# Hunar Batra

✉ i@hunarbatra.com   ✈ hunarbatra.com   in linkedin.com/in/hunarbatra

## Education

**B.Sc (Honours) Computer Science,**       Class of 2020,
**University of Delhi**       (Accredited by NAAC Grade 'A+')
C.G.P.A - **8.42 / 10**, First Division
*Academic Achievements and Honours*

- Student of the Year, Department of Computer Science, 2020 - *for all-rounder performance*
- Scored S.G.P.A - 9.5 / 10 in sixth semester *(Overall Rank 2)*
- Achieved the Highest Grade Point in the university in Data Structures, Machine Learning, Android Programming, Software Engineering, System Programming, PHP, Computer Graphics, Microprocessor subjects

**Modern School Vasant Vihar, New Delhi**       Class of 2017
Grade 12th (CBSE) - 92%
Grade 10th (CBSE) - 9.6 CGPA

## Research Publications

- 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 [Paper Link ⧉ ]

- 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,. **Springer** [To be published]

## Research Experience

**Student Researcher, Department of Computer Science**       03/2020 – 06/2020
*University of Delhi*

- Developed a Voice-based personal assistant web application for visually impaired students, embedded with NLP capabilities, built over a serverless architecture with a NoSQL Cloud Database - Cloud Firestore
- Single-handedly built & trained the feedback collection NLP agent, tagged entities, added contextual input-output conversational flow. Created Node.js webhook to handle responses, deployed on Google Cloud Platform
- Embedded voice interaction using WebSpeech API Speech Recognition & Speech Synthesis interfaces, websocket for bi-directional real-time communication. Performed benchmarking, load, soak, sink testing & built GNU plots
- Co-Authored a research paper on this project, accepted to International Conference on Applied Soft Computing & Communication Networks (ACN'20), to be published in Springer

**Student Researcher, Artificial Intelligence Research Lab**       06/2019 – 09/2019
*University of Delhi*

- Self-initiated research work under Dr. Amita Kapoor, wherein I built an Assistive System for Autonomous Vehicles for vehicles and lane detection, based on Deep Learning & Computer Vision
- Compiled Darknet, an open-source neural network & YOLOv3 with OpenCV for real-time predictions. Implemented a bash script to automate bulk testing & mean average precision calculation
- Achieved 99.07% accuracy for detecting vehicles and lanes using Histogram of Oriented Gradients (HOG) & a Linear Support Vector Machine Classifier on HSV colour space

## Work Experience

**Mobile Robotics Engineer, UVRobots**       08/2020 – present | London, UK

- Built a React Native mobile application integrated with ROS melodic nodes, to control the sanitization Robot Lamp's navigation & lucidly developed the front-end of the application
- Developed a Flask REST API for streaming live video from Raspberry Pi using the Motion-JPG technique. Processed the video, generated depth & disparity maps using OpenCV and merged images using KNN
- Generated room laser scan visualisations using LiDAR real-time data, roboviz & PyLidar libraries

**Co-Founder, HushTech Solutions** ⬈                              06/2019 – present | New Delhi, India
- Self-taught Conversational AI developer, developing omni-channel messenger chatbots powered by Natural Language Processing (NLP) to help businesses automate their customer interactions, marketing & lead generation
- Built intelligent full-funnel integrated messaging chatbots with data analytics abilities
- Conducted extensive research into the conversational technology market, requirements of the clients & shipped chatbots for messaging platforms and Robotic Process Automation solutions

**Machine Learning Engineer, Omdena AI**                         03/2020 – 06/2020 | Palo Alto, USA
- Selected as one of the 28 Global AI Experts to work on the AI Pandemics project in collaboration with AI for Peace
- Performed Latent Dirichlet Allocation (LDA) topic modelling over a dataset of scraped COVID-19 news articles to analyse the impact of government policies over the vulnerable population.
- Used time series analysis on OxGCRT & Mobility Datasets to find correlations between policy implementations & it's impact on number of cases & mobility. Further, implemented moving averages & vector autoregression (VAR)
- Conducted exploratory data analysis, built categorical heat maps for analysis & a modified SEIR model. Results to be published at the United Nations AI for Good Summit 2020

**Mobile Application Development Intern, Impute Inc.**            04/2019 – 07/2019 | Tokyo, Japan
- Developed a Hybrid Voice-Assistant based on Natural Language Processing for the Fluent8 iOS Application, integrated with a corpora of daily-life topics to help users improve their conversational skills.
- Extensively trained the NLP agent & enabled contextual conversation using Dialogflow AI & Node.js client SDK
- Deployed webhooks on Cloud Function for Firebase for response retrieval. Designed the Conversational User Interface (CUI) & directed fallback user queries to external APIs to enhance the conversational experience

