CV

Duvvapu Likhith Kumar

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GitHub: [https://github.com/sherlock1108/pale-dot.git] | **Date of Birth:** August 18, 2001

Education

Bachelor of Technology (B.Tech) – Computer Science & Engineering

IIIT Delhi | 2020–2024 | CGPA: 5.12/10.0

Academic Context: Performance reflects a combination of initially pursuing computer science without strong conviction, undiagnosed health challenges (since resolved), and significant time devoted to broad intellectual exploration across humanities and sciences. From 2024 onward, intensive self-directed study in theoretical physics & cosmology.

Independent Physics Study (2024–Present): Systematic reading across cosmology, general relativity, quantum field theory, through textbooks, online articles, and online courses (MIT OCW Classical/Quantum Mechanics, Stanford relativity lectures). Focus on building theoretical foundations.

GRE General Test
Verbal Reasoning - 154/170
Quantitative Reasoning - 155/170
Analytical Writing - 4/6
TOEFL - 104/120

Research Projects & Technical Work

CMB Power Spectrum and Spatial Curvature Constraints

Theoretical Cosmology | Aug–Nov 2025

- Clarified the discrepancy in the different distance values, justifying using models that use dark energy. Also talked about why there are 2 different values for the Hubble constant (locally measured and measured from the CMB), and why both are correct insofar as their respective frameworks are considered.

Also explained in detail about the representation of the power spectrum of the CMB, and what is describes. And how it explains the geometry of the universe, when inflation theory is taken into account.

- Demonstrated quantitative understanding of photon-baryon acoustic oscillations and horizon physics at recombination **Materials:** [GitHub: CMB-curvature-analysis] |

Hubble Tension: Distance Ladder vs. Early-Universe Constraints

Observational Cosmology | Aug–Nov 2025

- Analyzed 9% discrepancy between H_0 measurements from CMB (Planck: 67.4 km/s/Mpc) and local distance ladder (SH0ES: 73 km/s/Mpc)
- Compared distance-redshift relations from Type Ia supernovae, Cepheid variables, and ΛCDM theoretical predictions
- Investigated systematic uncertainties in both methods
- Demonstrated ability to critically evaluate observational data and theoretical interpretations **Materials:** [GitHub: hubble-tension-analysis]

Spectroscopic Analysis of SS Cygni (Dwarf Nova System)

Observational Astronomy | Nov 2024–Jan 2025

- Resolved the stellar nature of the 2 stars involved in the system based on the given data, temperature & luminosity readings
- Inferred why it had to be a binary system with the 2 stars orbiting very close to each other. **Materials:** [GitHub: SS-Cygni-spectra]

Technical Skills

Programming & Computation: Python (NumPy, SciPy, Matplotlib, Pandas, SymPy), MATLAB, SQL, Java

Professional Experience

Cybersecurity Research Intern | Elevate Labs | May–June 2025

Awarded "Best Performer" | Completed weekly projects and a final mega-project, demonstrating skills and dedication towards real-world tasks in cybersecurity

Verification – hr@elevate-labs.info

Aerospace Research Program | [Omspace Rocket and Exploration Pvt Ltd] | Ongoing (6-month program)

Research Intern – Astrophysics | [*Aug* 2025]–Present

Contributing to [computational modeling / theoretical / simulation] projects in general astronomy & astrophysics

Developing skills in collaborative technical work and translating theoretical knowledge to applied problem-solving.

Specialized Training & Professional Development

Overview of Space Science | Indian Space Research Organization (ISRO) | *July–Aug* 2023

8-week intensive training covering orbital mechanics, satellite systems, space instrumentation, and Indian space program overview.

AGNIRVA Space Internship | AICTE-recognized program | Jan-Mar 2025

Machine Learning and Reinforcement Learning in Finance | NYU Tandon School of Engineering | Jan–May 2024

4-course online specialization focusing on statistical methods, optimization algorithms, and practical applications. Completed capstone project applying ML methods to financial time series; demonstrating ability to master quantitative frameworks through self-study.

Ethical Hacking 101 | Simplilearn | June 2025

Completed foundational cybersecurity course (Certificate: 8423862).

Selected Earlier Projects

E-Vision: Multi-Line Tactile Display for Visually Impaired | 2019–2020

Team member (3-4 students) | Designed and modeled prototype assistive technology device; contributed to hardware design and testing. Final prototype displayed at IIIT-D (Indraprastha Institute of Information Technology, Delhi)

Database Management System for Sample Online Retail Store | Jan–June 2022

Team project (4 students) | Designed full-scale relational database with ER diagrams, indexing, and complex SQL queries (non-commercial use case).

Finlatics Business Analyst Experience Program | Dec 2023–Jan 2024

Completed case-based projects in MS Excel and Power BI; scored 84.85/100

UX Design for mobile application- high fidelity prototype | 2021
Implemented a full-scale clickable high-fidelity prototype of a healthcare application in Figma

Team Size- 4

With an emphasis on user experience and interaction, we developed a custom UX design prototype for a healthcare application (based on making healthcare and first-aid access easier in rural/disadvantaged areas).

Achievements & Miscellaneous

- **Mastercard Cybersecurity Virtual Internship (Forage):** Completed job simulation analyzing security threats and designing training programs for financial services context

Check out the simulation here:
https://www.theforage.com/simulations/mastercard/cybersecurity-t8ye

- **Gold Medal** in inter-school spelling bee competition (team event, 7th grade)
- Active chess player with knowledge of opening theory, middlegame strategy, and chess history
- Broad intellectual interests across literature, history of science, and philosophy; providing interdisciplinary perspective and strong written communication skills

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Languages

English (fluent), Telugu (native), Hindi (conversational)

Declaration: The above information is correct to the best of my knowledge.
Duvvapu Likhith Kumar
Date: November, 2025