Arnav Gupta

Junior @ IIITD | Developer |Competitive Programmer | Security Researcher

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Education

Indraprastha Institute of Information Technology – New Delhi, India (IIITD) **CGPA: 7.96**

B. Tech | Computer Science and Applied Mathematics (CSAM) *Jan 2022 – Present*

- Core team member, problem setter, and tester for cybersecurity clubs (d4rkc0de and OWASP) @ IIITD
- Undergraduate Researcher @ Networking and Security Lab IIITD under Dr. Sambuddho Chakravarty
- Attained a flawless 10 CGPA in Algorithm design and Analysis, Operating Systems, Advanced programming, and Introduction to Programming.
- Technical Courses studied Operating Systems, Computer Networks, Networks and System Security, Distributed Systems, Parallel Runtimes for Modern Processors, Data Structure and Algorithms, Object Oriented Programming, Algorithm Design and Analysis, Theory of Computation, Optimization Mathematics, and Introduction to Programming. (Full List)

Work Experience

Software Engineering Intern (SWE Intern) @ Google India *May 2024 – Present*

Team: Google Local Search (RWJ India)

- Aimed to improve search results for mixed-language queries, addressing lower classifier scores and gaps in local categorical rankings. Developed a classifier to create a query set from past user queries, which was used to train local ranking models, thereby enhancing local results ranking.
  Skills:
  Natural Language Processing (NLP), Machine Learning, Search Results Page ranking, few-shots prompting and, MLOps.

Undergraduate Researcher @ Networking and Security Lab IIITD *July 2023 – Present*

Guide: Sambuddho Chakravarty

Project: Android Side Channel Attacks malware *Thesis*

- We aim to assess potential vulnerabilities in Android systems, employing machine learning to investigate eavesdropping on user credentials, GPU memory dumping, and subsequent recreation.
- By leveraging machine learning techniques, the team developed a classifier based on the Side Channel exploitation methodology, achieving high accuracy in user behavior classification and eavesdropping detection.
  Skills:
  Android Kernel hacking, GPU Based Side Channel attacks, OS Syscalls exploitation, Machine Learning, User Behavior Classification and, Penetration Testing.

Undergraduate Researcher @ Networking and Security Lab IIITD *June 2023 – Dec 2023*

Guide: Sambuddho Chakravarty

Project: GPU Based Firewall *Source Code*

- Our project aimed to leverage the power of General-Purpose GPU (GPGPU) computing to optimize the performance of a stateless firewall. By offloading computationally intensive tasks to the GPU, we sought to achieve faster packet processing, an increased firewall rules list, and improved network security.
  Skills:
  CUDA C++ programming, General-Purpose GPU computing and Multithreaded kernel Programming.

Ratings

CodeForces Profile
- Highest – 1067

CodeChef Profile
- Highest – 1606 (3-Star)

HackerRank Profile
- Java – 5 Star
- Problem-Solving – 3 Star

Technical Projects

Adaptive Work Stealing Runtime (Self Implemented Parallel Runtime) *Performance*

- This project aimed to create a more efficient and scalable backend for HClib through advanced task management and optimization techniques. This improved the HClib runtime by integrating a custom work-stealing runtime to manage async-finish tasks more effectively. This included implementing a scheduler, optimizing multicore processor locality, and enhancing energy efficiency with dynamic concurrency control and power-saving methods.
- Used concepts like OOPS, Compiler design, Async, ULT and KLT creation, Concurrency Control, Dynamic concurrency throttling, Profiling and Task Optimization.
  Technologies used:
  HClib Runtime, C++ Language, likwid Library, pthread library and, automake.

Cardiovascular Disease Prediction (Disease Prediction using Machine Learning) *Source Code*

- Cardiovascular Disease Prediction utilizing health indicators such as blood pressure, age, cholesterol, height, weight, etc.
  Technologies used:
  Python language, Sci-kit learn ML modelling library, NumPy and, Pandas.

BUY-IT (Online Retail Store Application) *Source Code*

- Online Retail store application with a scalable database using microservices architecture.
- Used concepts like OOPS, UI/UX, Microservices architecture, Database design, Continuous Integration and Continuous Deployment (CI/CD), and Component-based design.
  Technologies used:
  React, Tailwind, HTML, CSS, JavaScript, MySQL database, GitHub Actions and, Docker.

Technical Achievements

- Contributed 8,694 lines of code in HACKTOBERFEST 2022 distributed across various repositories. GitHub
- Managed 42 HACKTOBERFEST 2023 contributions, overseeing 12,110 lines of code as a maintainer. GitHub
- Bertelsmann Tech Booster Challenge 2024 nanodegree recipient in Enterprise Security, ranked among the top 500 out of 17,000 applicants.
- Secured rank 3 (38 Projects) in Hack Overflow 2.0 for providing a technical solution within sustainable development technologies. (**Project Name**: BAISAKHI.AI) Project Link

Skills

Technical Tools and Technologies:

Core Languages:
Java, Python, C, C++, SQL, MATLAB, HTML/CSS, JavaScript

Tools and Frameworks:
Gradle, Maven, Git/GitHub, libGDX, Docker, Docker Swarm, Nginx, Android JVM, Linux, CUDA, hclib, ZeroMQ, gRPC

Scripting, Cloud, and Database:
Selenium, Beautiful Soup, Bash Scripting, Google Cloud, AWS, MongoDB, SQLite, MySQL

Languages:
Fluent in English and Hindi

Certifications & Training:
Intro to ML with Tensor Flow by Bertelsmann, Docker Basic by Kode Kloud, Intro to Cybersecurity by Bertelsmann, Enterprise security by Bertelsmann, Deploy to Kubernetes in Google Cloud, GPU computing specialization by John Hopkins, and Google cloud essentials.

Other Links

Technical

- **GitHub**: github.com/arnavgupta2003
- **LeetCode:** leetcode.com/extinct_arnav/
- **CodeForces**: codeforces.com/profile/extinct_arnav
- **CodeChef:** codechef.com/users/extinct_arnav

Socials

- **LinkedIn**: linkedin.com/in/arnavgupta-/
- **EMAIL:** arnav.gupta.2003@gmail.com
- **Google Developers:** g.dev/extinct_arnav