

# Rahul Ranjan

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## Objective

AI/ML Engineer with hands-on experience in **machine learning model development, data engineering, and AI solution optimization**. Strong foundation in **Python, ETL pipelines, and cloud-based AI deployment**. Passionate about **biomedical applications of AI** and leveraging AI to enhance **global healthcare innovations**.

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## Education

### Monash University, Melbourne (Feb 2023 – Present)

Master of Artificial Intelligence, GPA: 2.8/4

*Relevant Courses: Machine Learning, Multi-agent Systems, Discrete Optimization, Intelligent Image and Video Analysis, Project Management, Deep Learning*

### Birla Institute of Technology and Science, Pilani (Aug 2017 – Jun 2022)

Master of Science (Physics), GPA: 3/4

*Relevant Courses: Classical Mechanics, Optics, Electromagnetic Theory, Atomic and Molecular Physics, Laser and Applications*

### Birla Institute of Technology and Science, Pilani (Aug 2017 – Jun 2022)

Bachelor of Engineering (Electronics and Instrumentation), GPA: 3/4

*Relevant Courses: Digital Image Processing, Operating Systems, Analog & Digital VLSI Design, Electronic Instrumentation & Instrumentation Technology, Neural Networks and Fuzzy Logic*

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## Experience

### Aglow Engineers (Jun 2022 - Feb 2023)

Information Technology Officer, Kolkata

- **Developed and optimized an AI-driven data pipeline** integrating **Python-based ETL processes** with ElasticSearch, improving **data retrieval efficiency**.
- Implemented machine learning-based predictive analytics for data security & governance, reducing system vulnerabilities by 15%.
- Developed real-time dashboards in Tableau, integrating Oracle and SQL Server data, enabling a 10% reduction in reporting time.

### Centre for Railway Information Systems (Jan 2022 - May 2022)

Intern Researcher, New Delhi

- Designed and implemented database optimization strategies for the "WORKSHOP INFORMATION SYSTEMS (WISE)" project, improving query efficiency by 25%.
- Leveraged PostgreSQL, Java, and Python to automate data processing, reducing manual analysis time by 30%.

### Xilinx India (now AMD) (Jul 2021 - Dec 2021)

Intern Software Developer, Hyderabad

- Automated software deployment and log monitoring workflows using Python and cron jobs, enhancing team productivity by 20%.
  - Developed Data Flow Sync Checker to validate real-time data synchronization, reducing data inconsistencies by 35%.
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## Technical Skills

- Programming: Python (Expert), C# (Basic), R, Java
- AI/ML Tools: TensorFlow, PyTorch, Scikit-learn, FastAPI
- Data Engineering & ETL: SQL, PostgreSQL, MongoDB, data pipeline optimization
- Cloud & Deployment: AWS, Docker, ML model optimization

## Projects

### Surface Plasmonic Resonance for Biomarker Detection (Aug 2020 – Dec 2020)

- Designed a sensor for detecting biomarkers like Rhodamine 6G in HeLa cells using surface plasmonic resonance.
- Conducted Python-based simulations to analyze light-matter interactions for biomedical applications.
- Proposed a novel approach for microorganism detection using SPR in the Kretschmann configuration.

### IoT-Based Water Management System (Jan 2020 – May 2020)

- Developed an IoT-based water pipeline monitoring system, integrating cloud analytics with sensor nodes.
  - Reduced operational costs by 12% using predictive maintenance and flowmeter-based monitoring.
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## Thesis

### Effect of disorder on critical exponents (Jan 2022 - May 2022)

- Investigated phase transitions in ferromagnetic substances using the Ising Model and Metropolis Algorithm.
  - Implemented MATLAB simulations to analyze the effects of disorder on critical behavior, identifying discrepancies with theoretical predictions.
  - Optimized computational methods to improve simulation efficiency.
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## Publications

- Roha VS, Ranjan R, Yuce MR. Evolving Blood Pressure Estimation: From Feature Analysis to Image-Based Deep Learning Models. J Med Syst. [Under Review].
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## Achievements

- The Duke of Edinburgh's International Award for Young People: Silver Standard (Mar 2015)
- Recognized for leadership, skill development, and community service.