PRIYANKA MARY MAMMEN

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RESEARCH INTERESTS

Time-series Modeling, Empirical Machine Learning, Health Sensing, Sustainable AI

EDUCATION

MS/PhD in Computer Science, University of Massachusetts, Amherst　　　Sept, 2019 - Present

M.Tech in Computational Mathematics, NIT Surathkal　　　Aug, 2014 - July, 2016

B.Tech in EEE, Cochin University of Science and Technology　　　July, 2010 - June, 2014

RESEARCH EXPERIENCE

Laboratory for Advanced Software Systems　　　Sept 2019 - Present
University of Massachusetts, Amherst (Research Assistant under Prof. Prashant Shenoy)

- Enabling Scalable Sleep Monitoring with Mobile Sensing and Machine Learning.

IBM Hybrid Cloud Infrastructure　　　June 2022 - Sept 2022
Research intern under Dr. Eun Kyung Lee, Dr. Ramachandra Rao Kolluri and Dr. Tamar Eilam

- Uncertainty-driven forecasting for resource management in GPU clusters.

IBM Impact Science Team - Hybrid Cloud Infrastructure　　　Jun 2021 - Aug 2021
Research intern under Dr. Ramachandra Rao Kolluri, Dr. Eun Kyung Lee and Dr. Tamar Eilam

- Developing probabilistic multi-horizon time-series prediction models and apply it to predict the load in real time in public data centres.

Smart Energy Informatics Lab　　　Oct 2016 - Jun 2019
CSE dept, IIT Bombay (Research Associate under Prof. Krithi Ramamritham)

- Energy efficient Buildings and Thermal Comfort: Deploying and managing sensor networks across the campus, data collection, real time visualisation and analytics on grafana, and inferring insights

- Energy Optimization in Smart Grids: Conducting campus-wide energy awareness surveys and consumer studies, formulating mathematical models and developing algorithms, following heuristic as well as machine learning approaches , and building a reliable infrastructure for resource allocation in smart grids.

- Smart Classroom Complex: Application of Image Processing and Machine Learning algorithms in a Real-time System to determine occupancy and automate the appliances in a given space.

Department of Electrical Engineering　　　May 2015 - Jul 2016
IIT Bombay (Research Intern under Prof. Virendra R. Sule)

- Development of Solver for XOR Linear Systems that can generate all possible solutions for XOR boolean linear equations.

- Elliptic Curve Arithmetic over extension field: Implemented an elliptic curve addition over extension field using python.

TEACHING EXPERIENCE

Teaching Assistant - CS328: Mobile Health Sensing and Analytics　　　Fall 2021, Spring 2023

- Duties included preparing assignments, holding office hours, leading weekly lab sessions and grading.

Teaching Assistant - CS377: Operating Systems   Spring 2021

- Duties included holding office hours, leading weekly lab sessions and doing student support sessions.

Teaching Assistant - CS121: Introduction to Problem Solving with Computers   Fall 2020, Spring 2022

- Duties included holding office hours and leading weekly lab sessions.

Teaching Assistant - CS230: Computer Systems Principles   Fall 2019

- Duties included holding office hours, taking weekly lab lectures and grading.

OTHER WORK EXPERIENCE

Open Source Solutions Lab   Aug 2016 - Oct 2016
IIT Bombay (Senior Project Technical Assistant under Padma Shri Dr. D.B. Phatak)

- Project: An open source Indian MOOCs platform for massive Indian deployment of MOOCs.

PUBLICATIONS

[13] P.M. Mammen, N. Bashir, R. Kolluri, E.K. Lee, P. Shenoy " CUFF: A Configurable Uncertainty-driven Forecasting Framework for Green AI Clusters." *Accepted at the fourteenth ACM International Conference on Future Energy Systems, 2023.*

[12] P.M. Mammen, C. Zaccharia, P. Shenoy " Personalized Sleep Monitoring Using Smartphones and Semi-supervised Learning." *Under Review*

[11] P.M. Mammen, P. Shenoy "Are you asleep when your phone is asleep? Semi-supervised methods to infer sleep from smart devices." *Learning from Time Series for Health Workshop at Neural Information Processing Systems, 2022*

[10] C. Zaccharia, G. Yilmaz, P.M. Mammen, B. Parkman, M. Chee, R. Balan and P. Shenoy "SleepMore: Predict Sleep Using Multi-device Sensing" *Accepted at Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), 2023.*

