Avi Amalanshu

avi.amalanshu@kgpian.iitkgp.ac.in | avi-amalanshu.github.io

ABOUT ME

I am an undergraduate student at IIT-KGP. I am looking forward to a career in R&D. I am actively looking for research opportunities in DL, distributed & mobile systems, and computational economics.

EDUCATION

Dual Degree (B.Tech+M.Tech)
Indian Institute of Technology Kharagpur
B.Tech Electronics & Electrical Comm. Engg.
M.Tech Vision & Intelligent Systems
Minor Computer Science & Engineering
GPA: 8.83/10.00
Guide: Prof. Jithin Ravi
2020 - 2025

INTERESTS

- Computational Intelligence
- Federated Learning
- Generative Models
- Information Theory

SKILLS & BACKGROUND

- ML/DL/Optim. Theory & Libraries
- Parallel & Distributed Systems
- Probability & Statistical Modelling
- Scientific Ideation & Writing

HIGHLIGHTS

- Published researcher
- Seasoned programmer (C/C++, Python, MATLAB)
- Skilled engineer with vast coursework
- A long list of hands-on projects
- Ranked in the prestigious JEE exam
- One of only 5 allowed to switch to the coveted ECD program

WEB PRESENCE

avi-amalanshu
avi-amalanshu
avi-amalanshu.github.io
@avi_amalanshu

HONORS & AWARDS

2023 - SURF, Purdue University
2023 - SRIP, IIT Gandhinagar
2022 - Poster Invitation, NeurIPS 2022
2022 - MLRC 2021, PapersWithCode
2021 - Branch Change, IIT Kharagpur

EXTRACURRICULARS

Scrabble, Word Games, Quiz, Guitar, Drums, Swimming, Basketball

EXPERIENCE

Purdue University - West Lafayette, US-IN — May '23 – Aug '23
Summer Undergraduate Research Fellow
- Guided by Prof. David Inouye, Probabilistic & Understandable ML Lab.
- Responsible for literature review, synthesis, coding experiments, paper-writing.
- Published a paper at ICML 2023 Workshop on Localized Learning. [2]
- Another first-author paper underway.

Autonomous Ground Vehicle - Kharagpur, IN-WB — Jun '21 – ongoing
Deep Learning Team Leader (Aug '23 – ongoing)
- Responsible for directing the research efforts in robotic perception of a student-run research group.

Software and AI Team Member (Jun '21 – Aug '23)
- Worked on problems of robotic perception, particularly trajectory prediction.
- Participated in various conference workshop competitions on deep learning.
- Won the Machine Learning Reproducibility Challenge, 2021. [1]
- One of 15 selections out of 300+ applicants. One of 3 who completed all 5 selection tasks. Tasks were to program a broad range of image processing problems.

KEY PROJECTS

Localized Deep Learning in Decentralized and Dynamic Environments — Aug '23
- As a part of SURF 2023 at Purdue University
- Helped develop Internet Learning, a novel, highly decentralized and fault tolerant training regime for Machine Learning
- Developed new algorithms for Vertical Federated Learning

MLRC 2022 — Feb '23
- Lead the reproduction of two state-of-the-art A* conference papers. (*Hamilton et. al. STEGO: Unsupervised Semantic Segmentation by Distilling Feature Correspondences* and *Zheng, et. al CLRNet: Cross Layer Refinement Network for Lane Detection*)
- Conducted literature review and reading groups. Devised novel experiments based on the papers. Edited the reports.

MLRC 2021 — Mar '22
- Reproduced a state-of-the-art A* conference paper (*Mangalam et. al From Goals, Waypoints & Paths To Long Term Human Trajectory Forecasting*). Showed its transfer learning capability.
- Conducted literature review and reading groups. Ported the code to PyTorch Lightning. Reproduced some experiments. Wrote the report.
- Report published in ReScience C 2021 journal, invited to present poster at NeurIPS 2022.

KEY COURSEWORK

Programming & Data Struct.	Algorithms	Information Retrieval
Probability & Statistics	Optimization Models	Cyber-Physical Systems
Reinforcement Learning	Machine Learning	Learning Theory
Machine Intelligence	Comp. Neuroscience	Neuronal Coding
Img. & Vid. Proc.	Digital SigProc (I+II)	Comms. (I+II)

PUBLICATIONS

[1] A. Shukla, S. Roy, Y. Chawla, A. Amalanshu, S. Pandey, R. Agrawal, A. Uppal, V. N, P. Mondal, A. Dasgupta, D. Chakravarty in ML Reproducibility Challenge 2021 (Fall Edition), **2022**.
S. Ganguli, A. Amalanshu, A. Ranjan, D. I. Inouye in ICML Workshop on Localized Learning (LLW), **2023**.