SIDDHANT KAR

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EDUCATION

Year	Degree	Institution	GPA
2016-20	B.Tech, CSE	Indian Institute of Technology, Kanpur	9.2/10.0
2016	XII (CBSE)	Central Academy	94.6%

WORK EXPERIENCE

Nutanix — *Bengaluru, India*
Member of Technical Staff - III — Aug'22 - present

- **IAM as a Service:** Worked on developing a brand new Identity and Access Management (IAM) solution based on a micro-service architecture. Made multiple improvements to back-end performance and scalability in order to make it capable of handling hundreds of authentication and authorization requests per second.
- **Service Accounts:** Designed and implemented a new type of identity in IAM called service accounts. Added support for API key and certificate-based authentication, and integrated with various workflows across products. Also added attribute-based access control (ABAC).
- **Federated IAM:** Implemented the domain registration workflow in Nutanix Central (NC), wherein API keys are used to set up federation between two IAMs, one within NC and the other on-prem. Also implemented federated login between the two using OAuth token-exchange.

Member of Technical Staff - II — Aug'20 - Aug'22

- **CAC and SAML IdPs:** Added support for user login via a Common Access Card (CAC) or certificate, along with revocation checking using protocols like CRL and OCSP. Also enabled login using SAML identity providers, with single sign-on (SSO) and single logout (SLO) supported via both HTTP POST and redirect bindings.
- **Minor Features and Support:** Worked on several other minor features, and debugged and fixed a lot of bugs/support tickets. Also responsible for on-boarding three product engineers and managing several interns. Led their training and development and later reviewed their code regularly to ensure code quality.
- **Skills and Technologies:** Proficient in Go and Python. Also familiar with Envoy proxy, Crunchy Postgres, Redis, Prometheus, and Jaeger on Kubernetes.

Intern, Member of Technical Staff — May'19 - Jul'19

- **Integration with KMS:** Modified an open-source key management server (external KMS) called PyKMIP and integrated it with the existing distributed secret store on AOS in order to help manage encryption keys.
- **CVE Scanning:** Created a tool to scan code repositories for CVEs (Common Vulnerabilities and Exposures), with added support for decompilation of binary files.

SCHOLASTIC ACHIEVEMENTS

- **Academic Excellence Award**, IIT Kanpur — 2016-18
- All India Rank **195**, IIT JEE **Advanced** — 2016
- All India Rank **219**, IIT JEE **Mains** — 2016
- Awardee, **KVPY** and **NTSE** Scholarships — 2012-14

TECHNICAL SKILLS

- **Programming**: Go, C++, Java, Python, bash, CUDA, PHP
- **Infra**: Kubernetes, Docker
- **Database**: PostgreSQL, Redis, Cassandra

PROJECTS

Compiler for Go — *Compiler Design*
Prof. Amey Karkare — Jan'19 - Apr'19

- Developed a **Golang to X86** compiler, up to AT&T format assembly, with all basic functionality as well as features like function overloading and auto type-inference.

Quantum Query Complexity — *Quantum Computing*
Prof. Rajat Mittal — Jan'20 - June'20

- Applied different techniques to find the gap between a function's degree and its block multi-linear degree.

Schelling Games — *Game Theory*
Prof. Sunil Simon — Sep'19 - June'20

- Worked on various game-theoretic models of Schelling segregation. Proved several hardness results and derived algorithms related to equilibrium existence.

EVeN: Event Venue Notifier — *Computing Laboratory*
Prof. Nisheeth Srivastava — Aug'18 - Nov'18

- Created a web/mobile application that notifies users of events based on the time and their current location.

GemOS: x86 Operating System — *Operating Systems*
Prof. Debadatta Mishra — Aug'18 - Nov'18

- Implemented virtual memory, paging, system calls and page fault/exception handling, signal handling, process management (clone and sleep), scheduling of processes, and a file system for GemOS.

Code-based Cryptography — *Summer Intern, ISI Kolkata*
Dr. Anirban Ghatak — May'18 - Jul'18

- Worked on cryptanalysis of the GPT system, a code-based cryptosystem based on rank-metric codes.

RELEVANT COURSEWORK

Data Structures & Algorithms	Algorithms - II
Compiler Design	Operating Systems
Database Management Systems	Computer Networks
Algorithmic Game Theory	Linear Programming
Randomized Algorithms	Computer Graphics

EXTRACURRICULAR

- Stood 1st among over 50 teams in the on-campus **code.fun.do** organized by Microsoft.
- Mentored students and conducted institute-level classes as an **Academic Mentor** for mathematics.
- Performed as a vocalist for Music Club, IIT Kanpur.