Don Kurian Dennis

PhD Student, Machine Learning Department
Carnegie Mellon University
*Advisor: **Prof. Virginia Smith***

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Research Interests

Primary: Theoretical and Applied Aspects of Machine Learning, Optimization, Statistical Learning
Secondary: Systems for ML, Resource Efficient Inference and Training

Education

Carnegie Mellon University
PhD, Machine Learning Department — *August '19 -*
Courses: Optimization, Measure Theoretic Probability, High-Dim Stats, Advanced ML, Modern Algorithms.

Indian Institute of Technology Patna
Bachelor of Technology, Computer Science and Engineering — *July '13 - May '17*

Publications

Heterogeneity For the Win: One-Shot Federated Clustering
Don Dennis, Tian Li, Virginia Smith
International Conference on Machine Learning (ICML), 2021.[Link]

Shallow RNN: Accurate Time-series Classification on Resource Constrained Devices
Don Dennis, Durmus Alp Emre Acar, Venkatesh Saligrama, Prateek Jain
Advances in Neural Information Processing Systems (NeurIPS), 2019.[Link]

Multiple Instance Learning for Sequential Data Classification on Resource Constrained Devices
Don Dennis, Chirag Pabbaraju, Harsha Simhadri, Prateek Jain
Advances in Neural Information Processing Systems (NeurIPS), 2018. [Link]

EdgeML: Edge of Machine Learning - Demonstration of Low resource Keyword Spotting
Don Dennis, Harsha Simhadri, Prateek Jain
Advances in Neural Information Processing Systems (NeurIPS), 2018 (MLPCD2 Workshop).

GesturePod: Programmable Gesture Recognition for Augmenting Assistive Devices
Shishir Patil, Don Dennis, Chirag Pabbaraju, Harsha Simhadri, Manik Varma, Prateek Jain
ACM Symposium on User Interface Software and Technology (UIST), 2019. [Link]

Work Experience

Microsoft Research Lab Redmond
Advisor: Dr. Kazuhito Koishida — ***May '21 - Aug '21, Research Internship***

Working on new algorithms to improve ML training time and reduce resource footprint for on device ML on the edge.

Microsoft Research Lab India
Advisor: Dr. Prateek Jain & Dr. Harsha Simhadri — ***July '17 - July '19, Research Fellowship***

Worked on bringing machine learning to severely resource constrained edge and end-point devices (IoT devices, embedded systems, etc). Research involved designing new and novel theoretical frameworks and algorithmic tools for such settings as well as implementing these algorithms on user-facing real-world systems.

Center for Smart Systems, SUTD/NUS Singapore
Advisors: Dr. Vishram Mishra & Prof. Lim H Beng — ***Summer Internship '16***

Research involved building and analysing various ontologies for a protocol agnostic universal IoT Gateway.

Indraprastha Institute of Information Technology (IIIT), Delhi [GitHub]
Advisor: Prof. Debajyoti Bera — ***Summer Internship '15***

Explored a new Breadth First Search algorithm with multi-point initialization for throughput efficiency on the distributed map-reduce framework. Also worked on developing ear-decomposition algorithms on Map-Reduce.

Google Summer of Code '15 [GitHub]
Advisors: David Anders & Tom King, Intel ***Summer Internship '15***

Developed the first complete simulation of the Harwell WITCH, a Dekatron based computer used at the Atomic Energy Research Establishment, Oxfordshire during early 1950s. Simulator was built using extremely scarce schematics inferred from recently declassified documents.

★ Helped win £50,000 funding.

Open Source Contributions

EdgeML: Machine Learning for Edge and End-Point Devices [GitHub]
Open Source ***Microsoft Research***

Core developer of EdgeML, Microsoft Research India's machine learning library for edge and end-point devices. Developed ProtoNN, EMI-RNN and ShaRNN for EdgeML's Tensorflow and pytorch submodule. Previously, maintainer of the python codebase.

Mixxx: Open Source DJ Mixing Software [GitHub]
Open Source

Worked on improving various aspects of the Auto-DJ feature. My improvements were included in the 1.12 release.

References

Virginia Smith
Assistant Professor,
Machine Learning Department, CMU
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Prateek Jain
Sr. Staff Research Scientist
Google AI
prajain@google.com

Harsha Vardhan Simhadri
Principal Researcher
Microsoft Research
harshasi@microsoft.com