Aka Sai Lalith Kumar

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Education

- **Bachelor of Technology, Shiv Nadar University** — Delhi NCR
  Major: Electronics and Communication Engineering; GPA: 8.31 — *Jul 2019 - Jul 2023*
  Minor: Computer Science and Engineering
  Courses: *Data Structures, Artificial Intelligence, Cryptography, Operating Systems, Software Engineering*

Research Publications

- **Ransomware Criminal Smart Contract** — Copenhagen, Denmark
  2024 IEEE International Conference on Blockchain (Blockchain) — *Aug 2024*
  Authors: Aka Sai Lalith Kumar and Sweta Mishra

Experience

- **Industry Solutions Delivery, Microsoft** — Hyderabad
  Consultant — *Aug 2023 - Jul 2025*
  - **MTN EVA 3.0**: Led security efforts as Security Lead for a team of 35 consultants, conducting comprehensive code reviews, threat modeling, and security testing to ensure robust project protection and compliance.
  - **LSEG Voyager Program**: Designed and implemented secure configurations for 40+ cloud services using Azure policies, developed CI/CD pipelines for streamlined deployments, and spearheaded the standardization of cryptographic protocols to enhance cloud security and efficiency.
- **Applied Cryptography Lab, Shiv Nadar University** — Delhi NCR
  Undergraduate Researcher, Advisor: Dr. Sweta Mishra — *Mar 2021 - Jun 2023*
  - **Ransomware Criminal Smart Contract**: Proposed a cryptographic protocol using Smart Contracts, demonstrating the feasibility of ransomware attackers adopting this technology. Modeled the protocol as a Discrete Time Markov Chain and verified it using Probabilistic Checking.
  - **Collaborative Cyber Crime**: Designed and verified a formal mathematical model to evaluate the efficacy of collaborative cyber crime.
  - **Random Number Generator**: Created an experimental, NIST test suite passing Pseudo Random Number Generator using Collatz conjecture's hailstone patterns.
- **MyEra** — Remote
  Software Development Intern — *Dec 2021 - Feb 2022*
  - **Backend Architecture**: Made significant changes to the Backend architecture, wrote new documentation and optimized API performance by 10%.
  - **Admin Page**: Implemented API's for getting user insights and displayed them on Django's admin page.
  - **Twitter API**: Created a crawler to pull the latest trending topics from different sources like Twitter API and integrated it with the backend.
- **Orangewood Labs (Y Combinator W18)** — Delhi NCR
  Software Engineering Intern — *Apr – Jul 2021*
  - **3D data**: Created linear algebra libraries for visualizing and processing 3D point cloud data applications.
  - **Spray painting automation**: Engineered an algorithm to automate and process point cloud data, optimizing the robot arm's path for efficient spray paint distribution.
  - **Optimization**: Handled massive datasets and accelerated the run time from 20 minutes to 1 minute per point cloud using Support Vector Machine, wrote a white paper summarizing the results.

Teaching Experience

- **Teaching Assistant** — Delhi NCR, India
  EED308, Embedded Systems Hardware — *Spring 2023*

- **Course Grader and Capstone Advisor** — Delhi NCR, India
  CSD451, Applied Cryptography — *Fall 2022*

Projects

- **Target Automated Architecture**: Implemented a tool to draw solution architecture diagrams with project-specific style using input fed from an Excel file. Encapsulated the core graphics module into a Gen AI based web application to make it interactive and ease the usage. **[C#, Dotnet ASP.NET core webapi, react, Azure Open Ai]**

- **Format Preserving Encryption**: Engineered a Python implementation of the NIST standard FF3-1 algorithm for format-preserving encryption from scratch, enhancing its performance through optimization. Developed tests and packaged the solution for future utilization. **[Python, PyCrypto, Sockets]**

- **Noised based Random Number Generation**: Designed a two-layer algorithm leveraging signal noise to improve bit generation rates by 25%, overcoming limitations of traditional methods for secure randomness extraction. **[Python, PyTorch, GSP Toolbox]**

- **Image Edge Detection Algorithm**: Created an image edge detection algorithm using graph signal processing that outperformed standard LBP and LDP visual descriptors by 20%. Optimized the solution for usage in embedded systems. **[C++, Matlab, GSP Toolbox, OpenCV]**

Community Involvement

- **IEEE Student Chapter Secretary** — Delhi NCR, India
  Conducted online and offline technical training impacting over 100 students — *Jan 2022 - Feb 2023*

- **Volunteer, Rural Organization for Social Empowerment(ROSE)** — Hyderabad, India
  STEM education for children from underprivileged backgrounds — *May 2022 - Jul 2022*

- **Co-Lead of Hack Data 4.0** — Delhi NCR, India
  Organized the biggest Hackton of SNU with 50 participants — *Nov 2019 - Feb 2020*

Awards & Honours

- **Innovation Maestro, London Stock Exchange Group** — Hyderabad, India
  Awarded for creatively solving critical requirements by Microsoft LT — *Aug 2024*

- **Rise Award, Microsoft** — Hyderabad, India
  Awarded for well rounded contribution to Microsoft's Mission — *Jun 2024*

- **Dean's list, Shiv Nadar University** — Delhi NCR, India
  Awarded for exemplary academic efforts — *2022 Spring, 2023 Monsoon*

Skills Summary

- **Programming Languages**: C#, Python, C/C++, Terraform, Powershell, Assembly
- **Tools & Frameworks**: Git, LaTeX, ASP.NET, PyTorch, Point Cloud library, OpenCV, django