Arka Pal

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Education

University of Illinois - Chicago (UIC), Chicago, IL
Master of Science in Computer Science **(Expected: May 2024)**
Related coursework: Algorithms, Computer Networking, Cybersecurity.

K.J. Somaiya College of Engineering (KJSCE), University of Mumbai, India
Bachelor of Technology **(August 2018 – May 2022)**
Electronics and Communications Engineering
Related coursework: Data Structures and Algorithms, Computer Networking, Cloud Computing, Cybersecurity.

Experience

Project Intern | TATA Projects, Mumbai, India (August 2020 – September 2020)
- Devised an application to collect details on 1000+ vehicles from a hosted database using APIs.
- Reduced data preprocessing time by 30% by making output of program compatible with requisite parameters for monitoring.

Software Intern | Enhanced Software Solutions, Mumbai, India (December 2019 – January 2020)
- Designed a web application to track resources spent on off-site visits for 100+ employees.
- Developed using Flask, SQLite, HTML, CSS, Javascript and Bootstrap.

Technical Head | IETE, KJSCE chapter, Mumbai, India (July 2020 – July 2021)
- Led efforts for the ideation to the execution of 6+ technical projects for technical events and seminars.
- Spearheaded workshops on multiple subjects like embedded systems, microcontrollers, programming and Computer Networking, and taught 100+ students on these subjects.

Intern | Synergy Community, Mumbai, India (August 2020 – September 2020)
- Produced 30+ pages of documentation and course material for learning and understanding the concepts of the Flask micro-framework.
- Mentored 50+ students and reduced the time taken by them by 20% on average in utilising the framework.

Academic Projects

AWS Cloudresume Challenge, UIC (December 2022 – January 2023)
- Initialised an S3 bucket to host a static website to be served through a Cloudfront distribution for wide coverage with minimal latency.
- Architected a backend consisting of the services of 4+ AWS services like DynamoDB, API Gateway, Lambda Functions and the requisite IAM capabilities (roles and permissions for temporary access) to show the number of visitors to the front-end (website).
- Consolidated all of the back-end infrastructure in Cloudformation templates to implement an IaC paradigm for the project.
- Developed a front-end website to host an online version of personal resume powered by the defined resources.

SDN Firewall, KJSCE (August 2021 – April 2022)
- Simulated a corporate network with requisite amount of traffic flow to provide suitable avenues for DDoS and ARP attacks, using Software Defined Networking (SDN) components available in Mininet.
- Created a firewall for SDNs using rule-based prevention logic to block against ARP and DDoS attacks on the Controller.
- Employed two of the most robust SDN controller implementations in Python, POX and RYU.

GRE-over-IPSec VPN, KJSCE (January 2021 – July 2021)
- Constructed a GRE-over-IPSEC VPN between two enterprise endpoints using Cisco infrastructure.
- Incorporated over 8 network technologies like DNS, FTP, VLANs, OSPF, GRE, IPSEC, LACP, NAT44.
- Link to executable demo (.pkt): File

Skills

Certifications:
- *Cloud Computing*: AWS Certified Solutions Architect Associate (SAA-C02), AWS Certified Cloud Practitioner (CLF-C01)
- *Computer Networking*: CCNA: Enterprise Networking, Security, and Automation; CCNA: Switching, Routing, and Wireless Essentials

Cloud Computing: S3, Cloudfront, DynamoDB, Lambda Functions, API Gateway, IAM, Cloudformation, EC2, VPC, ALB/ELB, EKS, VPC, IGW, VGW, CGW, Security Groups, Route Tables, Subnets.

Computer Networking: DNS, DHCP, OSPF, LACP, IPSEC, GRE (GRE over IPSEC), VLANs, NAT44, experience with Cisco IOS.

General: Python and Shell scripting.

Software Development: Python, Flask, BeautifulSoup, Requests, Pandas, HTML, CSS, Javascript, Bootstrap.