DYUTIDEEPTA BANERJEE

From Physics to Product | Applied AI, Imaging & System Optimization

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Data analytics professional with a strong foundation in Physics and Data Science, specializing in AI-driven solutions for vision, decision intelligence and automation. Experienced in advanced analytics, predictive modeling, and machine learning, with a proven ability to quickly learn and effectively apply new vision & data analysis tools. Skilled at delivering actionable insights from complex data and collaborating across teams to drive data transformation for scientifically researched physics- models for informed decision-making.

WORK EXPERIENCE

Product & Workflow Analyst (UX, QA & Stakeholder Solutions) - Contracted to Johnson & Johnson
Bangalore, India | Jan 2025 - Present
Internship Trainee - Software Intergration Services Inc. (Sisincorp)
Bangalore, India | Jun 2024 - Dec 2025

- Streamlined workflows and data-driven reporting to enable seamless project delivery.
- Translated business and technical goals through design documentation, Figma wireframing, and strategy development from Jira tickets.
- Coordinated with global stakeholders and developers at JnJ to align software quality with business objectives.
- Led cross-platform QA testing, identifying critical defects and optimizing bug resolution pre-deployment.

Automation & UI Specialist: Batch QR Code System (Freelance) - Toriox PRJ Packaging Pvt Ltd
Bangalore, India | Sept 2024 - Dec 2024

- Created Python scripts for real-time data input, storage, and retrieval, improving efficiency and reducing manual effort by 80%.
- Developed QR code generation and data screening modules integrated into the client's software.
- Enhanced data security and processing speed with edge-based solutions.
- Delivered reliable, production-ready code, earning strong client satisfaction.

Artificial Intelligence Intern - MathWorks: Customer Success Engineering Group **Project link:**
Munich, Germany | Nov 2022 - May 2023

- Designed and developed a MATLAB AI application with custom functions for efficient multispectral image preprocessing and automated feature extraction.
- Trained CNN models from scratch, achieving >95% classification accuracy, surpassing benchmark AI systems.
- Established a gold-standard dataset pipeline, increasing model training efficiency by 40% and enabling cross-domain applications in geospatial, medical and manufacturing sectors.
- Partnered with international research teams at the ***Max Planck Institute for Solar System Research*** (MPI), leveraging expertise in physics and AI-driven computer vision in planetary science.

Visiting Fellow - International Center for Theoretical Sciences Tata Institute of Fundamental Research: Fluid Mechanics Laboratory
Bangalore, India | July 2019 - Apr 2020

- Developed physics-based computational models, applicable to AI-driven simulations in robotics & aerodynamics.
- Conducted experimental validation of Newtonian fluid drag models, improving prediction accuracy by 90%.
- Designed gcodes and 3D printed lab apparatus for experimental work.

EDUCATION

MSc in Physics of Data
University of Padua, Italy | Oct 2020 - Apr 2024
Dissertation: AI-based detection of Lunar Sinuous rilles: A comparison with manual detection methods
Select Projects:

- AI in Medicine: Paediatric bone age estimation using X-ray datasets
- Network Science for Smart Governance: Models to analyse global trends from social media

BSc (Hons) in Physics & minor in Data Science
Azim Premji University, Bangalore, India | Aug 2016 - Aug 2019
Dissertation: Bristle Bots as a Minimal Model of Directed Motion

- Developed 3D-printed adaptive microbots for real-time motion analysis

SELECTED TECHNICAL CONTRIBUTIONS

Encrypted QR generator with Decryption Algorithm - *India | May 2025*
A Python-based toolkit for encrypted QR code generation, secure data encoding, and visual data screening. Includes a Tkinter GUI for input, QR generation with/without background designs, and a Fernet-based decryption system. Ideal for product packaging, secure tagging, and data tracking workflows.

Celestial Quest: AI-Powered Ed-Tech Platform for Astrophysics - *India | Oct 2024*
Developed Python scripts for automated NASA data scraping, integrated with LLaMA-based NLP/LLM pipelines. Built UI templates and exported HTML modules for email notifications, designed the platform logo, and contributed to public deployment using AWS for scalable, real-time access. This was a team project for the ***NASA Space Apps Hackathon 2024***.

AWARDS & CERTIFICATIONS

Finance for Non-Finance Professionals | *Rice University by Coursera (2025)*
Deep Learning Onramp Certification | *MathWorks (2023)*
Introduction to Cosmology Certification | *M.P. Birla Institute of Fundamental Research (2017)*
Winner of **ERODEM Research Grant** | *University of Padua (2024)*
Winner of **Erasmus Plus Traineeship Grant** | *Erasmus+ (2022)*

SKILLS

Core Competencies:

- **Physics & Computational Modeling:** Strong foundation in physical sciences with expertise in simulations, hyperspectral imaging, and algorithm development
- **AI & Data Science:** Deep Learning, Predictive Analytics, Model Deployment, Statistical Modeling, Data Wrangling, Computer Vision, Data Processing, Machine Learning frameworks (TensorFlow, PyTorch)
- **Programming & Tools:** Python, MATLAB, R, Pandas, Spark, Power BI, MS Office, QGIS, Tkinter, CAD
- **Project & Agile Management:** Jira, Scrum, Git, Bash
- **Design & Visualization:** Figma, Canva
- **Financial & Business Acumen**

Soft Skills:
Public Speaking, Team Leadership, Cross-Disciplinary Collaboration

Languages:
Native: English & Hindi | **Mother Tongue:** Bengali | **Beginner:** Italian & German

INVITED TALKS & TECHNICAL PRESENTATIONS

Conference Speaker, 11th European Lunar Symposium, *Padua, Italy | July 2023*
"*AI for Lunar remote sensing data analysis*"
Seminar Speaker, Max Planck Institute for Solar System Research, *Göttingen, Germany | May 2023*
"*Applicability of AI in feature detection using hyperspectral satellite imagery*"
Scientific Presenter, Indian Institute of Science (IISC), *Bangalore, India| Feb 2020*
"*Experimental presentation for Buffon's Mathematical Model*"

VOLUNTEERING, OUTREACH & LEADERSHIP

Academic Coach for graduate-level Physics & Mathematics | *Classgap by GoStudent (Jan 2024 - Dec 2024)*
Communication Coach | *Center for Linguistics, University of Padua, Italy (Dec 2021 - Jan 2022)*
Certified Peer Counsellor for Mental Health | *Azim Premji University, Bangalore, India (Jul 2017 - Apr 2019)*
Special-ed teacher for the underprivileged at NGO | *Parikrma Humanity Foundations, Bangalore, India (Jul 2017 - Dec 2017)*

This is an interactive CV. Reference is available on request.