Prabir Kumar Das

📍 Toulouse, France   📞 +33 759539100 / +91 8420206706   ✉ dasprabirk03@gmail.com   🌐 Website   GitHub   in LinkedIn

EDUCATION

Centrale Méditerranée   Marseille, France
MScT in Complex System Engineering (Biomedical Track), GPA: 3.71/4 (TIGER Excellence Scholarship Awardee)   2024 – 2025
- [Program Link] **Coursework:** Advanced Image Processing, Advanced Imaging,Computer Sciences & data sciences,Modelling for Biomedical Engineering, Introduction to Neurotechnologies, Biomechanics, Advanced Material Sciences & Integrated Design

Indian Institute of Technology, Kharagpur   India
M.Tech in Medical Imaging and Informatics, School of Medical Science and Technology, CGPA: 8.86/10   2020 – 2022
- [Institute Website] **Coursework:** Digital Image Processing, Biomedical Imaging Informatics, Pattern Recognition and Machine Intelligence in Medicine, Deep Learning Foundations and Applications, Medical Imaging Laboratory, Molecular Imaging, Biomedical Instrumentation, Biostatistics, Linear Algebra for AI and ML, Statistical Techniques & Computer Programming

West Bengal University of Technology (MAKAUT)   India
B.Tech in Electronics and Instrumentation, CGPA: 8.29/10   2012 – 2016
- [University Website] **Coursework:** Digital signal Processing, Electric Circuits, Analog and Digital Electronics, Sensors & Instrumentation, C Programming, DBMS, Microcontrollers.
- **Final Year Project:** Image-Guided Pick and Place Robot with Distance Measurement using Arduino Microcontroller (Demo)

TECHNICAL SKILLS

- **Medical Imaging & Analysis:** DICOM, NiBabel, EEGLAB, PSF-based Deconvolution, MRI/Ultrasound Processing
- **AI & Deep Learning:** PyTorch, TensorFlow, Keras, scikit-learn, U-Net, CNN, ResNet50, Diffusion Models, OpenCV
- **Programming & Development:** Python, MATLAB, C/C++, Bash, Git, Linux Shell
- **Signal Processing & Modeling:** FFT, SVD, Graph Theory, Phase-Based Connectivity, Time–Frequency Analysis
- **Scientific Tools & Software:** COMSOL, Abaqus, LaTeX, ImageJ, Origin
- **Development Environments:** Google Colab, Jupyter Notebook, VS Code, Anaconda, Occidata Server
- **Data Science:** Data Augmentation, Transfer Learning, Model Evaluation, Feature Engineering,Regression Modeling

RESEARCH EXPERIENCE

Masters Thesis Intern (ongoing)   IRIT, Toulouse, France
Super-resolution in Ultrasound Imaging Using Diffusion Models [IRIT]   [Link]   Mar 2025 – Aug 2025
- Working at MINDS team under **Dr. Duong-Hung Pham** and **Dr. Denis Kouamé** to enhance ultrasound spatial resolution using diffusion-based generative models.
- Developing an unsupervised SR method comparing Denoising Diffusion Restoration Models (DDRM) with classical inverse solvers.
- Implemented a pretrained DDPM-based DDRM pipeline for restoring simulated and in vivo B-mode and RF datasets.
- Focused on anatomical structure enhancement using SVD and Fourier-domain modeling.

Project Intern   IEEE EMBS – IIT Kharagpur
Left Atrium Segmentation in Cardiac MRI Using U-Net (Certificate Link)   Jul 2021 – Oct 2021
- Built a U-Net model supervised by **Prof Manjunatha Mahadevappa** to segment the left atrium from cardiac MRI scans, targeting atrial fibrillation diagnosis.
- Used the Medical Segmentation Decathlon dataset (20 train, 10 test); applied Z-normalization, cropping, 2D slicing.
- Trained with Dice loss and Adam optimizer; achieved a Dice score of 0.939 (94% accuracy).

Masters Thesis Student   IIT Kharagpur
EEG-based Brain Connectivity and Brain-Behavior Correlation (GitHub) (YouTube)   2021 – 2022
- Analyzed functional and effective connectivity from EEG data during cognitive tasks supervised by **Dr. Debashree Guha Adhya**.
- Used phase-locking value and graph theory metrics to quantify temporal brain network dynamics.
- Correlated EEG patterns with psychological assessments to study brain-behavior interactions.

Team Project: Role as Software Developer   Institut des Sciences du Mouvement, Marseille
Biomedical Instrumentation for Human Movement Analysis (Report Link)   Sep 2024 – Feb 2025
- **Supervisors : Serge Mesure (Aix Marseille Université) & Didier Bertrand (CryoKiné).**Collaborated with clinicians and researchers to develop a wearable solution for gait asymmetry detection using smartphone sensors.

