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, vision & quantum 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

Physics & Data Science Project Associate
Spatialty.AI
09/2025 - Present | Bangalore, India

- Contributing to R&D in Physics-based modeling, AI, and computer vision for projects across defence, aerospace, construction, energy, and material science.
- Developing foundational models and solutions using Python scripting tailored to the company's interdisciplinary project needs.

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

- Collaborated with global stakeholders to define business solutions, conduct cross-platform quality checks, and deliver actionable improvements for the product lookup system.
- Managed sprint cycles with international teams across time zones, streamlining agile processes to reduce fix turnaround by 40%.

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

- Established a standardised pipeline for multispectral and Digital Terrain Model satellite imagery to enable morphological analysis.
- Developed a MATLAB AI application for spectral image preprocessing, creating gold-standard training data through segmentation, enhancement, and annotation.
- Adapted CNN models with deep and transfer learning, achieving over 95% prediction accuracy.
- Collaborated with international teams at *Max Planck Institute and University of Padova*, enabling cross-domain applications in geospatial, medical, and manufacturing sectors.
- Continuing research collaboration for publication.

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

- Developed Physics-based simulation models for turbulent flows in Newtonian fluid dynamics systems for Reynolds' number limits
- Established an experimental mechanism for validating drag models and conducted motion analysis using videographic data
- Designed gcodes and 3D printed lab apparatus for experiments

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

- Designed and deployed edge-based Python modules for real-time inventory management, reducing manual intervention by 80% in low-latency production environments.

EDUCATION

MSc Physics of Data
University of Padua
10/2020 - 04/2024 | Padua, Italy
(2022/23 foreign exchange - university pause)

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

KEY ACHIEVEMENTS

Winner of ERODEM Research Grant 2024
Italian Ministry's funding for conservation of heritage sites by carbon dating using ML models

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's International Journal of Applied Earth Observation and Geoinformation
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***

Built an open source project, a Python-based toolkit for encrypted QR code generation with data created with Tkinter GUI, enhancing data security with 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 like Llama for improved data processing and tailored course material based on user feedback

Studied Bristle Bots as a minimal model of directed motion

Designed & developed 3D printed miniaturised bots having bristle-like legs for movement, with an electromotive light-sensing circuit. Conducted experimental analysis and validation for the bot's motion exposed to an environmental gradient
Formalised theory for design adept towards directed motion to initialise study for collective dynamic systems

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, QGIS, 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