Amey **Agrawal**

CS Ph.D. Student, Georgia Tech

🌐 ameya.info   @ agrawalamey12@gmail.com   � github.com/agrawalamey   🎓 Google Scholar

Education

Present **Aug 2022**	**Georgia Institute of Technology** Ph.D., Computer Science. GPA 4.00/4.00. *Advisor: Prof. Alexey Tumanov	Area: Systems for machine learning, LLM inference systems.*	**Atlanta, USA**
Jul 2018 **Aug 2014**	**Birla Institute of Technology and Science Pilani** B.E. (Hons.), Computer Science	**Pilani, India**

Experience

Present **May 2023**	**Microsoft Research** *Research Intern	Mentors: Dr. Ramchandran Ramjee, Dr. Esha Choukse* Designing efficient inference systems for large language models.	**Redmond, USA**
Aug 2022 **Jan 2021**	**Microsoft Research** *Research Software Engineer-II	Mentor: Dr. Muthian Sivathanu* Built parts of the elasticity sub-system that leveraged efficient time sharing of GPUs to provide transparent scaling of deep learning training workloads. This work was done as a part of the Singularity project, Microsoft's planet-scale AI infrastructure service.	**Bangalore, India**
Nov 2020 **Jul 2018**	**Qubole Inc.** *Member of Technical Staff-II	Mentor: Rohit Karlupia* Worked on various applied machine learning and software engineering problems to enhance Qubole's data science platform. Published research in several top-tier venues.	**Bangalore, India**
Dec 2017 **Jul 2017**	*Software Engineering Intern	Mentor: Bharath Bhushan* Built core data-plane components for Qubole's Deep Learning clusters based on TensorFlow and Apache Spark.	

Publications

Metron: Holistic Performance Evaluation Framework for LLM Inference Systems [pdf][code]
Amey Agrawal*, Anmol Agarwal*, Nitin Kedia, Jayashree Mohan, Souvik Kundu, Nipun Kwatra, Ramachandran Ramjee, Alexey Tumanov
Preprint: arXiv:2407.07000 (2024) **[CoRR]**

Taming Throughput-Latency Tradeoff in LLM Inference with Sarathi-Serve [pdf][code][video]
Amey Agrawal, Nitin Kedia, Ashish Panwar, Jayashree Mohan, Nipun Kwatra, Bhargav S. Gulavani, Alexey Tumanov, Ramachandran Ramjee
Proceedings of 18th USENIX Symposium on Operating Systems Design and Implementation, 2024, Santa Clara **[OSDI'24]**

Vidur: A Large Scale Simulation Framework For LLM Inference [pdf][code][video]
Amey Agrawal, Nitin Kedia, Jayashree Mohan, Ashish Panwar, Nipun Kwatra, Bhargav S. Gulavani, Ramachandran Ramjee, Alexey Tumanov
Proceedings of 7th Annual Conference on Machine Learning Systems, 2024, Santa Clara **[MLSys'24]**

Sarathi: Efficient LLM Inference by Piggybacking Decodes with Chunked Prefills [pdf]
Amey Agrawal, Ashish Panwar, Jayashree Mohan, Nipun Kwatra, Bhargav S. Gulavani, Ramachandran Ramjee
Preprint: arXiv:2308.16369 (2023) **[CoRR]**

DynaQuant: Compressing Deep Learning Training Checkpoints via Dynamic Quantization [pdf]
Amey Agrawal, Sameer Reddy, Satwik Bhattamishra, Sarath Nookala,
Vidushi Vashishth, Kexin Rong, and Alexey Tumanov
Preprint: arXiv:2306.11800 (2023) **[CoRR]**

Sybill: Deep Learning Workload Tuning with Virtual GPUs [poster]
Srihas Yarlagadda*, **Amey Agrawal***, Sarath Nookala, Pranavi Bajjuri, Shivam Mittal, Alexey Tumanov
ACM Symposium on Cloud Computing Poster, 2023 **[SoCC'23]**

Singularity: Planet-Scale, Preemptible, Elastic Scheduling of AI Workloads [pdf]
Singularity Team, Microsoft
Preprint: arXiv:2202.07848 (2022) **[CoRR]**

Logan: A Distributed Online Log Parser [pdf]
Amey Agrawal, Rajat Gupta, and Rohit Karlupia
Proceedings of IEEE International Conference on Data Engineering, 2019, Macau [**ICDE'19**]

Learning Digital Circuits: A Journey Through Weight Invariant Self-Pruning Neural Networks [pdf][code]
Amey Agrawal, and Rohit Karlupia
Sparsity in Neural Networks Workshop 2021; New in ML Workshop, NeurIPS, 2019, Vancouver [**SNN'21**]

Delog: A Privacy Preserving Log Filtering Framework for Online Compute Platforms [pdf] [dataset]
Amey Agrawal, Abhishek Dixit, Namrata Shettar, Darshil Kapadia,
Rohit Karlupia, Vikram Agrawal, and Rajat Gupta
Proceedings of IEEE International Conference on Big Data, 2019, Los Angeles [**BigData'19**]

Honours and Awards

Center for Research into Novel Compute Hierarchies (CRNCH) Fellowship, 2023 [🌐]
› For research of automatic hardware-aware optimization of deep learning training workloads.

School of Computer Science Fellowship, 2022
› PhD fellowship from Georgia Institue of Technology.

Teaching and Leadership Roles

Systems for Machine Learning   *Guest Lecturer | Prof. Alexey Tumanov*   Fall'23
› Conducted a three-part lecture series on large language model inference systems.

Covid Central, Yavatmal   *Technical Lead* [demo]   Apr'21 - Jul'21
› Led a group of four developers to create a platform to manage Covid-19 patients in hospitals. Provided the system to regional hospitals for no-charge.

Introduction to Neural Networks & Fuzzy Logic   *Lead Teaching Assistant* [assignments]   Aug'17 - May'18
› Introduced Python programming assignments along with a new custom-built evaluation platform. Other responsibilities included coordinating the team of seven teaching assistants to conduct labs, designing assignments and helping students with the term project.

Introduction to Machine Learning   *Teaching Assistant*   Jan'18 - May'18
› Conducted introductory sessions on the scientific Python ecosystem, and organized tests and programming assignments for over 100 students in the class.

Department of Visual Media, BITS Pilani   *Design Team Lead* [behance]   May'15 - Feb'16
› Headed a team of eight graphics designers to create websites and video games for cultural and technical festivals at BITS Pilani.

Concepticon Initiative   *Founding Member & Lead Coordinator*   Oct'14 - Feb'15
› Led a team of fifty volunteers to organize career awareness events among high school students. These events witnessed participation of over seventeen hundred students across three cities.

References

› Prof. Alexey Tumanov	*Assistant Professor, Georgia Tech* [🌐]
› Dr. Ramchandran Ramjee	*Partner Research Manager, Microsoft Research* [🌐]
› Dr. Srinivas Sridharan	*Distinguished Engineer, NVIDIA* [🌐]
› Dr. Muthian Sivathanu	*Distinguished Scientist, Microsoft Research* [🌐]