

# SRAVAN KUMAR ANKIREDDY

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## Education

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**Ph.D., The University of Texas at Austin**

Aug 21 – May 26 (expected)

Electrical and Computer Engineering

GPA: 4.0/4.0

**B.Tech & M.Tech, Indian Institute of Technology Madras**

Aug 14 – May 19

Electrical Engineering

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

## Selected Research Projects

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- **Efficient foundation models for long-context time-series forecasting** Jun 25 - Present
  - 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.
- **Residual Diffusion models for Joint Source Channel Coding of CSI** Aug 24 - May 25
  - 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.
- **Synthetic Datasets using Tabular Generative Models** May 24 - Aug 24
  - 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.
- **Data Augmentation using Generative Models** Jan 23 – May 23
  - 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.
- **Construction of Polar codes using Sequence Modeling** May 23 – Jan 24
  - 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.
- **Task-Aware Variable Rate Compression of Distributed Sources** Jul 22 – Sep 23
  - 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.

## 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

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\*Equal contribution.