Charantej Reddy Pochimireddy

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Research Interests

Machine Learning, Deep Learning, Computer Vision, and Signal Processing

Work Experience

15-05 2025 | Chief Engineer at Samsung Research India, Bangalore
Developing AI based video/image quality enhancement algorithms.

08-12 2024 | Postdoctoral Scholar in Data Sciences at Penn State College of IST
Explored challenges in machine learning, deep learning, and computer vision at the intersection of psychology and biology.

05-07 2024 | Research Intern at Intel, Hyderabad
Worked on unsupervised adversarial attacks targeting foundation deep learning models.

05-12 2022 | Visiting researcher at Swinburne University of Technology, Australia (part of Joint Ph.D. program)
Worked on problems in Signal processing and Graph learning.

07-08 2019 | Research Intern at TCS Innovation Labs, Pune
Worked on generating time series data using generative adversarial networks.

08-12 2017 | Senior Associate Software Engineer at MathWorks India Pvt. Ltd., Hyderabad
Worked on traffic sign detection and recognition and logo recognition using CNNs.

02–07 2017 | Image Processing Engineer at Uurmi Systems Pvt. Ltd., Hyderabad
Worked on pedestrian detection using deep learning (in MATLAB) and compressing convolutional neural networks for real-time application.

07–11 2016 | Application Support Engineer at MathWorks India Pvt. Ltd., Bangalore
Helped customers to solve technical problems using MATLAB and Simulink and developers to apply the customer-facing knowledge to projects within the company.

Patents

1. Power Efficient Architecture For Raw Color Filter Array Processing Utilizing Feature Re-arrangement And Parallel Execution.
   Inventors: Charantej Reddy Pochimireddy, Sarvesh, Apoorva Verma, Swapnil Malviya, Palavalli Shyam, Subhasmita Sahoo, Raj Narayana Gadde
   Application Number: 20250129004
2. Multi CFA Ultra High Resolution Video Enhancement Architecture.
   Inventors: Raj Narayana Gadde, Sarvesh, Swapnil Malviya, Subhasmita Sahoo, Apporva Verma, Palavalli Shyam, Charantej Reddy Pochimireddy
   Application Number: 20250325006

Education

May 2024 — Joint Ph.D. in Communication and Signal Processing, **IIT Hyderabad**, Hyderabad and **Swinburne University of Technology**, Melbourne
Thesis: "Fast and Efficient DFT Computation for Signals with Structured Support"
Advisor: Dr. Aditya Siripuram | Co-Advisor: Dr. Jingxin Zhang
CGPA: 9.5/10

June 2016 — Masters in Communication and Signal Processing, **IIT Hyderabad**, Hyderabad
Thesis: "Sparsity based spatio-temporal video quality assessment"
Advisor: Dr. Sumohana Channappayya
CGPA: 9.55/10

May 2013 — Bachelors in Electronics and Communication, **SNIST, JNTU Hyderabad**, Hyderabad
CGPA: 77.02/100

PUBLICATIONS

[1] Charantej Reddy Pochimireddy, Subhasmita Sahoo, Apoorva Verma, Palavalli Shyam, Swapnil Malviya, Sarvesh, and Raj Narayana Gadde. "Efficient Real-Time Raw-to-Raw Denoising for Extreme Low-Light Ultra HD Video on Mobile Devices (Under review)". In: *IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2026.

[2] Charantej Reddy Pochimireddy, Aditya T. Siripuram, and Sumohana S. Channappayya. "Can Perceptual Guidance Lead to Semantically Explainable Adversarial Perturbations?" In: *IEEE Journal of Selected Topics in Signal Processing* (2023), pp. 1–11. DOI: 10.1109/JSTSP.2023.3258253.

[3] Charantej Reddy Pochimireddy, Aditya Siripuram, and Brad Osgood. "Fast DFT Computation for Signals with Structured Support". In: *IEEE Transactions on Information Theory* (2023), pp. 1–1. DOI: 10.1109/TIT.2023.3329804.

[4] Charantej Reddy Pochimireddy, Aditya Siripuram, and Brad Osgood. "Numerical Stability of DFT Computation for Signals with Structured Support". In: *2024 IEEE International Symposium on Information Theory (ISIT)*. 2024, pp. 3689–3694. DOI: 10.1109/ISIT57864.2024.10619543.

[5] P Charantej Reddy, Aditya Siripuram, and Brad Osgood. "Some results on convolution idempotents". In: *2020 IEEE International Symposium on Information Theory (ISIT)*. IEEE. 2020, pp. 1462–1467.

[6] P Charantej Reddy, V S S Prabhu Tej, and Aditya Siripuram. "Fast DFT computation for signals with spectral support". In: *2021 National Conference on Communications (NCC)*. 2021, pp. 1–6. DOI: 10.1109/NCC52529.2021.9530137.

[7] P Charantej Reddy, V S S Prabhu Tej, Aditya Siripuram, and Brad Osgood. "Computing the Discrete Fourier Transform of signals with spectral frequency support". In: *2021 IEEE International Symposium on Information Theory (ISIT)*. 2021, pp. 2381–2386. DOI: 10.1109/ISIT45174.2021.9518104.

[8] B Subbareddy, P Charantej Reddy, Aditya Siripuram, and Jingxin Zhang. "A survey of signal processing based graph learning techniques". In: *2019 1st International Conference on Industrial Artificial Intelligence (IAI)*. IEEE. 2019, pp. 1–6.

Awards and Recognitions

- Recipient of the **Qualcomm Innovation Fellowship** (QIF-2021).
- Mentor for BTech EE student team that was placed sixth worldwide in IEEE VIP Cup 2019.