

Ansh Khurana

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EDUCATION

Stanford University

MS in Computer Science with specialization in Artificial Intelligence

2022-Present

Indian Institute of Technology Bombay

B.Tech with Honors in Computer Science and Minor in Applied Statistics and Informatics

GPA: 9.75/10

2017-2021

Received the **Research Excellence Award** for outstanding research work during undergraduate

Relevant Coursework: Advanced Machine Learning, Automatic Speech Recognition, Intelligent Learning Agents, Medical Image Computing, Operating Systems, Software Systems Lab, Database and Information Systems

WORK EXPERIENCE

Pre-Doctoral Researcher | Google Research [Publications: [Preprint](#), [ICML'22 PODS Workshop](#)] July 2021 - Aug 2022

- 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

- 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

- 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

- 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

SELECT PROJECTS

Deep-EM Learning for Medical Image Enhancement [Publications: [ICPR'20](#), [ISBI'22](#)]

IIT Bombay

- 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)

Secure Personal Cloud [\[code\]](#)

IIT Bombay

- Implemented a **Zero-Knowledge** based secure cloud using RSA, ARC4, Blowfish and AES-CBC block level file encryption at the client side to ensure secure end-to-end encryption while uploading and sharing files
- Developed a server with **Django** web framework at the back-end integrated with an **SQL** database
- Designed a **mobile-friendly** web-app using JavaScript for decrypting and rendering users' encrypted files

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

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 **220,000** aspirants (2017)

POSITIONS OF RESPONSIBILITY

Teaching Assistant - for Computer Vision, Machine Learning, Data Structures and Algorithms, and Calculus courses

Reviewer - for CVPR 2022, ECCV 2022, ISBI 2022, ICPR 2022 and AAAI 2023 machine learning conferences

Department Academic Mentor - for sophomore students in the Computer Science department, IIT Bombay