Debashish Deka

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EDUCATION

Degree	University	Year	GPA
M.Tech	IIT Bombay **Computer Science & Engineering**	July 2017- June 2019	8.86/10
B.Tech	NIT Silchar **Mechanical Engineering**	July 2011- June 2015	8.01/10

WORK EXPERIENCE

- **Cohesity**
  Member of Technical Staff III | Storage & Backup *Nov'21 - Present*
  - Currently working on Distributed Storage Backup.

  Tools & Technologies: C++11/14, Multi-Threading, gRPC, CMake

- **Samsung Electronics Inc.**
  Associate Staff Engineer | 5G NAS Protocol Stack *February'21 - October'21*
  - Contribution to the latest 5G L3 modules and addition of new feature on top of it.
  - Implemented 5G QOS filtering feature under IP Fragmentation scenario.
  - Worked on modern C++ based locking strategy to prevent concurrent access to a large existing code base.
  - Worked on latest 5G NR Rel-16 changes & features for creating new ideation and use cases.
  - Implemented a C++11 Reflection Library for compatibility between JSON and C++ objects.
  - Worked on Legacy code redesign in C++.

  Senior Software Engineer | Network Layer, Commercial Modem SW Development *July'19 - February'21*
  - Resolved issues in 5G L3 modules during commercial testing by OEM vendors.
  - Developed a serializer tool for messages exchanged between User Device and LTE Core Network.
  - Contributed to a in house JSON Library development in C++11 along with its optimization and benchmark.

  Awards, Patents and Recognition
  - Recipient of the **Employee of the Month** award twice.
  - Received **High Performer** Rating consecutively for two year.
  - Patent : Method and user Equipment for managing failure in registration for accessing network slice.

  Tools & Technologies: C++11, Generic C++ Design, Templates, Template Meta Programming

MAJOR PROJECTS

- **Bringing 5G to Reality : 5G TEST-BED** *May'18 - June'19*
  M.Tech Project (Advisor: Prof. Mythili Vutukuru)
  - Prepared the design documents for 5G network functions like gNodeB, AMF for mobility management
  - Implemented a standard compliant NAS and NGAP protocol stack for mobility management and GTP-U protocol for session management procedures
  - Implemented a **multi-thread** AMF with a **thread-pool** implemented using **C++11** with performance numbers equivalent to Microsoft's PPLX asynchronous library.
  - Implemented Rest APIs for 5G Service Based Architecture using Microsoft's CppRestSDK.
- **Dynamic resource management of LXC containers**
  CS 695 Topics in Virtualization and Cloud Computing (Advisor: Prof. Purushottam Kulkarni) *(Autumn 2017)*
  - Extracted resource parameters using a bash script from the container specific **control groups** and written a python script to monitor live CPU and memory usage from a remote machine

- Written a python script to increase or decrease CPU and memory allocated dynamically based on the load on the applications executing inside the **LXC containers**

- **Live location tracking and accident detection android app**
  CS 653 Mobile Computing (Advisor: Prof. Vinayak Naik) *(Autumn 2017)*
  - Designed and developed an android app to detect falling events using accelerometer data and LIBSVM library in **Android Studio**
  - Developed a module to fetch location (latitude and longitude) of a target device using SMS service provided the phone number as input
  - Implemented a module to track live location of another android device using **firebase** and **Google Map API**

- **Transfer learning for image classification problem**
  CS 725 Foundation of Machine Learning (Advisor: Prof. Ganesh Ramakrishnan) *(Spring 2017)*
  - A **CNN** was used as a fixed feature extractor for the images. Features from the **CNN** were used as input for Neural Network, **SVM** and **AdaBoost** classifiers and performance across them was compared
  - Studied the impact of using features extracted from **AlexNet**, a pretrained model instead of training **CNN**
  - Observed significant improvement with **Alexnet** as compared to native model for Asirra Dogs vs Cats dataset
- **Full Stack Song Lyrics Website**
  CS 682 Software Engineering, group project (Advisor: Prof. G Sivakumar) *(Spring 2019)*
  - A **Full Stack** web-app was implemented for viewing song lyrics in Hindi and find word meanings in English.
  - **VueJS** was used for a single page front end application and the back-end was implemented using **NodeJS**.
  - The entire application was containerized with **Docker Compose** and deployed in **Google App Engine**.
- **Algorand Discrete Event Simulator**
  *(CS 620 New Trends in Information Technology, group project **Prof. Vinay J. Ribeiro**)* *(Spring 2019)*
  - A **Discrete Event Simulator** was implemented to simulate the stake based **Algorand's Cryptocurrency** Network.
  - A set of experiments were performed to tune the system parameters like, quorum size, no. of block proposers, no of empty block with fail stop byzantine adversary.

Technical Skills

- **Languages**: C,C++11, Python, Go
- **Tools and Technologies**: Git, Perforce, LaTeX, GDB, Socket Programming, Multi Threading, C++ Template Design Pattern, Docker Container, Jenkins

ACHIEVEMENTS

- Secured **99.60** percentile in **GATE-2017** CS/IT among **96878** candidates *(2017)*
- Achieved **2nd** position in an *in class* **Kaggle**, machine learning competition out of 122 students, IIT Bombay *(2017)*
- Won **2 Bronze** medals in long rated contests on **HackerRank**, Highest Rating: **1989**, Handle: **DebashishDeka**. Active paticipant in Codeforces and solved 300+ problems on various online judges *(2015-till date)*
- Secured **1st** position in **ROBOTRYST'14** zonal round at NIT Silchar, (a national robotic championship) and seleted for the grand finale at IIT Delhi *(2014)*
- Successfully completed and received a passing grade in **AUTONAVx**, Autonomous Navigation for Flying Robots, a course of study offered by Technical University of Munich (TUMx) through **edX** *(July'2014)*
- Secured **1st** position in **BOTCRAFT'12**, a wireless robotic event at Tecnoesis, NIT Silchar *(2012)*

Hobbies and Self Projects

- Following Modern C++ best practices and I write blog articles at [Blog] • Competitive Programming • Computer Games and Cricket • Building distributed self projects like Map-Reduce,Raft, Block-chain by following MIT's 6.824: Distributed Systems course.
- Implemented a C++ wrapper on top of Linux's new IO Uring API for asynchronous Networking load. This Project is under development and future plan is to incorporate C++'s new asynchronous model along with co-routine support. [AsyncIO]
- Implemented a small C++ library to achieve User Level Thread abstraction for x86-64 systems. UserSpaceThread and the related blog [Tour of Registers]