Deepraj Pandey

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EDUCATION

ASHOKA UNIVERSITY
POST GRADUATE DIPLOMA IN ADVANCED STUDIES AND RESEARCH IN COMPUTER SCIENCE
May 2021 | Sonepat, India

ASHOKA UNIVERSITY
BSc. HONS. IN COMPUTER SCIENCE
May 2020 | Sonepat, India

D.A.V. PUBLIC SCHOOL
May 2017 | Bhubaneswar, India

SKILLS

PROGRAMMING
Current:
Typescript • C++ • Python • C • Javascript • Dart • Flutter • Vue • Hyperledger Fabric • LaTeX

Familiar:
Bash/ZSH • PowerShell • DevOps • Android

Other:
Git • Processing • Google Apps Script Arduino • Ruby on Rails • TI-BASIC

Systems/Simulators:
Linux • MacOS • AWS • GCP • Gem5 NVMain • Champsim • JOS Kernel

COURSEWORK

Programming Language Design (TA)
Advanced Computer Architecture
Program Analysis*
Operating Systems
Computer Security
Algorithm Design
Advanced Programming

Adv elective in first year.

VOLUNTEERING

Alumni Relations Committee | 2020
Part of the student committee set up to strengthen student alumni relationships.

Ashoka Student Ambassador | 2019
Student contact for prospective applicants from Eastern India.

MLH Local Hack Day | Dec, 2017
Organised a 12 hour internal hackathon at Ashoka University.

MISCELLANEOUS

Calligraphy
Rollerskates
Mechanical Keyboard Enthusiast

EXPERIENCE

MICROSOFT RESEARCH | RESEARCH INTERN
August 2021 - Present | Bengaluru, India
- Advised by **Dr. Srinivasan Iyengar** on a multi-disciplinary, high-impact project in sustainable computing.
- Responsible for experimental and literature-review based decision making for research direction.

DEPARTMENT OF COMPUTER SCIENCE | TEACHING ASSISTANT
August 2020 - Present | Ashoka University, India
- TA under **Prof. Gautam Paul** for **Introduction to Computer Programming**, Spring 2021.
- TA under **Prof. Manu Awasthi** for **Programming Language Design and Implementation**, Monsoon 2020.
- Handled course logistics, designed & graded assignments and exams.
- Conducted weekly office hours to cover supplementary material.

BLOCKCHAIN RESEARCH GROUP | RESEARCH ASSISTANT
May 2020 - September 2020
- Worked with **Prof. Mahavir Jhawar** and built **CovidBloc** - a transparent, privacy-preserving contact tracing system on blockhain.
- Designed and developed a framework based on the **Google-Apple Exposure Notifications Crypto Specification** from scratch on Dart and TypeScript.
- Contribution: EN server - Hyperledger Fabric, health web portal - Vue (with support for **offline verification** of patients), & user app - Flutter (partial).
- Submitted to **SPACE 2020** under short paper category. [eprint]

DEPARTMENT OF COMPUTER SCIENCE | RESEARCH ASSISTANT
May 2019 - Aug 2019 | Ashoka University, India
- Worked with **Prof. Manu Awasthi** on non-volatile memory architecture in hand-held devices.
- Designed an interface to **gem5** to add **arbitrarily deep** cache hierarchies with non-volatile memory (via NVMain) for simulations.

PROJECTS

KEY VALUE STORE ON INTEL SGX | GITHUB LINK
Aug - Dec 2020
- Designed and developed a basic in-memory key value store on Intel SGX.
- Language: C++; followed TDD, ensuring memory safety using Valgrind during development.
- Part of a larger project on exploring feasible KVS architecture (based on works like **ShieldStore**) on Intel SGX. Link to **a presentation on the work**.

DEAD BLOCK CORRELATING PREFETCHERS ON CHAMPSIM | GITHUB LINK
Jan - May 2020
- Reproduceability study of the DBCP paper from 2021 with proposed improvements.
- Language: C++, C, Bash, Python; reproduced results on SPEC 2017.
- Link to **the report**.

SPLIDWISE: FINANCE MANAGEMENT DAPP | GITHUB LINK
Jan - May 2020
- Designed and led development of a distributed application to help users split their bills by recording payments.
- Tech Stack: **Hyperledger Fabric 1.4**, NodeJS REST API with OAuth, VueJS, AWS, Certbot SSL.
- Links to **Report**, **Presentation**.

