

SAUMITRA SAPRE

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EDUCATION

University of California, San Diego

Master of Science, Computer Science and Engineering

Relevant Courses: Supervised & Unsupervised Learning, Software Engineering, Algorithms, Networks

Sep. 2022 – Jun. 2024

San Diego, CA, USA

GPA: 3.91/4.0

Pune Institute of Computer Technology, Pune University

Bachelor of Engineering, Computer Engineering

First Class with Distinction | Perfect **10/10 GPA** in senior year

Jul. 2017 – Jul. 2021

Pune, MH, India

GPA: 9.63/10

TECHNICAL SKILLS

Languages: C++, Python, Java, GoLang, Shell & PowerShell scripting, SQL, R, HTML/CSS

Tools : Protocol Buffers, Docker, gRPC, Vitis HLS, Git

Frameworks: NLTK, Pandas, Keras, TensorFlow, PyTorch, Scikit learn, NumPy, Rasa NLU, Android, ElectronJS

Skills: Natural Language Processing, Android App Development, Game Development, High Level Synthesis

OS Modules: Linux Volume Management, ZFS, Windows Management Instrumentation, Microsoft VSS

EXPERIENCE

Design Lab - UC San Diego

Oct. 2022 – Present

Graduate Student Researcher

San Diego, CA, USA

- Research member working on analysing AI explainability and trust with self driving cars to impact important design decisions for the automotive industry in the years ahead.
- Used VR integration with **Unreal Engine 4** and **CARLA** to design **60+** realistic driving simulation scenarios.

RackWare Inc.

Jul. 2021 – Aug. 2022

Software Engineer - RMM Team

Pune, MH, India

- Part of the **5 person core engineering team** in India that developed, maintained and enhanced RackWare's premier cloud migration and DR product called 'RackWare Management Module' (RMM).
- Optimized RMM's storage safety mechanism to continuously monitor and securely cut off running syncs to prevent image corruption during high disk usage. Eliminated redundant system calls by **80%**, reducing major CPU load.
- Coordinated the complete overhaul of RMM's self-extracting installer, reducing redundant user interactions by **87%**. Designed several critical fail-safes to improve product robustness during installation.
- Added product support for auto-provisioning Ubuntu - 14,16,18, SUSE - 12, 15 images on AWS, and provisioning Oracle Linux hosts on Azure; Solved **20+** critical cloud migration issues across Azure, OCI and AWS environments.

PUBLICATIONS

Knowledge Graph Generation From Text Using Neural Machine Translation Techniques

Aug. 2021

International Conference on Communication Information and Computing Technology (ICCICT)

[Link ↗](#)

- Analyzed several approaches used for SPARQL machine translation, particularly for data insertion in knowledge graphs. Curated custom datasets from DBpedia for machine translation of plain text to SPARQL insert queries which reached average **BLEU scores of 98.28** on Attention-RNN and Transformer models.

PROJECTS

Surfstore - Fault Tolerant File Storage System | GoLang, gRPC, Protocol Buffers

- Implemented a fault tolerant file storage system (similar to Dropbox) to synchronise file access across multiple devices.
- Ensured fault tolerance and scalability of nodes by employing the RAFT protocol and consistent hashing.

Emotionally Aware Chatbot | Rasa NLU, TensorFlow, MongoDB, Python | [Link ↗](#)

- Led a team of 4** that designed a user adaptive conversational agent to perform cognitive behavioral therapy.
- Modified the DIET classifier and implemented a custom TensorFlow NMT engine to detect intent and entities and curate personalized, empathetic responses that helped improve mood.
- Presented project at the International Conference on Smart Technology, AI & Computer Engineering (**ICSTAICE**)

ML Performance Analysis on Different Hardware | Keras, HLS4ML, AMD Vitis HLS, Python

- Analysed the performance of standard ML models across Intel Xeon (CPU), Nvidia Tesla (GPU) and Zynq-7000 SoC (FPGA) architectures. Achieved a **600x** speed improvement over the CPU and **350x** speed improvement over the GPU when testing the same models on the FPGA.
- Performed model compression and layer quantization optimizations to fit the model within FPGA resource constraints.

Indoor Positioning System | Android, BLE, Java | [Link ↗](#)

- Built a system to navigate between places in closed environments using Bluetooth Low Energy (BLE) Technology.
- Performed real-time localization using **trilateration** & route mapping with the help of BLE beacons placed in closed environments where GPS was ineffective. Accurately mapped **100 sq. ft.** of college library interiors.
- Ranked amongst **top 5 winners** in the institute level round at Smart India Hackathon (SIH) 2020.