


Sarang S

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EDUCATION


Birla Institute of Technology and Science (BITS) Pilani, K. K. Birla Goa Campus 2021 - 2026
BE Computer Science and Engineering & MS Economics | CGPA: 7.9 / 10.0 Goa, India

EXPERIENCE

UST Innovation Labs  May 2023 – Jul 2023
Research Intern | C++, Python, PyTorch, ROS2, RabbitMQ Thiruvananthapuram, India

- Developed a warehouse simulation environment in ROS2 and Gazebo to evaluate autonomous navigation agents and benchmarked Goal-Guided Transformer, a multi-modal transformer-based reinforcement learning architecture.
- Implemented **real-time streaming** of IMU data from a custom I2C driver through **RabbitMQ**.
- Gained experience in understanding the corporate structure and coordinating projects with stakeholders.

Data, Systems and High Performance Computing (DaSH) Lab Oct 2022 – Present
Undergraduate Researcher Goa, India

- Working under Prof. Arnab K. Paul  on various **federated learning** projects.
- Managed a cluster of 20+ compute devices, including Raspberry Pis and Jetsons, and set up deployment and monitoring workflows through Prometheus, Grafana, and Ansible.
- Created learning modules on running AI workloads on HPC workload managers like SLURM.

Doge Capital  Apr 2023 – Jan 2024
Web3 Engineer | Solana, Next.js, Node.js, MongoDB, Tailwind, Metaplex Remote, Dubai

- Built Wardrobe, a marketplace for trait NFTs and a first-of-its-kind NFT customizer in the Solana ecosystem.
- Developed a **robust backend** to handle high transaction volume and streamline the **ingress of on-chain data**.
- Scaled the platform using **caching strategies** by leveraging Vercel KV and Vercel Blob.

StraysCue  Feb 2023 – Mar 2023
Full Stack Developer | Node.js, Express.js, React.js, PostgreSQL Remote, India

- Led the development of a **full stack ERP application** for NGOs and deployed to DigitalOcean.
- Implemented hierarchical **role-based access levels** and Firebase Auth.

GoToSpares Nov 2022 – Jan 2023
Python Developer | Bash, Python, Web Scraping, Shell Scripting Remote, India

- Automated large scale data scraping and processing pipeline through scripting.

PUBLICATIONS

EkatraFL: Enabling Decentralized Cross-Silo Federated Learning [POSTER]
Student Research Symposium @ 30th IEEE International Conference on HPC, Data, and Analytics (HiPC 2023)
Sarang S, Yuvraj S. Bhadauria, Druva D., Arihant Bansal, Pinki Yadav, Aditya Shiva Sharma, Arnab K. Paul

TECHNICAL SKILLS

Languages: Python, C++, TypeScript, Java | Rust, Haskell, Solidity, Kotlin
Technologies: Git, Docker, LaTeX, Distributed Systems, Deep Learning, Federated Learning
Frameworks: PyTorch, Jax, TensorFlow, Flower, HuggingFace, React.js, Express.js, Flask, FastAPI,

PROJECTS

EkatraFL | *Flower, FastAPI, PyTorch, Solidity*

- Developed a novel **blockchain-based** framework for **decentralized cross-silo federated learning**.
- Benchmarked the framework on an edge compute cluster and automated the process through bash scripting.
- Built a hackable federated learning framework, **tinyfl** [↗](#), with PyTorch and FastAPI.

Trana [↗](#) | Co-pilot for the web. Built for Moveworks Hack-AI-thon 2023.

- Developed a **FastAPI inference endpoint** for Llama2 7B powered by Langchain
- Built a **context-aware web scraper** and implemented embedding caching into a persistent Chroma vector store.

Curiosity-driven Exploration for Deep Reinforcement Learning [↗](#) | PyTorch, Gymnasium

- Implemented the **Intrinsic Curiosity Module** paper in PyTorch and integrated a **Soft Actor-Critic** agent.
- Performed experiments with variations of the temporal buffer size on **Mujoco's Hopper** environment and compared results with the RL baselines.

Knowledge Distillation for Federated Learning [↗](#) | Flower, PyTorch, HuggingFace

- Implemented the **Federated Not-True Distillation** (FedNTD) paper in Flower and PyTorch.
- Benchmarked the results against FedAvg for VGG16 on tiny-imagenet.

Data Prefetching for Edge Deep Learning Workloads | *PyTorch, Apache Kafka, Distributed DL*

- Optimized convergence time for deep learning training workloads on edge devices.
- Implemented a **pre-fetching mechanism** to reduce I/O overhead and reduce overall training time.
- Used Apache Kafka to **stream data** from a distributed file system to compute nodes.

Project Kratos [↗](#) | *Autonomous Subsystem Member of the Mars Rover team at BITS Goa*

- Fine-tuned YOLO-based model for object detection.
- Integrated Visual Inertial Odometry into the navigation stack.
- Streamlined the sensor calibration pipeline through shell scripting.

ACTIVITIES

Open Source Contributor

- Demonstrable history in open source development with multiple merged code PRs in production level codebases like Flower, QuestDB, Appwrite, Pluto.jl.

Capture the Flag Player | *Core member of team BITSkrieg*

- Mentored students interested in cybersecurity and organized multiple CTFs.
- Competed in various international CTFs like VishwaCTF(2nd), Hacky Holidays(top 100), Winja CTF(18th).
- Placed first in Trialheist by CUSAT and third in OSDG CTF by IIIT-H individually.

Mentor | *Core member of Developer Society, BITS Goa*

- Mentored students on web development technologies and hosted hackathons.
- Worked on multiple projects for clients and university departments.

AWARDS

RMO Scholar (Regional Mathematics Olympiad) | *Homi Bhabha Centre for Science Education* 2020

- Ranked 4th in the state and appeared for INMO 2020.

NTSE Scholar | *National Council of Educational Research and Training*

2019

- Cleared NTS Stage-II 2019 and recipient of the scholarship.

LANGUAGES

English: Native/bilingual proficiency | **Hindi:** Limited proficiency | **Malayalam:** Native/bilingual proficiency