalent point-embedding models.	Jun 25 - Present
<b>Residual Diffusion models for Joint Source Channel Coding of CSI</b> – Developed an efficient and robust compression scheme for CSI using residual diffusion models. – Designed spatial entropy-based rate adaptation enabling variable-rate compression with single-model.	Aug 24 - May 25
<b>Synthetic Datasets using Tabular Generative Models</b> – Developed and trained a diffusion-based foundation model for RF calibration, focusing on synthetic data creation to model failures in the hardware. – Reduced data collection needs by over 10× through the use of high-quality synthetic tabular datasets.	May 24 - Aug 24
<b>Data Augmentation using Generative Models</b> – Explored parameter-efficient fine-tuning methods for text-to-image models for data augmentation. – Demonstrated gains of up to 3.4% in classification accuracy by augmenting the true datasets with synthetic images generated using low rank approximation (LoRA) with DreamBooth.	Jan 23 – May 23
<b>Construction of Polar codes using Sequence Modeling</b> – Modeled Polar code construction as a sequential decision making problem and designed a nested construction technique using transformer models and policy gradient methods. – Demonstrated significant gains (up to 0.8dB) compared to patented Polar code in 5G-NR standards.	May 23 – Jan 24
<b>Task-Aware Variable Rate Compression of Distributed Sources</b> – Designed distributed representation learning algorithm to optimize compression for downstream task. – Proposed a dimensionality reduction technique to encourage low-rank representations, allowing variable-rate compression using a single model.	Jul 22 – Sep 23

# Selected Publications

(see [8](#) for full list)

## Machine Learning

- **S. Ankireddy**, N. Seleznev, N. Nguyen, Y. Wu, S. Kumar, F. Huang, C. Bruss "TimeSqueeze: Dynamic Patching for Efficient Time Series Forecasting," *Recent Advances on Time Series Foundation Models Workshop, NeurIPS, 2025* [↗](#)
- A. Saha\*, S. Gupta\*, **S. Ankireddy\***, K. Chahine, J. Ghosh, "Exploring Explainability in Video Action Recognition," *Explainable AI for Computer Vision Workshop, CVPR, 2024 (Spotlight)* [↗](#)
- S. A. Hebbar\*, **S. Ankireddy\***, H. Kim, S. Oh, P. Viswanath, "DeepPolar: Inventing Nonlinear Large-Kernel Polar Codes via Deep Learning," *ICML, 2024* [↗](#)
- **S. Ankireddy\***, P. Li\*, R. Zhao, H. Mahjoub, E. Pari, U. Topcu, S. Chinchali, H . Kim, "Task-Aware Distributed Source Coding under Dynamic Bandwidth," *NeurIPS, 2023* [↗](#)

## Information Theory

- **S. Ankireddy**, K. Narayanan, H. Kim, "LightCode: Light Analytical and Neural Codes for Channels with Feedback," *Journal on Selected Areas in Communications (JSAC), 2025* [↗](#)
- **S. Ankireddy**, S. A. Hebbar, H. Wan, J. Cho, C. Zhang, "Nested Construction of Polar Codes via Transformers," *International Symposium on Information Theory (ISIT), 2024* [↗](#)
- **S. Ankireddy**, S. A. Hebbar, Y. Jiang, H. Kim, P. Viswanath, "Compressed Error HARQ: Feedback Communication on Noise-Asymmetric Channels," *International Symposium on Information Theory (ISIT), 2023* [↗](#)

## Relevant Graduate Coursework

- **Mathematics and Machine Learning**: Generative Models, Topics in Unsupervised Learning, Fair and Transparent Machine Learning, Reinforcement Learning, Probability and Stochastic Processes, Applied Linear Algebra, Convex Optimization.
- **Information Theory**: Estimation Theory, Coding Theory, Information Theory.

## Technical Skills

Python (NumPy, PyTorch), C, MATLAB

## Academic Achievements

- Agnes T. and Charles F. Wiebusch Fellowship from the Cockrell School of Engineering 2025
- Harry and Rubye Gaston Graduate Scholarship from the Cockrell School of Engineering 2024
- Finalist, **Qualcomm Innovation Fellowship** - North America (among 271 applicants) [↗](#) 2024
- Recipient of student travel awards to present research at NeurIPS, ISIT, and ICC 2023
- Wilson - Tayabali Family Fellowship from the Cockrell School of Engineering 2022
- George J. Heuer, Jr. Ph.D. Endowed Graduate Fellowship 2021
- Secured a national rank of 337 out of 1.4M+ students in JEE (Advanced) 2014

## Teaching Experience

- **Probability, Statistics and Random Processes**, UT Austin Fall 21, Spring 22
- **Introduction to Wireless Communications**, IIT Madras Fall 18, Spring 19

## Academic Service/Review

- **Conferences**: IEEE ISIT, ITW, ICLR, ICML
- **Journals**: IEEE JSAC, JSAIT, TCOM, TCCN, TGCN

\*Equal contribution.