PUBLICATIONS

- Pustovalov, V., **Das, P. K.** , Ghouli, A., Pham, D. H., and Kouamé, D. *"Ultrasound Image Restoration via Diffusion in the Fourier Space Decomposition"*, submitted to IEEE International Ultrasonics Symposium (IUS), 2025. **(Ongoing Work)**
  IRIT – UMR CNRS 5505, University of Toulouse, France. [Poster Link]

Work Experience

Senior Mathematics Faculty — ORCHIDS The International School, India
High School Mathematics Instruction (Certificate) — Mar – Jul 2023
- Taught advanced mathematics to high school students, with structured lesson plans and regular assessments.
- Participated in teacher training, parent-teacher meetings, and coordination of academic events.

Teaching Assistant — IIT Kharagpur, India
Course Name: MATLAB for Quantitative Techniques in Medicine (MM61311) (Course Link) — Aug – Dec 2021
- Assisted Dr. Debashree Guha Adhya in MATLAB lab sessions focused on medical imaging and analysis.

Assistant Systems Engineer — Tata Consultancy Services (TCS), India
Software Development and Automation (Certificate) — Nov 2016 – Aug 2018
- Worked on maintenance and development of enterprise software solutions across multiple business domains.
- Led internal process automation efforts to reduce manual overhead and streamline workflows.
- Collaborated with cross-functional teams on debugging and delivery of robust applications.

Awards & Achievements

- **TIGER Master's Excellence Scholarship** of €10,000 (2024–2025) (Award Letter)
- Secured **All India Rank 140** in GATE 2020 (Graduate Aptitude Test in Engineering) from Instrumentation Engineering (IN) with **98.09 percentile**. (Certificate)
- Postgraduate Scholarship of INR 2,97,600 by AICTE, Government of India

Summer School, Industrial and Vocational Training

Industrial Training on MRI — MULTIWAVE MRI Company, France
SILENCE – Acoustic Metamaterial for MRI Noise Cancellation — Nov 2024 – Dec 2024

Accelerated Data Science (Micro-credit Course) — IIT Kharagpur
*Organized in collaboration with **NVIDIA**.* — Mar 15, 2021 – March 19, 2021

Advances in Medical Imaging (Online Workshop) — IIT (BHU), Varanasi
Recent Advances in Medical Imaging Techniques (Certificate Link) — Apr 2021 – May 2021

Neuromatch Academy (Online)
Computational Neuroscience [Certificate] — Jul 2022
- Project: Analyzed emotion processing using HCP fMRI data with effective and functional connectivity. [GitHub]

Neuromatch Academy (Online)
Computational Neuroscience Certificate — Jul 2022
- Project: Analyzed emotion processing using HCP fMRI data with effective and functional connectivity. (Project GitHub)

BCI & Neurotechnology Spring School — g.tec medical engineering GmbH
140-hour advanced training program on BCIs and neurotechnology Certificate Link — 28 Apr 2025 – 7 May 2025

Interdisciplinary Computational Cognitive Science Summer School (Online)
Organized by IICCSSS, focused on cognitive modeling and interdisciplinary neuroscience. Certificate Link — Aug 2021

Embedded Systems Training — Oriens Infotech Pvt. Ltd., India
Microcontroller-Based Embedded System Design for Industrial Applications Certificate Link — Jun – Jul 2015

Vocational Training in Power Plant Instrumentation — BHEL – Durgapur Projects Ltd.,India
1×250 MW Coal-based Thermal Power Plant Certificate Link — Jun 2014

Technical Certifications and Online Courses

- Python Programming by GUVI (Certificate)
- MATLAB, Image Processing, and ODE by MathWorks (Certificates)
- C, C++ with Data Structures by CMC Academy (Certificate)
- Python for Data Science and Machine Learning by Jose Portilla (Course Link) (Certificate)
- Udemy course on Python for Medical Imaging, DICOM handling, visualization, and image enhancement techniques. [Certificate]

Academic & Personal Projects

- Invasive Ductal Carcinoma (IDC) Classification using custom CNN and ResNet50 (GitHub Link)
- Mapping the Visual Periphery: Insights into Eccentricity Patterns in fMRI-Derived Visual Receptive Fields (GitHub Link)

Languages

- English, Hindi, Bengali

References

- **Prof. Denis Kouamé**, Professor in Computer Science, University of Toulouse III – Paul Sabatier
  Head of the Signals and Image Department, IRIT Lab
  denis.kouame@irit.fr — +33 5 61 55 82 43

- **Dr. Julien Fade**, Associate Professor, Graduate School Program Director, Centrale Méditerranée / Researcher, Institut Fresnel
  julien.fade@centrale-med.fr — +33 04 13 94 54 95