Vignesh Nanda Kumar

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Education

University of California San Diego, CA, USA *Sep '21 - Mar '23 (expected)*
Master of Science in Computer Science and Engineering
- **CGPA:** 4.00
- **Coursework:** Data Systems for ML, Network Systems, Programming Languages, Statistical NLP

Birla Institute of Technology and Science, Pilani, Rajasthan, India *Aug '15 - Jun '19*
Bachelor of Engineering (Hons.) in Computer Science
- **CGPA**: 9.98/10.00 — **Silver Medalist of 2019 batch**

Professional Experience

ServiceNow **San Diego, USA**
Software Engineering Intern *Jun '22 - Sep '22*
- Developed a database agnostic producer-consumer based architecture for database compaction to be deployed in the upcoming ServiceNow platform release.
- Implemented Java API for periodic and user triggered compaction, job cancellation and managing compaction statistics.
- Introduced guard rails for safe execution of compaction, along with ensuring race conditions are avoided when multiple nodes contest for compaction jobs.

AI Labs, American Express (Amex) **Bengaluru, India**
AI Researcher - 1 *Jul '19 - Jul '21*
- Collaborated with a team of 7 developers to maintain features for AXGBoost (Amex XGBoost) algorithm according to business user requirements pertaining to model building, scoring and printing across 4 release cycles.
- Extended support for GPU model building, distributed multi class and handling node failures along with extensive unit and functional testing for the new version of AXGBoost.
- Reduced the time taken for summarising data (up to 4x) while maintaining performance of distributed execution by formulating a distributed random sampling algorithm.
- Conceptualized a search tool in Django that enables enterprise-wide context-aware search which got selected in the top 5 among 13 ideas in AI Labs Ideation Workshop.

Research Intern *Jan '19 - Jun '19*
- Designed the class architectures, fixed multi-threaded floating point operation issues and overhauled the distributed AXGBoost algorithm for better maintainability from 2400+ lines of code to <500 lines in C++.
- Worked on the Python command line interface to expose different features across model building, scoring and printing for improving usability and integration with ML Platform.

Goldman Sachs **Bengaluru, India**
Summer Analyst *May '18 - Jul '18*
- Implemented a pluggable parallel email scanner for shared mailboxes which enables easy access to shared mails exchanged for a deal, using Java Spring Framework and Microsoft Exchange Services.

Gnowledge Lab, Homi Bhabha Centre for Science Education (HBCSE) **Mumbai, India**
Software Engineer Intern *May '17 - Jul '17*
- Developed a search engine using Django and integrated it with a digital learning platform (CLIx) to enable quick content access in schools with no internet connectivity (deployed in 500 government schools).

Projects

Model Selection pipeline for Multimodal model training *Jan '22 - Jun '22*
- Designed a data-parallel ETL pipeline using Dask for processing multimodal data for ML model selection workloads.
- Developed Model Hopper Parallelism technique for scalable model selection using XML-RPC in Python.

Dropbox-like file storage service — Code *Feb '22 - Mar '22*
- Developed a fault tolerant cloud-based file storage service that is based on Dropbox. Implemented the service, client and RAFT distributed consensus protocol using gRPC framework in Go.

Integrate Deep Learning Model Selection System with Dask — Report *Oct '21 - Dec '21*
- Extended support for Cerebro, a distributed model selection system with Dask while ensuring reproducibility of original implementation in terms of system performance.

Parallelization of Union-find Algorithm — Code *Jan '18 - Oct '18*
- Optimized the distributed Union-find algorithm by reducing the message passing operations(15% reduction) using deferred bulk updates. Implemented the algorithm using Open MPI in C++.

Skills

- **Technical Skills:** C, C++, Java, Python, Open MPI, OpenMP, Spark, Django

Awards and Extra Curricular

- **Drives Results Award**: Awarded in the AI Labs town hall at Amex for my contribution to AXGBoost. *Feb '21*
- **Google AI Summer School, AI for Social Good Track**: among the 50 students selected. *Aug '20*
- **BITS Merit Scholar**: Received 80% Scholarship for being in the top 1% in all semesters. *Jun '19*