Ekansh Chauhan

ekansh.chauhan@research.iiit.ac.in +91-9643342275

Examination	University	Institute	Year	GPA/%
Graduation	IIIT Hyderabad	International Institute of Information Technology, Hyderabad	2022 - Current	9.17
Under Graduation	GGSIPU, Delhi	Maharaja Agrasen Institute of Technology, Delhi	2017-21	8.6
AISSCE	CBSE, Delhi	Hope Hall Foundation School, New Delhi	2015-16	82.2

RESEARCH INTERESTS

* Self/Weakly Supervised Learning * Medical Imaging * AI for Healthcare * AI for sustainable Development Goals

RESEARCH EXPERIENCE

- **International Institute of Information Technology, Hyderabad (IIIT-H)**
  Research Fellow – [Advisors: ***Prof. Vinod P K*** *and* ***Prof. CV Jawahar]*** *(Jan'22-Present)*
  Cancer diagnosis and prognosis using giga-pixel histopathology images
  - **India Pathology Dataset**
    * Curated one of the largest dataset in Asia, specifically focused on India, consisting of gigapixel images, cancer subtypes, grades, and various Immunohistochemistry (IHC) biomarkers.
  - **Weakly Supervised Learning for slide level classification in Brain histopathology images**
    * Concept Used: Multi-Instance Learning (MIL), Self-Supervised Learning, Attention & Vision Transformer
    * Explored MIL algorithms for brain cancer subtype classification with self-supervised feature extractor.
    * Developed deep-learning techniques for classifying IHC stained biomarkers with H&E stain.
  - **Detection of Glomeruli and classification of LUPUS nephritis**
    * Concept Used: Object Detection, Unsupervised Learning, Attention and LSTM
    * Developed a glomeruli detection and lupus nephritis classification pipeline using a proposed MIL-based approach.

- **iHub-Data, International Institute of Information Technology, Hyderabad (IIIT-H)**
  Research Fellow – [Advisor: ***Prof. Bapi Raju]*** *(May'21-May'22)*
  Worked in the broad areas of 3D Computer Vision and Affordable AI solutions
  - **LRH-Net: A Multi-level Knowledge Distillation Approach for Low-Resource Heart Network**
    * Concept Used: Multi-Level Knowledge Distillation (MLKD), Squeeze and Excitation network.
    * The proposed model has 106× fewer parameters and 76% faster inference than the teacher model for detecting cardiovascular diseases, making it suitable for edge devices.
  - **Oro-Facial Video Analysis for Accurate Classification of ALS, Post-Stroke, and Healthy Subjects**
    * Concept Used: Variational Autoencoders, Optical flow, 3D CNN's, LSTM
    * Encountered challenges such as limited and noisy data, complex temporal dynamics, and in-distinctive features across different class videos.

- **Indian Institute of Technology (IIT- BHU), Varanasi**
  Summer Intern – [Advisor: ***Prof. Hari Prabhat Gupta]*** *(June'20 – July'20)*
  - **Data-Driven Environmental Quality Assessment using Machine Learning**
    * Concept Used: Multiclass Classification, Overfitting Mitigation
    * The performance of our multi-class model (poor, medium, or good) achieved 94.314% testing F1-score.
    * Turbidity, Total Solids, Dissolved Oxygen, pH and Temperature are found out to be the critical parameters for finding the water quality index.

PUBLICATIONS

- **LRH-Net: A Multi-level Knowledge Distillation Approach for Low-Resource Heart Network**, *paper*
  Ekansh Chauhan, Swathi Guptha, Likith Reddy, Bapi Raju
  MICCAI workshop, FAIR 2022

- **Analysis of COVID-19 pandemic and forecasting using machine learning models**, *paper*
  Ekansh Chauhan*, Manpreet Sirswal*, Deepak Gupta, Ashish Khanna, Aditya Khamparia
  International Journal of Computer Applications in Technology Vol. 66, No. 3-4
- **Analysing Radiographs using Artificial Intelligence for Covid-19 Existence**, *(book chapter)*
  Manpreet Sirswal*, **Ekansh Chauhan***, Deepak Gupta, Ashish Khanna, Fadi Al-Turjman
  AI-Powered IoT for COVID-19. CRC Press, 2020

** indicates equal contribution* | *Full publication list at Google Scholar*

TECHNICAL SKILLS

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

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

Techonologies & tools: draw.io, Anaconda (Python), LINUX, MATLAB, LaTeX, WordPress, Advanced MS-excel

ANY OTHER PROJECTS / RELEVANT COURSES (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 CS7.501 Advanced NLP | *IIIT-Hyderabad* *(Aug'23-Dec'23)*
  - Taught by Prof. Manish Shrivastava
- Coordinator for 6th Summer School on AI | *CVIT, iHub-Data, IIIT-Hyderabad* *(July'22-Aug'22)*
  - Focus on Computer Vision & Machine Learning
- 6 days Seminar on "DISCOVER YOURSELF" | *MAIT, Delhi* *(Sept'17-Oct'17)*
  - Explore self-awareness, personal growth, and develop tools for self-discovery and transformation

ADDITIONAL EXPERIENCE & ACHIEVEMENTS

- Conference Core Technical Organizer
  - International Conference on Innovative Computing and Communication (ICICC-2021-23)
    organized by Shaheed Sukhdev College of Business Studies, Delhi, India
  - International Conference on Data Analytics & Management: An Indo- European Conference (ICDAM-2020-23)
    organized by Karkonosze University of Applied Sciences, Jelenia Gora, Poland & Politécnico de Portalegre, Portugal, Europe
  - International Conference on Computing and Communication Networks (ICCCN-2021-23)
    organized by Manchester Metropolitan University, Manchester, United Kingdom
- Organizer of Synergy 2.0 (Tech. Fest) at Delhi Technological University
- Winner of Cricket Tournament as a Captain at IIIT-H & Maharaja Agrasen Institute of Technology (2018,2022)

EXTRA CURRICULAR ACTIVITIES

I like playing different sports like Cricket, Badminton, Table Tennis, Chess, and Carrom. I'm good at strategic games like Poker too. I also enjoy watching documentaries to keep learning new things

LANGUAGES

English, Hindi (fluently: read, write, speak)