Sunny Sanyal

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Education

PhD in Electrical and Computer Engineering 2020–Present
The University of Texas at Austin Austin, TX
GPA: 3.81/4
Supervisor: Prof. Sujay Sanghavi

M.Eng. by research in Communication and Information Systems 2016–2019
Chongqing University of Posts and Telecom Chongqing, China
GPA: 92.22/100 (Excellent Thesis Award)
Supervisor: Prof. Dapeng Wu

B.Tech. in Electronics and Communication Engineering 2011–2015
Maulana Abul Kalam Azad University of Technology, India Kolkata, India
(Formerly known as West Bengal University of Technology)
GPA: 8.23/10 (Top 10% in class)

Research Interests

Large Language Models, Efficient Training, Efficient Inference, and Knowledge Distillation

Work Experience

1. **Amazon Science (Alexa AI)** Summer, 2022
   Applied Scientist Intern Sunnyvale, CA
   – Worked on vision language pretraining using knowledge distillation for transformers.

2. **Tech Mahindra** 2015–2016
   Associate Software Engineer Hyderabad, India
   – Worked within the offshore team to develop a website for ACRA government of Singapore.

Publications

1. **Early Weight Averaging Meets High Learning Rates for LLM Pre-training.** NeurIPS WANT Workshop, 2023
   Sunny Sanyal, Atula Tejaswi, Jean Kaddour, Abhishek Kumar, and Sujay Sanghavi.
2. **DeepMines: A fog enabled prediction platform for underground coal mines.** IEEE COMSNETS Workshop, 2020
   Sunny Sanyal, Animesh Chattopadhyay. (IEEE ComSoc Honorary Mention Award)
3. **Data Aggregation Techniques for Internet of Things.** Master's thesis, 2019
   Sunny Sanyal. (Excellent Master's Thesis Award)
4. **A Federated Filtering Framework for Internet of Medical Things.** IEEE ICC, 2019
   Sunny Sanyal, Dapeng Wu, and Boubakr Nour. (Oral)
5. **Improving Quality of Data: IoT data aggregation using device to device communications.** IEEE Access, 2018
   Sunny Sanyal, and Punning Zhang.
6. **Co-relative mobility based IoT data uploading using D2D communication.** ACM/EAI Mobimedia, 2017
   Sunny Sanyal, Wu Dapeng, Junjie Yan, and Xing Li.
7. **Trust oriented partner selection in D2D cooperative communications.** IEEE Access, 2017
   Dapeng Wu , Junjie Yan, **Sunny Sanyal**, Ruyan Wang.
8. **Automatic switching of home appliances one sensor to many system approach.** IEEE PIICON, 2014
   Sunny Sanyal, and Simpy Sanyal.

Work in Progress

1. **DataComp for NLP: Developing a pre-training pipeline for a fully open source LLM.** Fall, 2023–present
   Joint work in collaboration with Apple, Allen institute and University of Washington.

Selected Honors and Awards

- Selected for Google CSRMP 2023 program. 2023
- Travel Grant for NeurIPs conference for two consecutive years. 2022, 2023
- Ram's Horn Best Project Award in EE381K Digital Video Class, UT Austin. 2021
- Excellent Master's Thesis Award. 2019
- Outstanding International Student Award, International College of CQUPT, China. 2019
- Technology Innovation Award, International College of CQUPT, China. 2019
- Honorary Mention Award in IEEE ComSoc Student's Competition. 2018
- Chinese Government Scholarship. 2016–2019
- Newspaper coverage for project– communication system for mute people. 2014
- Secured 2nd position in national embedded systems design competition at 'KSHITIJ-2013', IIT, KGP. 2013

Demos, Posters and Talks

- Early Weight Averaging Meets High Learning Rates for LLM Pre-training. (Poster) Amazon symposium, 2023
- Generative Masking and In-painting for Videos. (Demo) CVPR Demos, 2023
- Understanding the Effectiveness of Early Weight Averaging for Training LLMs. (Poster) 6G@UT, 2023
- Object masking and inpainting a.k.a Harry Potter's spell. (Talk) MLL Symposium, 2022
- Do Neural Networks Overthink? (Talk) Austin DL, 2021

Selected Professional Services

- Organized Broadening Research Collaborations in ML (BRCML), workshop at NeurIPs. New Orleans, 2022
- Volunteered for the LevelUp org to help students for grad school applications. Virtual, 2022
- Leader of the DEI Student Committee at Cockrell School of Engineering, UT Austin.. Austin, 2023
- Reviewer for NeurIPs 2022/23 workshops, IEEE Access, IEEE VTC 2019 Fall, IEEE ICC 2019, and IEEE ICCC 2019. Virtual, 2019–2022
- Member of the program committee for NeurIPs 2022 BRCML workshop, ACM/SIGAPP SAC 2019. Virtual, 2019–2022

Teaching

- TA for EE 460J Data Science Lab taught by Prof. Constantine Caramanis at UT Austin. Spring, 2021

Technical Skills

- **Programming Languages:** Python, Pytorch, Numpy, Pandas, Scikit learn, Deepspeed, Huggingface, SQL, and Matlab.
- **Systems:** Linux, AWS EC2, Cudatoolkit, Arduino, and Raspberry Pi.
- **Writing:** Latex, Gephi and various visualization tools.

Relevant Courses

- **Graduate:** • Probability and stochastic processes • Convex optimization • Advanced topics in computer vision • Data mining • Topics in NLP • Grounded NLP • Digital video • Complex networks in real world