Raahul Singh

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London | Dehradun

EDUCATION

IIIT SRI CITY

BTech in Computer Science and Engineering
Cum. GPA: 8.43 / 10
August 2018 - 2022 | India

LINKS

Website: **raahulsingh.net**
Github: **Raahul-Singh**
GitLab: **rasalghul2**
LinkedIn: **raahulsingh42**

COURSEWORK

UNDERGRADUATE

- Advanced Deep Learning and Neural Networks
- Artificial Intelligence and Machine Learning
- Linear Algebra and Vector Calculus
- Probability Theory and Discrete Mathematics
- Agent Based Modeling
- Information Retrieval and Search Systems
- Service-Oriented Architecture and Application Development
- Object-Oriented Programming and Software Design

SKILLS

PROGRAMMING

Python
Frameworks:
PyTorch
NumPy
Pandas
SunPy
LangChain/Langgraph

RESEARCH AND ENGINEERING EXPERIENCE

PHAIDRA | Staff AI Research Engineer

August 2020 – Present
Timeline: Intern (2020–22) | IC1 (2022–23) | IC2 (2023–24) | Senior (2024–25) | Staff (2025–Present)

- **Architected the core agentic framework for "Prism," transforming a self-initiated prototype into Phaidra's flagship Observability system.**
- Engineered the agent's tool-execution layer to perform **automated information fusion**, aggregating heterogeneous industrial data sources for complex multi-step reasoning.
- Designed and implemented the company-wide interactive platform for monitoring production models and agents, providing critical bias and performance insights to Domain Experts.
- Invented data-agnostic techniques for incorporating domain knowledge into deep neural networks, resulting in more interpretable and physically consistent models.
- Co-invented a hybrid control architecture **(Patent US20250021061A1)** that guarantees deterministic safety in mission-critical industrial systems, enabling safe exploration for AI agents.
- Directed the transition of experimental IP into production by establishing deployment protocols between Research and Engineering teams.
- Achieved **15x improvement** in time series prediction accuracy while reducing data requirements by **30x**, successfully extending prediction horizons to 2x and 3x variables.

GOOGLE SUMMER OF CODE '20 @ SUNPY (OPENASTRONOMY)

Student Developer
May 2020 – July 2020

- Developed machine learning models to forecast solar flare probabilities from Active Region data, improving prediction accuracy and reliability.
- Engineered a Search Events object for seamless querying and matching data across HFC, HEK, and HELIO astronomical databases.
- ***Link to an overview of deliverables.***

PUBLICATIONS

DETERMINISTIC INDUSTRIAL PROCESS CONTROL Patent

US20250021061A1 (Jan 2025)

- Co-invented a hybrid control architecture that arbitrates between AI agents and local loops to guarantee deterministic constraints in safety-critical systems.
- [Link to Patent]

STARKINDLER arXiv Preprint

- **Raahul Singh**, Ashutosh Pandey. (2025). *Starkindler: An Uncertainty Aware Objective for Photometric Redshift Estimation.* arXiv preprint arXiv:2512.22566.
- Formulated a novel loss function regularised by aleatoric uncertainty, demonstrating significant outlier reduction on SDSS data compared to baseline CNNs.
- [Link to Paper] [Source Code]