

EDUCATION

University of Oxford – MSc Advanced Computer Science	[2021 - 2022]
Google Women in Computer Science Scholarship Awardee (Merit-based), Stanford MATS Scholar, GHC Scholar	
Dissertation: "Protein Language Representation Learning to predict SARS-CoV-2 mutational landscape", under Dr. Peter Minary [Overview]	
University of Delhi – BSc (Hons) Computer Science	[2017 - 2020]
8.42 CGPA, First Division Honours with Distinction	
Overall Rank 3 and Student of the Year Award (2020); Published 6 research papers	

RESEARCH EXPERIENCE [3 years part-time research exp.]

Research Scholar – Stanford Existential Risks Initiative, Stanford University	[Nov 2022 – Present]
Deciphering NNs misalignment, agentic & power-seeking behaviours in LLMs. Proposed grounded self-learning LM agents with 29% improved accuracy over MMLU physics dataset. Building level 1 AGI for automating AI Alignment research	
Research Intern (EWADA) – Oxford Human Centred AI Group, University of Oxford	[Nov 2021 – Dec 2022]
Built decentralised apps using SOLID with privacy-preserving ML recommendations under Prof Jun Zhao, Nigel Shadbolt & Tim Berners Lee	
Research Lead – Oxford Rhodes AI Lab	[May – Oct 2022]
Leveraged GNNs to predict climate closures equation using symbolic regression in collab with CalTech (CLiMA), MIT & NASA JPL	
Language Modelling Research – Computational Biology Group, University of Oxford	[April – Oct 2022]
Applied language modelling to predict COVID-19 mutations using transformer-based models & AlphaFold2 under Prof. Peter Minary	
Chatbot Development Research – University of Oxford	[Feb – Aug 2022]
Developed a Question-Answering language model for the Philosophy Dept to help convey their research work over website/messenger	
NLP Student Researcher – Department of Computer Science, University of Delhi	[March 2020 – July 2021]
Researched & developed multiple projects- GPT-3 use-case model extractor, Ensemble ML Fake News detection, GPT-2 Title Generation. COVID-19 News Summariser using transformers, Medical QA bot. Co-authored and published papers in IEEE & Springer Singapore	
Computer Vision Student Researcher – AI Research Lab, University of Delhi	[June – Sept 2019]
Built a Computer Vision based Assistive System for Autonomous Vehicles. Compiled Darknet with OpenCV for real-time predictions	

WORK EXPERIENCE [1 year full-time work exp.]

Mobile Robotics Engineer – Swift Robotics	[Aug 2020 – Sept 2021]
Developed Flask REST API to livestream video processed with Computer Vision techniques (OpenCV, image stitching- KNNs)	
Built a React Native application which interacts with ROS melodic nodes to control robot's navigation & visualised LiDAR odometry	
Co-Founder – HushTech Solutions	[June 2019 – July 2021]
Self-taught NLP engineer; developed omni-channel messenger chatbots & RPA solutions for businesses such as a DIET classifier email bot	
Machine Learning Engineer – Omdena (One of the 28 Global AI experts selected)	[March – June 2020]
Applied statistical models: LDA topic modelling, VAR, ARIMA & EDA over COVID-19 policies. Results showcased at UN AI Summit	
Mobile Application Development Intern – Impute Inc.	[March – June 2019]
Developed & extensively trained a contextual conversation QA agent for Fluent8 iOS app. Deployed webhooks on Firebase Cloud Function	
Chatbot Development Intern – Inverted Sense	[Dec 2018 – March 2019]
Built chatbots using Twilio & developed an in-built shopping cart with up-selling resulting in higher lead conversions & ROAS	

PROJECTS | Github : github.com/hunarbata

- **MuFormer**: Inverted AlphaFold2 for inverse-folding with pLM inductive bias to generate mutational sequences
- **CoVBER**: COVID-19 mutation prediction language model [\[Link\]](#)
- **GraphSAGE LSTM & BiLSTM Aggregators**: Merged in PyTorch Geometric Package [\[Link\]](#)
- **HunAI**: DialogPT DSTC telegram buddy bot
- **MUCE**: GPT-3 based requirement specification use-case extractor
- **TiGen**: GPT-2 based SEO-optimised Research Article Title Generator
- **CoVShorts**: Transformer-based abstractive COVID-19 news summariser
- **Real Time Voice Cloning**: Transfer Learning based voice cloning on the recorded input to generate TTS

AWARDS & ACHIEVEMENTS

- **Research Scholarship**, Stanford University, Machine Learning Alignment Theory Scholar, 2022
- **Google Women in Computer Science Generation Scholarship** EMEA, 2022
- **Grace Hopper Conference Scholarship**, Department of Computer Science, University of Oxford, 2022
- **Deep Learning Theory Summer School Scholarship**, Simons Institute for Theory of Computing, UC Berkeley, 2022
- **Rank 7**, G-Research Algorithmic Trading Oxbridge Challenge, 2021
- **Student of the Year & Rank 3**, Department of Computer Science, University of Delhi, 2020
- **The Mars Generation 24 under 24** Award for Leaders & Innovators in STEM, 2019
- **National Finalist, Smart India Hackathon** Software Edition, (out of 5,000 teams) in India's largest hackathon by MHRD Govt. of India, 2019
- **Highest GPA** in Data Structure, Machine Learning, Computer Graphics, Android, Software Eng, System Programming, PHP, Microprocessor
- **National Winner**, Summer with Google (out of 20,000 participants), 2018

