

Arnesh Batra

arneshbatra2212@gmail.com | +91 9315840114 | [linkedin/arnesh-batra-9684a4211](https://www.linkedin.com/in/arnesh-batra-9684a4211) | [github/arnesh2212](https://github.com/arnesh2212)

EDUCATION

Bachelor's degree, Computer Science and Artificial Intelligence

| Aug 2023 - May 2027

INDRAPRASTHA INSTITUTE OF INFORMATION TECHNOLOGY, DELHI

Grade : 8.8

Coursework: Data Structures and Algorithms; Introduction to Intelligent Systems; Linear Algebra

WORK EXPERIENCE

THE UNIVERSITY OF CALIFORNIA, SAN DIEGO | RESEARCH INTERN

Remote | Feb 2025 – Present

- Working under Professor Pengtao Xie for developing large language models for DNA RNA interaction prediction.
- Developing transformer based models for processing DNA/RNA sequences of 100,000 + length using multigpu batch handling.

AI INSTITUTE, UNIVERSITY OF SOUTH CAROLINA | RESEARCH INTERN

Remote | Oct 2024 – Present

- Developing robust watermarking techniques for AI-generated video content under the supervision of Professor Amitava Das.
- Experimenting with advanced Video-to-Video and Text-to-Video models to explore resilient watermarking applications working with metrics like SSIM and FVD score.
- Skills: Deep Learning, Computer Vision

HMI LAB, IITD | RESEARCH INTERN

Delhi, IN | May 2024 – Oct 2024

- Worked on a project under the guidance of Professor Jainendra Shukla, Implemented multimodal large language models (LLMs) for real-time tasks, such as live commentary generation and video captioning.
- Work accepted in IEEE Transactions of Multimedia
- Skills: Deep Learning, Computer Vision, Natural Language Processing

CYBORG | AI/ML LEAD

Delhi, IN | Dec 2023 – Present

- Organized and delivered a workshop on Neural Networks, enabling over 40+ students build their first neural networks from scratch.
- Skills: Deep Learning, Machine Learning

PUBLICATIONS

Audio Spectrogram Transformer Guided Classification and Information Retrieval For Birds

INTERSPEECH'24

- This paper presents an audio spectrogram-guided classification framework called ASGIR for improved bird sound recognition and information retrieval.
- Our work is accompanied by a simple-to-use, two-step information retrieval system that uses geographical location and bird sounds to localize and retrieve relevant bird information by scraping information of recognized birds.
- Achieved 100% median performance on F1, Precision, and Sensitivity metrics for 51 bird classes from the Xeno-Canto dataset.

M-SCAN: A Multistage Framework for Lumbar Spinal Canal Stenosis Grading Using Multi-View Cross Attention

IN REVIEW

- Our model a distinctive training strategy, our proposed multistage approach effectively integrates multiple angles.
- This strategy employs a multi-view model with a sequence-based architecture, optimizing feature extraction and to achieve an AUROC of 0.971 in spinal canal stenosis grading surpassing other state-of-the-art methods.
- The robustness of the framework is demonstrated not only through its high predictive accuracy but also by its adaptability to variations in image resolution, histogram distribution, and slice counts across different patients.

SocialDF: Benchmark Dataset and Detection Model for Mitigating Harmful Deepfake Content on Social Media Platforms

IN REVIEW ICMR 25

- Developed a benchmark dataset for deepfake-driven misinformation, capturing high-fidelity, adversarially generated deepfakes from diverse online sources.
- Researched deepfake detection challenges, focusing on distinguishing between benign and adversarially manipulated media.
- Future-Proofing Against Evolving Deepfake Threats: Emphasizes robust detection strategies integrating multiple modalities.

PROJECTS

FOCUS FLOW [↗](#)

PYTORCH, DEEP LEARNING, LLM

- AI-driven adaptive learning platform that customizes educational content to support neurodiverse students, enhancing academic outcomes and well-being.
- Implemented real-time attention tracking using Mediapipe for facial recognition and OpenCV for video processing.
- Leveraged RAG for accurate, contextual study support, enhanced by Gemini for natural language understanding and Chroma DB for efficient information retrieval.

SUPERRESOLUTION FOR GRAVITATIONAL LENSING IMAGES [↗](#)

PYTORCH, DEEP LEARNING

- Worked with various models including GANs, SRResnet, and diffusion-based denoising.
- Achieved the best AUROC Score of 0.9978 with 98.3% accuracy and SSIM 0.94.

CAPTCHA SOLVER USING CRNN WITH ATTENTION [↗](#)

PYTORCH, DEEP LEARNING, COMPUTER VISION

- Captcha solver with above 96% accuracy made using a Convolutional Recurrent Neural Network with Attention.
- Achieved 4th place in the IIT JODHPUR ML Hackathon.

RE-DACT - SECURE DATA REDACTION TOOL [↗](#)

PYTORCH, DEEP LEARNING, NLP, CV

- Selected for Smart India Hackathon (SIH) 2024 grand finals among 100+ teams.
- Our tool can redact multiple data formats including text, pdf, images and videos specific to the user demands achieving an accuracy of over 99+ among all data formats using our custom transformer based models.

F1NALYZE - FORMULA 1 DATATHON [↗](#)

MACHINE LEARNING, DATA PREPROCESSING

- Achieving a RMSE score of 1.35 obtaining 1st place among 50 teams.
- Utilized data processing, feature engineering and hyperparameter tuning to predict race outcomes and uncover insights into the sport's dynamics.

ACHIEVEMENTS

- Qualified for Smart India Hackathon (SIH) Grand Finals 2024 at IIT Kharagpur with project "RE-DACT," a secure redaction and anonymization tool.
- 1st Place in F1nalyze - Formula 1 Datathon conducted on kaggle.
- Secured 4th place in the Machine Learning Hackathon at IIT Jodhpur.
- Placed 5th in the "FILL THE VOID()" Hackathon organized by IIT Jammu.

SKILLS

Languages: Python, Java, C++, JavaScript, HTML, CSS, Flutter, SQL

Technology: Deep Learning, Machine Learning, NLP, Computer Vision, Data Structures, Cloud Computing, Git, Linux, Docker

Libraries: TensorFlow, PyTorch, NumPy, Pandas, Scikit-learn, Hugging Face, LangChain, TensorFlow.js