

Work Experience

Machine Learning Engineer	mVizn Pte. Ltd.	Jan 2024 – Present
ML Model Development Team	Singapore (Remote)	

- Led the development of a comprehensive Deep Learning pipeline for semantic segmentation of 3D point clouds using Python and PyTorch by applying state of the art segmentation models and data processing techniques to enhance model performance and robustness.
- Spearheaded the backend development of a web application that integrates the above model. Responsibilities included API integration, SQL Database creation and using Git version controlling and CI/CD pipelines to ensure the reliability, maintainability, and scalability of the platform.

Data Quality Analyst	Mercedes-Benz Research and Development India	Aug 2018 – Jan 2020
Data Management Team	Bengaluru, India	

- Developed tools (in PyQt) for manual quality control of annotated images for Vulnerable Road User (VRU) detection.
- Involved in training and validation of YOLO models for VRU detection.
- Created python scripts for automatic quality checks and data analysis/visualization of annotated data which increased annotation throughput by 20%. Also involved in dataset preprocessing for gesture recognition of VRU.

Systems Engineer	Tata Consultancy Services	Aug 2014 – August 2015
Software Maintenance Team	Kolkata, India	

- Maintained the TCS internal website – “Ultimatix” by handling feature requests in both frontend (HTML, Bootstrap CSS, JavaScript) and backend (Java, MySQL).

Skills

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| • Languages: | Python, Java, C++, SQL |
| • Technologies: | PyTorch, Tensorflow, Scikit-Learn, OpenCV, Numpy, Pandas, Matplotlib, Git |

Education

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| • PhD, Jadavpur University, Kolkata, India. | 2020–2025 |
| • M.Tech. Computer Science & Engineering, Jadavpur University, Kolkata, India. GPA – 8.83 | 2016–2018 |
| • B.Tech. Computer Science & Engineering, Techno India, Kolkata, India. GPA – 8.81 | 2010–2014 |

Projects

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- **Online Assignment Submission Portal** (Oct '24 – Nov '24) – A Flask + MySQL WebApp for upload, submission & checking of C programming assignments. Teachers can create assignments whereas students can view those assignments, submit the code and get it evaluated with a built in GCC compiler..
Live link – <https://subsequent-heath-arjit-home-3b9d0400.koyeb.app/>
Github – https://github.com/arjitde92/Online_Programming_Assignment_Portal
 - **Spiritual Chatbot** (Jan'24 – Feb'24) – An LLM chatbot that personifies a Hindu God. Uses OpenAI GPT-3.5 turbo model and Langchain for creating prompt templates. Attempted prompt engineering techniques to make chatbot stay within context and purpose. The front end was built using streamlit while python was at backend.
Live link – <https://spiritualchatbot.streamlit.app/> Github – <https://github.com/arjitde92/SpiritualChatBot>
 - **3D Brain Analysis and Visualization App** (Jul'24 – Aug'24) – A Flask Application that can segment the hippocampus or a brain tumor from a 3D brain MRI scan. The segmentation models are built using Hippocampus Segmentation Factory (HSF) for Hippocampus Segmentation and a 3D Attention UNet model for brain tumor segmentation.
Github – https://github.com/arjitde92/Brain_Seg_App

Publications

1. **A. De**, A. S. Chowdhury, (2025). Shape Induced Multi-class Deep Graph Cut for Hippocampus Subfield Segmentation. In: Antonacopoulos, A., Chaudhuri, S., Chellappa, R., Liu, CL., Bhattacharya, S., Pal, U. (eds) Pattern Recognition. **ICPR 2024**. Lecture Notes in Computer Science, vol 15313. Springer, Cham. https://doi.org/10.1007/978-3-031-78201-5_16
2. **A. De**, N. Das, PK. Saha, A Comellas, E Hoffman, S Basu, T Chakraborti. MSO-GP: 3-D segmentation of large and complex conjoined tree structures. **Methods**. 2024 June 3;229:9–16. doi: 10.1016/j.ymeth.2024.05.016. Epub ahead of print. PMID: 38838947.
3. **A. De**, P. Ebenezer, "Sleep Apnea sub-type detection from Polysomnography signals," 2024 IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (**IATMSI**), Gwalior, India, 2024, pp. 1–6
4. **A. De**, M. Tiwari, & A. S. Chowdhury. 3D Hippocampus Segmentation Using a Hog Based Loss Function with Majority Pooling. In 2023 IEEE International Conference on Image Processing (**ICIP**), Kuala Lumpur, Malaysia 2023, October, pp. 2260–2264.
5. **A. De**, R. Mhatre, M. Tiwari and A. S. Chowdhury, "Brain Tumor Classification from Radiology and Histopathology using Deep Features and Graph Convolutional Network," 2022 26th International Conference on Pattern Recognition (**ICPR 2022**), Montreal, QC, Canada, 2022, pp. 4420–4426
6. **A. De**, M. Tiwari, E. Grisan, A.S. Chowdhury, "A Deep Graph Cut Model for 3D Brain Tumor Segmentation", 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (**EMBC**), 2022.
7. **A. De**, A.S. Chowdhury, "DTI based Alzheimer's Disease Classification with Rank Modulated Fusion of CNNs and Random Forest", **Expert Syst. Appl.** 169 (2021), 114338. DOI: 10.1016/j.eswa.2020.114338

Voluntary Activities

- Participated in the IEEE EMBS Student Mentorship Program (SMP) 2023 as a mentee. Gained exposure in healthcare related signal processing and published a paper on Sleep Apnea Detection using Machine Learning Methods.

Open Source Contributions

- Contributed to [AI-Code](#) as part of Social Summer of Code (**SSoC**) 2024 & [DL-Simplified](#) as part of Social Winter of Code (**SWoC**) 2023 Hackathons.
- Contributed to [nexB](#) and [TheAlgorithms](#) repositories pertaining to both feature enhancements and documentations.

Certifications

- Deep Learning, a 5-course specialization, by Deeplearning.ai. Verify [here](#).
- TensorFlow in Practice Specialization, by Deeplearning.ai. Verify [here](#).
- MCPS: Microsoft Certified Professional, Microsoft Certification No.: 1042C4-5DHF30