DYUTIDEEPTA BANERJEE

Deep Tech Professional

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SUMMARY

Deep Tech professional with a strong foundation in Physics, specialising in image & data interpretation, science-based modelling and advanced analytics. Passionate about creating innovative industrial solutions across sectors, including spacetech, defence, healthcare, robotics, automotive, new energy, and material sciences. I combine deep scientific insight and Physics fundamentals with cutting-edge AI and vision technologies to solve complex, real-world challenges. As a clear communicator, I bring experience in engaging stakeholders across industry & academia - presenting internationally, driving cross-domain discussions, automating workflows, and delivering impactful work to local and global clients.

EXPERIENCE

Artificial Intelligence Research Intern *Project link*
MathWorks: Customer Success Engineering Group
11/2022 - 05/2023 Munich, Germany

- Established a work pipeline for standardised satellite imagery with Multispectral & Digital Terrain Model for morphological analysis using JAXA's SELENE image datacubes of the KAGUYA mission.
- Designed and developed a MATLAB AI application for efficient multispectral image preprocessing like segmentation, annotation, and enhancement to create gold-standard training data for Lunar sinuous rille features.
- Adapted CNN models using deep and transfer learning, achieving above 95% prediction accuracy.
- Partnered with international research teams at the *Max Planck Institute for Solar System Research* and the *University of Padova.*
- The work pipeline enables cross-domain applications in the geospatial, medical, and manufacturing sectors.
- Ongoing engagement with research teams for publication.

Visiting Fellow
International Center for Theoretical Sciences Tata Institute of Fundamental Research
07/2019 - 04/2020 Bangalore, India

- Developed simulation models for turbulent flows in Newtonian fluids having applicable in various fields
- Established an experimental mechanism for validating drag models and conducted motion analysis using videographic data
- Designed gcodes and 3D printed lab apparatus for experiments

Cross-Platform Solutions Specialist - Freelance Contractor
Johnson & Johnson
06/2024 - 08/2025 Bangalore, India

- Engaged with global stakeholders, defined solutions for business needs and conducted cross-platform testing
- Delivered actionable improvements for product lookup system
- Reduced fix turnaround by 40% through enhanced processes

Automation Specialist - Freelance
Toriox PRJ Packaging Pvt Ltd
09/2024 - 12/2024 Bangalore, India

- Designed and implemented edge-based Python modules for real-time batch QR code processing
- Achieved 80% reduction in manual intervention for low-latency production environments

EDUCATION

MSc Physics of Data
University of Padua
10/2020 - 04/2024 Padua, Italy

BSc (Hons) Physics, minor in Data Science
Azim Premji University
08/2016 - 08/2019 Bangalore, India

KEY ACHIEVEMENTS

Winner of ERODEM Research Grant 2024

Winner of Erasmus + Traineeship Grant 2022

Poster Publication at 11th European Lunar Symposium 2023 *View Poster*
AI-based detection of Lunar Sinuous rilles: A comparison with manual detection methods

First-authored Manuscript under review by Elsevier
Focused on modular vision pipelines for multi-dataset analysis in Lunar data. Co-authored by Max Planck Institute, University of Padua & MathWorks.

CERTIFICATIONS

Finance for Non-finance Professionals 2025
Rice University by Coursera *Certificate*

Deep Learning Onramp 2023
MathWorks *Certificate*

Introduction to Cosmology 2017
M. P. Birla Institute of Fundamental Research

Programming with Python 2017
University of Michigan by Coursera *Certificate*

R for Data Science 2016
Miscrosoft by edX *Certificate*

INVITED SPEAKER

Seminar Speaker for the Applicability of AI in Planetary Feature Detections
Max Planck Institute for Solar System Research
05/2023 Göttingen, Germany

Scientific Ehibitor for Buffon's Mathematical Model
Indian Institute of Science
02/2020 Bangalore, India

SELECT TECHNICAL CONTRIBUTIONS

Encrypted QR generator with Decryption Algorithm ***Project Link***

An open source project: A Python-based toolkit for encrypted QR code generation, enhancing data security using Tkinter for GUI and Fernet-based decryption system.

Built an AI-Powered Ed-tech Platform for NASA Space Apps Hackathon 2024 ***View Platform***

Created automated data pipelines for acquiring NASA exoplanetary datasets
Deployed NLP/LLM modules for improved data processing

VOLUNTEERING & LEADERSHIP

Academic Coach for graduate-level Physics & Mathematics
Classgap by GoStudent
01/2024 - 12/2024 Global

Communication Coach
Center for Linguistics, University of Padua
12/2021 - 12/2022 Padua, Italy

Certified Peer Counsellor for Mental Wellness
Azim Premji University
07/2017 - 04/2019 Bangalore, India

Special-ed Teacher Volunteer for the underprivileged at an NGO
Parikrma Humanity Foundation
07/2017 - 12/2017 Bangalore, India

SKILLS

Physics & Computational Modelling
Strong foundation in Physical sciences with expertise in AI for simulations, algorithm development and image analysis

AI & Data Science
Proficient in Deep Learning Frameworks, Predictive Analytics, Data Wrangling, Data processing, Statistical Analysis, Data interpretation, Computer Vision, Model Deployment, Scripting, Automation, Technical Documentation and Quality Analysis

Programming & Tools
Skilled in Python, MATLAB, R, TeX, CAD, SQL, MS Office, Git, Bash, Jira, learning C++

Soft Skills
Excellent communication, public speaking, presentation and team leadership skills, financial and business acumen

LANGUAGES

English
Native

Hindi
Native

Bengali
Mother Tongue

Italian
Beginner

German
Beginner