SKILLS

Python, C++, C, Javascript, SQL, App Dev (Native, React Native), Web Dev (HTML, CSS, React.js, TypeScript, Node.js, Flask)
PyTorch, PyTorch Geometric [\[Merged PR\]](#), TensorFlow, JAX, Kubernetes, Google Cloud Platform, ROS

1. Medbot: Conversational Artificial Intelligence powered Chatbot for delivering Telehealth after COVID-19, **IEEE 5th International Conference on Communications and Electronic Systems (ICCES 2020)**; Urmil Bharti, Deepali Bajaj, **Hunar Batra** et al., **IEEE Xplore** [[Link](#)]
2. Serverless Deployment of a Voice-Bot for Visually Impaired, **International Conference on Applied Soft Computing & Communication Networks (ACN 2020)**; Deepali Bajaj, Urmil Bharti, **Hunar Batra** et al., Book Chapter - **Springer** Singapore [[Link](#)]
3. CoVShorts: News Summarization application based on Deep NLP transformers for SARS-CoV-2, **IEEE 9th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO 2021)**; **Hunar Batra**, Akansha J, et al. - **IEEE** [[Link](#)]
4. MUCE - A Multilingual Use Case Model Extractor using GPT-3; Deepali Bajaj, **Hunar Batra** et. al, **International Journal of Information Technology (IJIT 2022)**, **Springer** [[Link](#)]
5. CovFakeBot: a machine learning based chatbot using ensemble learning technique for COVID-19 fake news detection; **Hunar Batra** et. al, **International Journal of Artificial Intelligence and Soft Computing 2022** [[Link](#)]
6. TiGen - Title Generator based on Deep NLP Transformer Model for Scholarly Literature; **Hunar Batra**, Eshika G et. al, **3rd International Conference on Communication, Networks and Computing 2022**, Springer;
7. Protein Language Models are self-supervised mutagenesis learners; **Hunar Batra**, Peter Minary; To be published (2022)
8. Solidflix: A decentralised movie social sharing app with privacy-preserving recommendations; **Hunar Batra**, Jun Zhao et. al; Work in progress (2022)

INVITED TALKS & WORKSHOPS

SolidWorld 2022 – Solidflix: A decentralised movie social sharing app with privacy-preserving recommendation [[Video](#)] [[Slides](#)]
GirlsWhoML 2022, University of Oxford – Introduction to Machine Learning (Linear Regression and Logistic Regression) [[Slides](#)]
ICML 2022, Oxford Women in Computer Science Virtual Social – Highlighting Women Researchers in Machine Learning
Oxford Computer Science Conference 2022 – Protein Language Modelling to generate de novo SARS-CoV-2 mutations [[Slides](#)]
Oxbridge Women in Computer Science Conference 2022 – Protein Language Modelling to generate de novo SARS-CoV-2 mutations [[Slides](#)]
ML Reading Group, University of Oxford (Feb and March 2022) – Presented state-of-the-art work on LLMs
ICRITO 2021, IEEE – Paper Presentation at 9th International Conference on Reliability, Infocom Technologies and Optimization, IEEE
ICCES'20, IEEE – Paper Presentation at 5th International Conference on Communication and Electronic Systems, IEEE
ACN'20, Springer – Paper Presentation at 5th International Conference on Applied Soft Computing and Communication Networks, Springer
Ryerson University (The DMZ, Think Outside the Valley 2020) – Process Automation with Chatbots [[Video](#)]
HackOn Hackathon 2020 – Ok Google! Let's build an action for Google Assistant [[Video](#)]
SRCC, University of Delhi 2019 – Chatbot Development for Marketing (youngest invited speaker)
Google DevFest New Delhi 2019 – Project showcase, Google Developer Students Club
WHRC 2018 – Ideation Paper Presentation on 'Ingestible Robots' at 15th WONCA World Rural Health Conference 2018

POSITIONS OF RESPONSIBILITY

Reviewer – ICML 2022, AI4ABM workshop	[May 2022]
Student Entrepreneur – Oxford University Innovation and Oxford Science Enterprises	[June - July 2022]
Summer Fellow – Global Leadership Initiative, Oxford Character Project	[June - July 2022]
IT Officer – Oxford Women in Business	[April - Oct 2022]
IT Officer – Oxford Women in Computer Science	[Oct 2021 - Oct 2022]
MSc Academic Representative – Department of Computer Science, University of Oxford	[Oct 2021 - Oct 2022]
Solutions Challenge Lead – Google Developer Student Club Oxford	[Oct 2021 - Jan 2022]
Exam Marker – Mathematical Institute, University of Oxford	[Oct 2021 - Nov 2021]
Lead – Google Developer Student Club (One of the few students selected globally by Google)	[Jan 2019 - Aug 2020]
Mentor – Google Code-in at TensorFlow	[Nov 2019 - Jan 2020]