Ekansh Chauhan

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Examination	University	Institute	Year	GPA/%
Post Graduation (PhD)	Uni. of Glasgow	Cancer Research UK, Scotland Institute	2024-Current	-
Graduation	IIIT Hyderabad	International Institute of Information Technology, Hyderabad	2022-24	9.17
Under Graduation	GGSIPU, Delhi	Maharaja Agrasen Institute of Technology, Delhi	2017-21	8.6

** GPA: out of 10 (best possible grade)*

RESEARCH INTERESTS

* Multi-Modal Learning * Medical Signal/Imaging Analysis * AI for Healthcare * Deep Learning

EXPERIENCE

- **Research Fellow – Computational Biology** *(Nov'24-Current)*
  Cancer Research UK, Scotland Institute *[Advisors: **Prof. Crispin Miller** and **Prof. Kelvin Blyth**]*
  - Developed a Deep Learning and Sparse CCA-based framework integrating single-cell transcriptomics with fine-scale tissue morphology via overlapping patches.
  - Validated on the Xenium 10x Genomics dermal melanoma dataset, revealing strong correlations between histological features and gene pathways.
- **Research Fellow – Cancer Diagnostics** *(Jan'22-Oct'24)*
  Centre for Visual Information Technology (CVIT), IIIT-H *[Advisors: **Prof. Vinod P K** and **Prof. CV Jawahar**]*
  - Developed deep-learning pipelines for cancer diagnosis and prognosis using giga-pixel histopathology images.
  - Curated one of Asia's largest histopathology datasets focused on diverse cancer subtypes, grades, and IHC biomarkers (Brain, Breast, Cervical, Colon, Kidney, Lung, Oral).
  - Benchmarked weakly supervised Multi-Instance Learning and self-supervised feature extraction for brain cancer subtype classification using H&E stained images.
  - Proposed a CNN-based model for HER2 subtype classification in breast cancer, achieving an F1 score of 83.52%, improving existing methods by over 5.35%.
  - Developed an interpretable LN classification pipeline using object detection, unsupervised learning, attention mechanisms, and LSTM for analyzing glomerulus patches.
- **Computer Vision Intern** , *Game Theory, Bangalore* (Dec'23 – Feb'24)
  - Deployed a cloud-based 3D shuttle tracking system for badminton using multi-camera triangulation and YOLOv8.
  - Implemented an IoT-based real-time person footfall tracking solution using computer vision on Raspberry Pi5 and Jetson Nano with TensorRT optimization.
- **Research Fellow – Healthcare & Artificial Intelligence (HAI)** *(May'21-May'22)*
  iHub-Data, IIIT Hyderabad *[Advisor: **Prof. Bapi Raju**]*
  - Developed LRH-Net, a multi-level knowledge distillation model for simultaneous cardiovascular disease detection from 2-lead ECG signals, reducing parameters by 106× and boosting inference speed by 76%.

PROJECTS

- **Smart Lightweight Medical Query System** | *HuggingFace, LLaMA, LangChain, FAISS, link*
  - Developed a medical response system optimized for local/edge devices.
  - Utilized LangChain for document chunking and FAISS for efficient query retrieval.
  - Achieved significant model compression through knowledge distillation, pruning, and GGML-based q5 quantization (reducing model size from 13.5 GB to 2.5 GB).
- **1D and 2D Grad-CAM for Model Interpretability** | *Gradient flow, link*
  - Implemented 1D Grad-CAM to highlight critical regions for accurate biomedical signal classification.
  - Extended the method to 2D Grad-CAM for visual question answering and image classification tasks.

SELECTED PUBLICATIONS

- **Contrasting Low and High-Resolution Features for HER2 Scoring using Deep Learning**, *Paper : Under Review*
- **IPD-Brain: An Indian histopathology dataset for glioma subtype classification**, *Paper : Nature Scientific Data, 2024*
- **Lupus Nephritis Classification with only Slide-Level Labels***, *Paper : MIDL 2024*
- **LRH-Net: A Multi-level Knowledge Distillation Approach for Low-Resource Heart Network**, *Paper : MICCAI workshop, FAIR 2022*

- **Analysing Radiographs using Artificial Intelligence for Covid-19 Existence**, *(Book chapter) : AI-Powered IoT for COVID-19. CRC Press, 2020*

  *Note: * indicates equal contribution. Full publication list available on Google Scholar*

TECHNICAL SKILLS

Programming Languages: Python, Core Java, C++, C, SQL.

Frameworks: PyTorch, MONAI (monai.io), Tensorflow, Slurm

Technologies & tools: Docker, Linux, MATLAB, LaTeX, WordPress, Advanced MS-excel

ANY OTHER SEMINARS / RELEVANT POSITIONS (FORMAL / INFORMAL)

- Attended Trustworthy AI Workshop | *University of Pennsylvania, Microsoft Research, Wadhwani AI* *(Jan'23)*
  - 35 candidates were selected out of 150+ applications
- Teaching Assistant for CS9.432 Cognitive Science and AI | *Taught by Prof. Bapi Raju* *(Jan'24-May'24)*
- Teaching Assistant for CS7.501 Advanced NLP | *Taught by Prof. Manish Shrivastava* *(Aug'23-Dec'23)*
- Coordinator for 6th Summer School on AI | *CVIT, iHub-Data, IIIT-Hyderabad* *(July'22-Aug'22)*
  - Focus on Computer Vision & Machine Learning

ADDITIONAL EXPERIENCE & ACHIEVEMENTS

- Received Cancer Research UK core fellowship for PhD in Cancer Sciences.
- Received Department of Science and Technology, Government of India, New Delhi fellowship for MS by Research.
- Conference Core Technical Organizer
  - ICICC-2021-23 : organized by Shaheed Sukhdev College of Business Studies, Delhi, India
  - ICDAM-2020-23, organized by Karkonosze University, Poland & Politécnico de Portalegre, Portugal, Europe
  - ICCCN-2021-23, organized by Manchester Metropolitan University, Manchester, United Kingdom
- Member of Student Parliament at IIIT Hyderabad
- Winner of Cricket Tournament as a Captain at IIIT-H & Maharaja Agrasen Institute of Technology (2018, 2022)

EXTRA CURRICULAR ACTIVITIES

- Passionate about sports including cricket, badminton, table tennis, chess, and carrom.
- Enjoy strategic games like poker and watching documentaries to continuously expand knowledge.

LANGUAGES

Proficient in English and Hindi (speaking, reading, and writing).