PROJECTS

Superhuman Browser Extension | Freelance
Reverse engineered Superhuman Email Client & added a feature to send automatic text messages on email opens. Private freelance project.

Garbage Collector | GitHub
Implemented the mark and sweep phases of a stop the world garbage collector for Programming Language Design and Implementation class.

Gina | GitHub
A bot built on first principles for syntax analysis and to learn a new language based on user translations.

DES Implementation | GitHub
A DES implementation in **C++** from scratch.

Network Design Cisco Packet Tracer
Designed multiple networks on Cisco Packet Tracer - inter-networks with DHCP servers, web hosting, DNS servers, VLAN, NAT enabled routers (private networks) etc.

OS Labs on xv6
Coursework similar to MIT 6.828. Edited kernel code to add physical page allocators, interrupt handlers, system calls, page faults, and context switches.

Trace Driven Cache Simulator | GitHub
Simple, proof of work trace based cache simulator with 32KB L1 caches (4 words).

Distributed Server | GitHub
Distributed, multithreaded TCP server with a priodic concurrency phase that ensures all servers have the same copy of the data sent from clients.

COMMUNITY

Computer Architecture Reading Group - Summer '19, Spring '20

Google Developer Group, Bhubaneswar: 2015 - Present

Google Develper Day: 2016 (Bhubaneswar), 2019 (Gurgaon)

LINKS

Github:// **DeeprajPandey**
LinkedIn:// **DeeprajPandey**
Academia:// **DeeprajPandey**
Twitter:// **@DeeprajPandey**
dblp:// **DeeprajPandey**

CONFERENCES

INTERNATIONAL SYMPOSIUM FOR COMPUTER ARCHITECTURE | Undergraduate Workshop Attendee
June 2019 | Phoenix, USA
- One of 42 undergrads selected from across the world for the **first undergraduate architecture workshop** at ACM FCRC - **ISCA 2019**.
- Received funding from UC Davis and a travel grant from Ashoka.
- Mentee under **Dr. Parthasarathy Ranganathan** as a part of the Senior Architect Mentor Matching program at the workshop.

MLH HACKCON VI | GitHub Scholar
June 2018 | Pennsylvania, USA
- Awarded the GitHub Scholarship for attending the student hackathon organiser conference organised by MLH and GitHub.
- Only student organiser representing a high school hackathon (HackDAV).
- Ideated a hacker exchange program with UMass & UTexas with GitHub.

ISTEM HACKATHON | Winner
Jan 2019 | IIIT Bangalore, India
- Worked in a team of VI and non-VI participants to build web app that extracts text data from coding tutorial videos for viewers with visual impairments.
- Our team won the hackathon which had 75+ participants including Graduate students and professionals from across the country.

NOTRE DAME LEADERSHIP SEMINARS | Participant
July 2016 | Notre Dame, USA
- Only student from India (among the 98 from across the world) selected for a **fully-funded** summer program at the University of Notre Dame.
- Seminar on the ethical concerns of space exploration under **Prof. Don Howard** and **Dr. Jessica Baron**.

LEADERSHIP

REDBRICK HACKS | Co-Head
August 2020 - Present | Ashoka University, India
- Currently co-heading the organising team of Ashoka University's flagship hackathon.
- Managing a team of **40** undergraduate students across **6** departments: finance, tech, marketing, hacker relations, legal, events.

WOMEN IN COMPUTING SOCIETY | Head of Events
August 2019 - July 2020 | Ashoka University, India
- Initially shared the position, later headed a team of 8. Organised workshops, guest talks, and socials, usually around inclusivity in Tech.
- Took workshops on Git, Docker, Intro to Programming, web technologies since 2017 on behalf of the society.

MLH SUMMER LEAGUE HACKATHONS | Mentor & Judge
May 2020 – August 2020 | Remote
- Judged **20-30** submissions at every hackathon in the MLH Summer League - one online event **every weekend** all summer.
- **Mentored** multiple projects at the hackathons that had 500-700 participants from all over the world.

HACKDAV | Founder
October 2015 – Present | Bhubaneswar, India
- Founded the state's first hackathon for high school students.
- Applicants from across India and 5 other countries.
- Led the team that raised **INR 18,00,000** in sponsorships for 2017.
- Major sponsors include DigitalOcean, Soylent, JetBrains, MLH, Balsamiq, Hackerearth along with Google and Microsoft Developer Groups.