Ankush Pathak

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Education

- **Indiana University, Bloomington, IN, US** May 2023
  Master of Science in Computer Science GPA: *4.0/4.0*
  Courses: *Engineering Cloud Computing(A+), Operating Systems(A+), Computer Networks(A+), Elements of AI(A+), Software Engineering(A+), Applied Algorithms, Applied Distributed Systems & Competitive Programming.*
- **Pimpri Chinchwad College of Engineering (University of Pune), India** May 2018
  Bachelor of Engineering in Computer Engineering GPA: *79.4%*

Skills Summary

- **Programming Languages**: Python, C++, Java, JavaScript, Bash
- **Platforms**: Linux, Android, Ethereum, Django
- **Tools**: Git, Kubernetes, Docker

Experience

- **Graduate Research Assistant, Indiana University, Bloomington, IN** Aug 2022 - May 2023
  - **Multiband WiFi Performance Optimization**: Evaluated the use of low-power high-range sub-1 GHz 802.11h HaLow radios to improve 802.11b/g/n connection delay and throughput between mobile nodes.
- **Cloud Engineer Intern, TIBCO, Bloomington, IN** Aug 2022 - Dec 2022
  - **AWS Cost Report**: Worked on developing an AWS Lambda module in Rust to facilitate aggregation of AWS billing details for business units and reporting them according to user specified cost categories.
- **Production Engineer Intern, Meta (formerly Facebook), Boston, MA** May 2022 - Aug 2022
  - **RPC Framework Migration**:
    - Migrated a **Python**-based TLS certificate management service from a legacy Python implementation of the Thrift (a RPC protocol) framework to a modern Cython-wrapped C++ implementation of the same framework.
    - The migration involved adopting a synchronous codebase to Python async style code.
    - The **async** style adoption led to upto 17% improvement in request processing latency.
  - **Code Timing Module**: Implemented a module for the same service to time arbitrary blocks of code based on a configured sampling rate.
- **Software Engineer, Persistent Systems, Pune, India** Jul 2018 - Aug 2021
  - **Email Encryption Product**:
    - Refactored a legacy on-premise product codebase to make it deployable on modern cloud platforms.
    - Designed, implemented, and deployed a **Go** (designed at Google) module on **Amazon Web Services Lambda** to aggregate logs.
    - Wrote over 100 **unit test cases** for two microservices improving their code coverage from 40% to 90%.
    - Implemented REST APIs on **Django** to facilitate user authentication and email encryption.
    - Worked on pushing data received via APIs to **Redis** store.
    - Designed and built an integration and deployment pipeline on **Jenkins** to build **Docker** images and deploy them on a **Kubernetes** cluster hosted locally or on Amazon Web Services EKS.
  - **Email Marketing Product**:
    - Optimized core business logic to improve product performance for a use-case from 1 to 1.7 million records processed per hour. The effort involved arduous **C++ debugging** of a multi-process system.
    - Implemented an on-demand shutdown for a **Java** multi-threaded data import process.
    - Resolved complex issues reported by end-users on production systems through systematic investigations.

Academic Projects

YouTube-hosted demos or reports for some of my projects can be viewed here: https://bit.ly/38zYz57

- **Distributed Map-Reduce**: Implemented a distributed map-reduce system in C++ that can accomplish arbitrary user-defined map-reduce jobs. Code hosted at https://bit.ly/ank-mr, includes a PDF report. Also implemented an automated script to deploy this project on Google Cloud Platform. (Nov '22)
- **Design and Implementation of a Secure and Robust Voting Machine using Blockchain**: Built a service deployed on Pi Zero to authenticate users using fingerprint and perform blockchain operations using Ethereum Web3 module. (Apr '18)

Student Involvement

- Qualified for and participated in Association for Computing Machinery (ACM) ICPC Coding Contest Regionals in Nov 2016.
- Published articles (1,2) in ACM XRDS. One of which has also been featured on ACM Selects.