Ansh Khurana

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EDUCATION

Stanford University **GPA: 4.2**
MS in Computer Science with specialization in Artificial Intelligence *June 2024*

Indian Institute of Technology Bombay **GPA: 9.75/10**
B.Tech with Honors in Computer Science and Minor in Applied Statistics and Informatics *May 2021*
Received the **Research Excellence Award** for outstanding research work during undergraduate

Relevant Coursework: Advanced Machine Learning, Automatic Speech Recognition, Intelligent Learning Agents, AI in Healthcare, Meta Learning, Operating Systems, Software Systems Lab, Database and Information Systems

TECHNICAL SKILLS

Languages Python, C++, C, Java, Bash, HTML/CSS, JavaScript, SQL, Prolog, R, MATLAB, LISP
Tools and Libraries PyTorch, TensorFlow, JAX, Docker, Apache Beam, Google Cloud, Django, Git, LaTeX

RESEARCH AND WORK EXPERIENCE

Pre-Doctoral Researcher | **Google Research** [Publications: Preprint, ICML'22 PODS Workshop] July 2021 - Aug 2022
Source Free Domain Adaptation

- Proposed a **fast and hyper-parameter free** test time adaptation algorithm that uses augmented samples for reliable feature normalization and automatically searches calibration parameters based on prediction confidence
- Obtained state-of-the-art single image test time adaptation performance with an average performance gain of **19.3%** and **12.2%** for classification and segmentation tasks, respectively over the base model

Software Engineering Intern | **Google Research** May 2020 - Aug 2020
Akshar: Robust OCR for the Next Billion Users

- Developed a Form Structure Recognition pipeline for social care forms under the **AI for Social Good** initiative
- Identified the failure modes in current state-of-the-art techniques for Form Structure Recognition and OCR
- Proposed a novel **text guidance** based **multi-stage fusion** architecture for Table Structure Recognition

Research Intern | **Aarhus University, Denmark** [Publication: CIKM'20] Dec 2019 - Jan 2020
Content Aware Influence Maximization

- Devised a novel Content-Aware Linear Threshold (**CALT**) model that governs a contagion based on both content features and network structure, and studied the properties of the spread function under this model
- Proposed an algorithm to learn the influence parameters of the model using the **credit allocation** technique
- Developed an algorithm for efficient influence maximization by feature selection based on the model's properties

Research Intern | **National University of Singapore** [Publications: GCPR'20, BMVC'20] May 2019 - July 2019
Interactive Image Segmentation

- Implemented Fully Convolutional Networks **(FCN)** with encoded guidance maps for interactive image segmentation
- Developed a generic framework using **PyTorch** to train and evaluate the model using multiple click sampling strategies to simulate human interaction and methods to encode the clicks into guidance maps

Bachelor Thesis | **IIT Bombay** [Publications: ICPR'20, ISBI'22] July 2020 - May 2021
Deep-EM Learning for Medical Image Enhancement

- Developed a novel *variational* DNN framework for image quality enhancement, relying on **Monte-Carlo EM** optimization, including Metropolis-Hastings Markov-Chain Monte-Carlo (**MCMC**) sampling in the latent space
- Proposed a robust and uncertainty-aware loss through datum-adaptive modelling on the DNN output residuals
- Won the **Best Paper Award** at the International Symposium of Biomedical Imaging (ISBI 2022)

HONORS AND AWARDS

- Awarded the **JN Tata Fellowship** for pursuing higher education in computer science *(2022)*
- Received the **Institute Academic Prize** at IIT Bombay for exceptional academic performance *(2020)*
- Secured **All India Rank 39** in **JEE Advanced** among **1.2 million** aspirants *(2017)*

POSITIONS OF RESPONSIBILITY

Teaching Assistant - for Computer Vision and Deep Learning for Natural Language Processing at Stanford University Introduction to Machine Learning, Data Structures and Algorithms, and Calculus at IIT Bombay
Department Academic Mentor - for sophomore students in the Computer Science department, IIT Bombay