Shyam Jesalpura

Nov 2022 – Present | *PhD student under supervision of Prof. Boris Grot,* University of Edinburgh

- Developing systems for large scale data analytics using serverless workers, spanning query planning, cost modeling, and query execution.
  - Addressed the challenge of the "gigantic search space" for serverless query plans, which can exceed millions of configurations and show massive (50x-1000x) cost-performance trade-offs.
  - Designed and implemented a novel query planner that automatically identifies the set of Pareto-optimal plans, allowing users to balance execution latency and monetary cost.

Publications

- Shattering the Ephemeral Storage Cost Barrier for Data-Intensive Serverless Workflows
  S. Jesalpura, D. Ustiugov, M. Baczun, B. Malper, R. Feyzkhanov, E. Bugnion, M. Kogias, and B. Grot
  In 3rd Workshop on SErverless Systems, Applications and MEthodologies (SESAME), 2025.
- Harmonizing Diverse Compute Resources for Efficiency
  D. Dehigama, S. Jesalpura, M. Kogias, B. Grot
  In 2nd Workshop on Hot Topics in System Infrastructure (HotInfra), 2024.
- Composing Microservices and Serverless for Load Resilience
  D. Dehigama, S. Jesalpura, A. Katsarakis, M. Kogias, R. Kumar, B. Grot
  In 2nd Workshop on SErverless Systems, Applications and MEthodologies (SESAME), 2024.

Work Experience

Aug 2021 – Oct 2022 | *Software Engineer at* Microsoft IDC, *Hyderabad*

- Improved Microsoft Defender for iOS using various security heuristics.

Education

Aug 16 - July 21 | **MSc.** in **Economics** & **B.E.** in **Computer Science**
from **BITS Pilani**, Hyderabad campus
CGPA: 8.71/10 or **3.48/4**

Internships

Jan 2021 – Aug 2021 | *Research Intern at* EASE Lab, *The University of Edinburgh*

- Helping researchers optimize cold start delays in serverless functions.
- Contributing to `vhive` (Open Source Framework for Serverless Experimentation).

August 2020 – Dec 2020 | *Professional Services Intern at* Amazon Professional Services, *New Delhi*

- Developed an automated proctoring system using eye-gaze tracking on AWS.

Summer 2020 | *Summer Intern at* Microsoft IDC, *Hyderabad*

- Enabled Microsoft Defender ATP to scan, quarantine and report the threats inside Linux Docker containers.
- Learned the inner workings of linux containers via linux namespaecs, proc filesystem and union filesystems.

Summer 2019 | *Research Intern at* Indian Institute of Management, *Banglore*

- Automated the digitisation using of 1931 Census data from scanned PDF images using open CV, python-multiprocess.
- Developed a phonetic algorithm to compare and group similar sounding caste names using NLP.

Summer 2018 | *Summer Intern at* Bhaskaracharya Institute For Space Applications and Geo-Informatics, *Gandhinagar*

- Rendering + Simulation of the electrical network of Gujarat from real time geographical PostGIS data.'
- Received "B.I.S.A.G. Innovation challenge" award among 17 competing teams for deploying project well before the deadline.

Summer 2017 | *Summer Intern at* National Innovation Foundation, *India*

- Redesigning a temporary shelter for the Salt Farmers of Kutch which kept the house 5°C cooler. Applied the concepts of Human centered designing and Design thinking

Projects

Aug 19
Oct 19 | Spotlight search for Linux
Apple's spotlight like search engine for linux

- Search inside the document like pdfs, Docx
- Ranked search results in near real time using vector space model
- Real time file monitoring for database updation using inotifywait
- Advanced wildcard query support

Feb 19
Mar 19 | Student Mess Registration Portal
Portal has been deployed and currently registers 8000+ college students/sec

- Increased registration capacity 20 fold to 8000+ requests/sec with 0 % error rate by designing a robust mechanism to handle critical race conditions
- Designed CAPTCHA for the users to prevent people from scripting using go-lang + in-memory DB.

May 18
Aug 18 | Nand2Tetris - 1
Building computer from first principles

- Built a programmable CPU in 6 stages starting from NAND gates as a part of nand2tetris course.
- Stages included building:
  - An Assembler program that translates programs written in the symbolic Hack assembly language into binary code
  - An ALU by combining logic gates, Flip-flops, and registers
  - Memory devices like RAM and ROM using Mux/Dmux and registers
  - Combining ALU, and memory to build CPU capable of running binary code loaded into memory

Positions of Responsibility

Sept 25 - Dec 25 | Teaching assistant for Distributed Systems **The University of Edinburgh**

Sept 25 - Dec 25 | Teaching assistant for Computing Systems **The University of Edinburgh**

Sept 24 - Dec 24 | Teaching assistant & Tutor for Computing Systems **The University of Edinburgh**

Sept 23 - Dec 23 | Teaching assistant & Tutor for Computing Systems **The University of Edinburgh**

Aug 19 - July 20 | Member of Student Faculty Council for **Department of Computer Science, BITS Hyd**

Aug 19 - July 20 | Ex officio **Student Welfare Division, BITS Hyd**

Aug 18 - July 19 | Technical Head for **Student Welfare Division, BITS Hyd**

- Performed Ubuntu linux server administration using nginx.
- Lead the team to develop
  - Complaints portal to add, remove, filter all student complains using PHP and MySQL.
  - Automated certificate generation process to remove human intervention completely

Competitions

March 2019 | **Finalist** in Smart India Hackathon by **Government of India**

- Utilised IRNSS's Messaging Capabilities to direct people towards relief centers during disasters.
- The proposed solutions included sending:
  - 10 relief locations with 100m accuracy, in 220 bits.
  - Alternative of 4 locations, while adding 2 current weather & other critical information alongside
- Simulated the satellite-phone interface using MQTT. Publisher/Suscriber model helped us in directing the message to appropriate client.

July 2014 | National Science Exhibition

- Developed operational model of energy generation from footsteps to charge gadgets on the move and provide air cushion.
- Stood runners-up at the state level.

Skills

Programming Languages: Golang, C/C++, Python
Technology: Databases, Cloud computing, FaaS

Interests and Activities

Game Theory, Economics, Psychology
Rock Climbing, Ultimate Frisbee, Hiking