[9] P.M. Mammen, C. Zaccharia, T. Ochir, A. Trivedi, R. Balan and P. Shenoy "WiSleep: Scalable Sleep Monitoring Using Passive WiFi Sensing" *Under Review*

[8] P.M. Mammen "Federated Learning: Opportunities and Challenges" accepted at *CoRR abs/2101.05428 (2021)*

[7] P.M. Mammen "Phd Forum Abstract: Scalable mHealth Technologies for Public Health Monitoring." in *the Proceedings of the eighteenth ACM Conference on Embedded Networked Sensor Systems* , Yokohama, Japan, 2020

[6] P.M. Mammen, S. Mehta, H. Kumar, and K. Ramamritham "Want to Reduce Energy consumption, Which Floor should I prefer?" in *the Proceedings of the eleventh ACM International Conference on Future Energy Systems.*, Melbourne, Australia, 2020

[5] H. Kumar, P.M. Mammen and K. Ramamritham "Explainable AI: Deep Reinforcement Learning Agents for Residential Demand Side Cost Savings in Smart Grids", accepted at *CoRR abs/1910.08719 (2019)*

[4] S. Mehrotra, P.M. Mammen, K. Ramamritham, and R. Bardhan "Data Driven Monitoring of Thermal Profile: Towards Sustainable Urban Habitats", in *the Proceedings of the 10th International Conference on Information and Communication Technologies and Development* , Ahmedabad, India, 2019.

[3] P.M. Mammen, H. Kumar, K. Ramamritham, and H. Rashid "Want to Reduce Energy consumption, Whom should we call ?" in *Proceedings of the ninth ACM International Conference on Future Energy Systems.* , Karlsruhe, Germany, 2018

[2] H. Rashid, P.M. Mammen, S. Singh, K. Ramamritham, P. Singh, and P. Shenoy "Want to Reduce Energy consumption? Don't Depend on the Consumers!" in *the Proceedings of 4th ACM International Conference on Systems for Energy-Efficient Built Environments*, Delft, Netherlands, 2017

[1] S. Pote, B.K. Lande and P.M. Mammen, " Elliptic Curve Arithmetic over extension field to intensify security and privacy." in *the Proceedings of the IEEE International Conference on Wireless Communications, Signal Processing and Networking*, Chennai, India, 2016.

GRANTS

- Assisted Prof. Krithi Ramamritham in writing the research proposal entitled - Customer Selection and Control for Demand Response Events in Smart Grids and received funding from Tata Consultancy Services.

TALKS AND PRESENTATIONS

- Indo - US Symposium on Urban Energy and Informatics (Oral)
- IEEE 2018 Conference on Norbert Wiener in the 21st Century India Events (Poster)

SCHOLORSHIPS AND AWARDS

- CRA-W Grad Cohort Invitation (2021)
- Received NeurIPS 2020 Financial Assistance Award (2020)
- CICS Scholarship to attend Grace Hopper Celebration (2020)
- Jim Gray Scholarship in Computer Science (2020)
- UMass Amherst CICS Fellowship Award (2019)
- Financial assistance for Masters Program through GATE MHRD scholarship (2014-2016)

TECHNICAL SKILLS

- Programming: C, Python, MATLAB, R
- Machine Learning: scikit-learn, Pandas, Keras, Tensor-Flow, Theano, PyMC3, PyTorch
- Databases: SQLite, MySQL, MongoDB
- Embedded Platforms: Arduino, Raspberry Pi

SERVICES

- ACM e-Energy volunteer (2021)
- UMass CICS Community Outreach Student Team Member (Sept'2020 - Sept'2022)
- UMass CS Women Social Committee Co-chair (2020)
- UMass CS New Student Committee Member (2020, 2021)
- CityVis Workshop Program Committee Member (2022)
- WiML Workshop NeurIPS volunteer (2022)
- PhD Mentor at Undergraduate Research Volunteer Program (2023)
- Reviewer: IEEE Network Magazine, ACM Health, CSCW Poster, NeurIPS Ethics Review (2023)

MENTORING

- Aishwarya Vishnubhotla, *Undergraduate Student, UMass Amherst*
- Bao Nguyen, *Undergraduate Student, UMass Amherst*
- Khushi Rajoria, *Undergraduate Student, UMass Amherst*
- Emma Azzi, *Undergraduate Student, UMass Amherst*