Sourasekhar Banerjee

Doctoral Student,
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Education

Umeå University, Umeå, Sweden
Doctoral Student, Computing Science, *June'20 - Present*

University of Calcutta, Kolkata, India
Master of Technology, Computing Science and Engineering, *August,16 - July,18*
Percentage: 82.25%

University of Calcutta, Kolkata, India
Master of Science, Computer and Information Science, *August,14 - July,16*
Percentage: 75.54%

St. Xavier's college (University of Calcutta), Kolkata, India
Bachelor of Science (Hons.), Computer Science, *August,11 - July,14*
Percentage: 71%

Research Interests

Federated Learning and Optimization, Distributed Learning, Deep Learning, Machine Learning,

Publications

Sourasekhar Banerjee, Alp Yurtsever, Monor Bhuyan. "Personalized Multi-tier Federated Learning"[In progress, and it will be submitted to FL-Neurips workshop]

Sourasekhar Banerjee, Xuan-Son Vu, and Monowar Bhuyan. "Optimized and Adaptive Federated Learning for Straggler-Resilient Device Selection" [Accepted in IJCNN 2022]

Sourasekhar Banerjee, Erik Elmroth, and Monowar Bhuyan. "Fed-FiS: a Novel Information-Theoretic Federated Feature Selection for Learning Stability."[International Conference on Neural Information Processing (ICONIP), 2021].

Sourasekhar Banerjee, Rajiv Misra, Mukesh Prasad, Erik Elmroth, Monowar H Bhuyan. " Multi-diseases classification from chest-X-ray: A federated deep learning approach."[In Australasian Joint Conference on Artificial Intelligence, 2020]

Yashwant Singh Patel, **Sourasekhar Banerjee**, Rajiv Misra, and Sajal K. Das. "Low-latency energy-efficient cyber-physical disaster system using edge deep learning."[In Proceedings of the 21st International Conference on Distributed Computing and Networking (ICDCN), 2020].

Himanshu Shekhar ,**Sourasekhar Banerjee** , Yashwant Patel, Rajiv Misra. " System and Method For Detection of Banned Objects From Images In Real-Time Using Intelligence at The Edge"[Filed for Indian Patent, Application No: 202031006618, 2020]

Manali Chakrabarty, **Sourasekhar Banerjee**, and Nabendu Chaki. "A Framework Towards Generalized Mid-term Energy Forecasting Model for Industrial Sector in Smart Grid."[International Conference on Distributed Computing and Internet Technology. (ICDCIT), 2020]

Sourasekhar Banerjee, Prasita Mukherjee, Sukhendu Kanrar, and Nabendu Chaki. "A novel symmetric algorithm for process synchronization in distributed systems."[In Algorithms and Applications (ALAP), 2018]

Awards & Achievements

WASP funded Ph.D. position, Umeå University, Sweden (2020-present)

Granted USD 500 from IEEE CIS as travel grant in **IEEE WCCI ,2022**.
AICTE **GATE** fellowship (2016-2018)
Qualified UGC-NET **Assistant Professor** December-2018
Qualified **JEST** 2018
Ranked 3^{rd} in M.Tech program on Computer Science and Engineering in University of Calcutta (2018)
Ranked 5^{th} in M.Sc program on Computer and Information Science in University of Calcutta (2016)

Research Projects

Federated Learning and Optimization
Doctoral project *June '20 - Present*

The research is focused on mitigating the challenges occurs in Federated Learning due to statistical and system heterogeneity. We are looking around the problems like, federated feature engineering, straggler mitigation, Model personalization etc.

Low-Latency Energy-Efficient Cyber-Physical System
Research Fellow, IIT Patna *Sept '18 - June '20*

The research focused on low-latency and energy-efficient Cyber-Physical System applications on the cloud-IoT-edge by bringing intelligence and inferencing proximity to the edge site to detect events in real-time.

A Framework Towards Generalized Mid-term Energy Forecasting Model for Industrial Sector in Smart Grid
M.Tech Project *july '17 - july '18*

The research focused on to build a generalized mid-term forecasting model for the industrial sector to predict the quarterly energy usage of a vast geographic region accurately with a diverse range of influential parameters.

A Design towards Reduced Message Complexity using Symmetric Algorithm for Process Synchronization
M.Sc Project *July '15 - july '16*

The research focused on to build a prioritized version of the well-known Ricart–Agrawala algorithm for mutual exclusion in distributed systems.

Teaching Experiance

5DV171 Operating System (B.S) (Umeå University) *Spring, 2022*

Members

IEEE Student member
APNNS Student member
ACM Student member

Computer Skills

Languages: C, Python, LaTeX.
Software Packages: PyTorch, JAX, LEAF, Scikit-Learn, Numpy, Pandas

(Updated: Nov '21)