Chesta Pahuja | **19I190008**
Industrial Engineering & Operations Research | **M.Sc.**
Indian Institute of Technology Bombay | **Gender: Female**
DOB: 02-03-1998

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2022	8.71
Graduation	Delhi University	Hansraj College	2018	7.865
Graduation Specialization: Mathematics				

SCHOLASTIC ACHIEVEMENTS

- Secured **AIR 59** in IIT JAM Statistics | • **Winner** of **Programming Challenge** Contest of Advanced Deep Learning course, IIT-B
- Among the **top-5** students in the M.Sc'19-22 batch, **IEOR** department, IIT-Bombay *(2021)*
- Awarded **Topper of the School trophy** by Maharaja Agrasen Model School for academic excellence in Class XII *(2015)*
- Cleared **CT-1** (score-93%), **CT-3** (score-85%) and **CT-5** (score-77%) from Institute and Faculty of Actuaries, IFoA, UK

RESEARCH PROJECTS

Intelligent Reflecting Surfaces for 6G Networks | *Prof. Manjesh Hanawal, IEOR IIT-B* *Spring'21*

- **First** public implementation of the paper "Deep Reinforcement Learning Based Intelligent Reflecting Surface for Secure Wireless Communications" by Weng et.al. - **programmed** and **simulated** IRS-aided **MISO downlink environment**
- Optimized IRS's **phase-shift** design using **DDPG** algorithm (unifying Deep Q-Learning,Policy Gradient) to maximize **SNR**
- **Proposed** and **implemented** modification to the **IRS-DDPG** framework to **learn** unknown channel gains between IRS-User with phase-shift control for a more realistic approach, other channels simulated using Rician & Rayleigh fading models

Compound scaling and Feature Fusion in CNNs | *Prof. P. Balamurugan Palaniappan, IEOR IIT-B* *Fall'20*

- Performed image classification using **ILSVRC 2019 SOTA EfficientNets**, fine-tuned on **Stanford Cars, CIFAR-10**, also examined transfer learning capabilities for object detection, on custom **Google Open Images V4** dataset, writing custom dataloaders
- Conducted the experiments using a single **NVIDIA Tesla K80** GPU on **Google Cloud** with results at-par with original work

Adversarial Deep Learning | *Prof. P. Balamurugan, IEOR IIT-B* *Ongoing*

- Encompassed basics of state-of-the-art black-box & white-box **attacks** and **defenses** to build more robust & secure NNs
- Planning to devise new algorithms for **distribution** attacks in **dynamic data**

KEY PROJECTS

Conversational AI for COVID-19 Support | *Course Project | DL for NLP | Guide: Prof. Pushpak Bhattacharya, CSE, IIT-B* *Spring'21*

- Developed a **full-stack** web application with a **Transformer**-based conversational agent (**voicebot**) in **CUDA** environment
- **Automated** doctor's usual responses to COVID-19 symptoms & queries by enabling bot to hold voice/text dialogues w/ users
- Web UI was built using **HTML** and **Flask, ngrok** APIs with **real-time** speech recognition and **Text-to-Speech** synthesis for voice conversations, integrated with **backend** developed using **BART** model, fine-tuned on COVID-Dialogue-Dataset-English

Isometric Learning for Visual Recognition | *Course Project | Advanced DL | Guide: Prof. P. Balamurugan, IEOR, IIT-B* *Spring'21*

- Used isometric learning to simplify the complexity in training of **very deep NNs**, without batch-norm and skip connections
- **Improved** accuracy/mean IoU by **0.85%** for segmentation on **Brain MRI** dataset - **proposed** and implemented **ISO-UNet**
- **First** public implementation of **R-ISONet + FasterRCNN** framework based on "Deep Isometric Learning for Visual Recognition" by Hozhi et. al. for Object Detection trained on **COCO** dataset on **GPU** with CUDA environment

Movie Recommendation System using FL | *Course Project | Online Machine Learning | Guide: Prof. M Hanawal, IEOR, IIT-B* *Spring'21*

- Implemented **PF-MAB** framework integrating **Federated Learning** with **personalization** & **Multi-Armed-Bandit** problem
- **Reduced** regret by **6x** from original study, **re-designed** PF-MAB with **cross-device FL** to imitate **real-world** scenario where some clients may **drop or fail** to connect; developed a movie recommendation system using this framework and MovieLens dataset
- **Personalized** movie recommendations based on both locally and globally best movie genre **learnt** for **individual clients**

SKILL SET & RELEVANT COURSES

Technical skills	***Programming:*** Python, MATLAB, R,AMPL, Mathematica | ***Tools*** & ***Environment:*** PyTorch, Keras, TensorFlow, NumPy CUDA, Pandas, SCILAB, Lingo, LaTeX, HTML, Pyomo ***Solvers:*** | CPLEX, GUROBI, GECODE | ***OS:*** Windows, Linux
Computer Science	Machine Learning, Deep Learning, Digital Image Processing, Data Structures and Algorithms
Others	Mathematics (**major**), Economics (**minor**), Optimization, Theory of Games, Actuarial Statistics & Mathematics

POSITIONS OF RESPONSIBILITY

Teaching Assistantship | *IE507: Modeling and Computation Lab | Instructor: Prof. P Balamurugan* *(July'21-Present)*
-**Mentoring** and grading assignments (Data analysis & ML, simulating random processes) for a class of **50+** students

Core Team Member| **LEAN IN** *group* | **Senior Coordinator**| *Neenv, HRD cell* | *Hansraj College, Delhi University* *(2016-17)*

Academic Captain | *Maharaja Agrasen Model School* *(2013-14)*

MISCELLANEOUS

Online	Completed **3/5 certifications** in Deep Learning Specialization offered by **Deeplearning.AI** by Andrew NG *(2020)*
Social	Volunteered at NGO, UNICEF, PratYek| *Data Analytics*	**Sports**	Represented IEOR in Badminton, PGGC, 2019, IITB
Anchor	PG Sports Orientation, 2019 with footfall of over 1200 students	IEOR Day, 2021 with over 100 attendees