ANSHUL GUPTA

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INTERNSHIPS

Google Summer of Code 2017 (The Linux Foundation)

Common Print Dialog

Jun '17 — Aug '17 — git

- **OBJECTIVE** — Build a unified solution for printing in desktop environments. A well designed print dialog will help the users to find the right printers and printing configurations
- Developed an ergonomic front-end written in Qt as a part of 5-strong team. It communicates with the back-end using DBus which supports printing with CUPS, IPP or Google Cloud Print

École Normale Supérieure de Lyon (INRIA)

Towards more scalable off-line simulation of MPI applications

May '14 — Jul '14 Lyon, France git

- **OBJECTIVE** — Build a framework for scalable time-independent trace replay for off-line simulation of MPI applications
- Merged ScalaTrace and Time-Independent Trace Replay to run simulations using Simgrid. Used NAS Parallel Benchmark to validate the framework

Indraprastha Institute of Information Technology, Delhi

Performance analysis and Optimization of Hadoop based cluster

May '13 — Jul '13 New Delhi, India

- **OBJECTIVE** — Analyze the effect of various configuration parameters on Hadoop Map-Reduce performance under various conditions to achieve maximum throughput
- Studied the effect of block-size, copy phase, map spill and reduce phase for Fair, Capacity, and FCFS Scheduler on the throughput and execution time

M.TECH. DISSERTATION

Scalability, Reliability, and Security of BodhiTree

Jul '18 – Present

- **OBJECTIVE** — Supporting no more than 250 students combined with the security bugs, BodhiTree needs to be revamped, so that theoretically, its performance can increase linearly with linear increase in resources
- Expected outcome from this project is a scalable LMS which can be distributed (as an application container) and deployed with ease

Modeling Virtualized Applications using Machine Learning Techniques

Spring 2017

- Performance models allows administrators to explore "what-if?" scenarios without the need of actual hardware. Simulations can be performed to get the expected performance if the model is correct
- Surveyed various machine learning approaches like ANNs/SVMs, Kalman Filters, Markov Models and Self-Organizing Maps for building performance models of virtualized applications

EDUCATION

IIT Bombay

M.Tech. in Computer Science & Engineering

Jul '16 — Present **GPA** 8.33 / 10

The LNM IIT, Jaipur

B.Tech. in Computer Science & Engineering

Jul '11 — May '15 **GPA** 7.59 / 10

PUBLICATIONS

Journal Articles

- Casanova, Henri, Anshul Gupta, and Frédéric Suter (2015). "**Toward more scalable off-line simulations of MPI applications**". In: *Parallel Processing Letters* 25.03, p. 1541002.

Conference Proceedings

- Apte, Varsha et al. (2017). "**AutoPerf: Automated load testing and resource usage profiling of multi-tier internet applications**". In: *Proceedings of the 8th ACM/SPEC on International Conference on Performance Engineering*, pp. 115–126.
- Bansal, Garvit et al. (2014). "**A framework for performance analysis and tuning in hadoop based clusters**". In: *Smarter Planet and Big Data Analytics Workshop (SPBDA 2014), held in conjunction with International Conference on Distributed Computing and Networking (ICDCN 2014), Coimbatore, INDIA*.

WORK EXPERIENCE

Research Assistant

CSE, IIT Bombay — Prof. Varsha Apte

Jul '16 — Present

- Did experiments on client bottleneck detection and scalability of AutoPerf
- Upgraded AutoPerf so that it supports newer Java version, Maven architecture, and Google's style guide

PROJECTS

ASSR: Automatic Stuttered Speech Recognition

Autumn '17 git

- **OBJECTIVE** — Enabling people having a stuttering speech impediment to use the current state-of-the-art speech-to-text systems
- UCLASS database was used for training and testing the ANN. IBM Watson's Speech-to-text system was used for validation of the corrected audio

Face Recognition using Faster R-CNN

Spring '17 git

- **OBJECTIVE** — Draw bounding box on all the faces in an image
- Developed a Faster-RCNN based model using VGG16 transfer learning
- Training dataset (WIDER): 12K 600x600 images. Test dataset (FDDB): 2845 images with 5171 faces. The accuracy obtained was 87%

Machine Learning approach for Music Genre Classification

Spring '16 git

- **OBJECTIVE** — Classify music into different categories: Rock, Hip Hop, Jazz, Metal, Classical, Pop, Disco, Blues, Reggae, Country
- Achieved an accuracy of 63.5% using Random Forest. Tried a different approach of using CNN on the spectrogram of audio files. Accuracy was 23%

Intelligent Reversi playing bot

Autumn '16 git

- **OBJECTIVE** — Build an intelligent agent to play Reversi
- Intelligence comes through Minimax algorithm with alpha-beta pruning
- The heuristic was a combination of parity, mobility, corners, and occupancy which determines the best possible next move

Solving Sudoku using Boolean SAT Solver in Haskell

Autumn '17 git

- **OBJECTIVE** — Build a SAT Solver and use it to solve Sudoku
- Implemented brute force and Davis-Putnam-Logemann-Loveland (DPLL) algorithms in Haskell
- Transformed Sudoku in 11,907 binary and 243 nine-ary CNF clauses which were fed to the SAT solver

Resource Provisioning of LXD Containers

Autumn '16 git

- **OBJECTIVE** — Prevent memory SLA violations in LXD based containers
- Implemented a framework which continuously monitors the containers in a cluster and alleviates memory hotspot by vertically and / or horizontally scaling the memory of containers

txt2midi: Indian musical notations to MIDI using Python

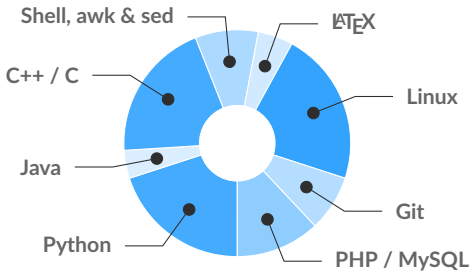
Autumn '16 git

- **OBJECTIVE** — Convert Indian classical music notation from text to MIDI
- Developed syntax for writing Indian classical music notation. Supports multiple instruments, mixing multiple tracks, setting volume and loop count for each track. The parser reads the input and generates a MIDI audio file

AREAS OF INTEREST

Machine Learning | Artificial Intelligence | Systems | Networks | Performance

SKILLS



IMPORTANT COURSES

Automatic Speech Recognition | Machine Learning | Computer Vision | Artificial Intelligence

Virtualization | Functional Programming | Performance Analysis of Systems & Network

ACHIEVEMENTS

Best Paper Award
AutoPerf was awarded the best paper award in ICPE 2017

AP Grade
Was awarded the only AP grade in Software Lab among 116 students

GATE Percentile
Secured 99.81 percentile in GATE 2016

RESPONSIBILITIES

Associate Coordinator
Networking - Computer Club
Jul '13 - May '14

Event Coordinator - Plinth 2012
Prison Break - Capture the Flag

HOBBIES & INTERESTS

- Swimming
- Listening to podcasts