**Chatbot Development Intern, Inverted Sense**                   12/2018 – 04/2019 | New Delhi, India
- Built messenger chatbots for real businesses using Twilio, Chatfuel, Janis.ai. Worked on designing, building, training, testing bots & integrated interactive UI with suggestion cards
- Proposed & successfully developed an in-built shopping cart, instant order email alert & up-selling feature which led to higher lead conversions & ROAS

## Awards and Honours

- **First Indian** to receive **The Mars Generation 24 under 24** Award - *Leader & Innovator in STEAM category,* 2019 ⬈
- **National Finalist**, Smart India Hackathon Software Edition (out of 5,000 teams), *India's largest hackathon by MHRD Govt. of India,* 2019
- **Young Inventor**, Tech Will Save Us, 2019 ⬈
- Developer Student Clubs Lead, Google Developers, 2020
- **Paper Presentation** at 5th International Conference on Communication and Electronic Systems, ICCES'20, IEEE
- **Paper Presentation** at 5th International Conference on Applied Soft Computing and Communication Networks, ACN'20, Springer
- Ideation **Paper Presentation** on 'Ingestible Robots' at 15th WONCA World Rural Health Conference, 2018
- **National Winner**, Summer with Google (out of 20,000 participants), 2018
- World Rank **1642**, Google CodeJam 2020
- Winner, Smart City Challenge, IIT Delhi, 2018
- Winner, National Level B-Plan Competition, MSME, Govt. of India, 2019
- Rank **15**, All India Gen-Z Leadership Olympiad, 2018
- Gold Award, Digital Champions Program, Reliance JIO, 2018

## Projects | github.com/hunarbatra

**HunAI [Python, GPT]**
A pre-trained response generation, DialoGPT DSTC model based Telegram Bot buddy, trained on Reddit discussions
**CoRelief [React.js, Kendo UI, API.AI]**
Natural Language Processing based web chatbot to help fight COVID-19 related anxieties & support mental health
**UAV Delivery Drone [ArduPilot Copter]**
Unmanned Aerial Vehicle for delivering vaccinations and disaster relief material to remote areas. Awarded The Mars Generation 24 under 24 Award in recognition of this project

**Real Time Voice Cloning [Python, Synthesizer, TensorFlow]**
Transfer Learning based voice cloning on the recorded input to generate Text-to-Speech (TTS)
**Voixt [JS, HTML, CSS, Chrome TTS]**
A Chrome Extension to read aloud the textual content on any browser tab, enabling TTS [Link ⧉ ]
**Apka Chikitsak [Node.js, SSML, GCP]**
Multilingual voice application to provide telehealth, healthcare literacy & information in rural India
**All India Emergency Helpline [Node.js, SSML, GCP]**
Hybrid NLP bot to provide emergency helpline info. 5K+/m users on Google Assistant [Link ⧉ ]
**Songify [Python, GPT 2]**
A GPT-2 based song lyrics generator based on a transformer natural language processing model
**Vehicle and Lane Detection [Python, SciKit]**
99.07% accuracy for detecting vehicles, lanes using HOG & SVM on HSV colour space
**Rekognition [Java, XML, ML Kit]**
Native Android app for Text Recognition, Object Recognition & Facial Features Recognition

## Skills

C++, C, Python, Javascript, Java, HTML, CSS, PHP, SQL, Application Development (Native, React Native)

Tools & Frameworks: Node.js, React.js, TensorFlow, Flask, OpenCV, Dialogflow, git, bash, Firebase, Google Cloud Platform, ROS

## Positions of Responsibilty & Volunteering

**Founder & Lead – Developer Student Clubs, Google Developers**　　　　01/2019 – 07/2020
*One of the few students selected globally by Google*
- Conducted 10+ workshops, trained 300+ students, delivered talks on Cloud, Machine Learning, Data Science, Web & Mobile Application Development.
- Facilitated Google Cloud Platform Crash Course, Explore ML & hackathons to foster a strong technical developer community. Supervised & led live projects

**Teaching Assistant - Computer Literacy Program**　　　　07/2019 – 03/2020
*University of Delhi*
- Served as a Teaching Assistant in Computer Literacy Program, which aims to teach women foundational basics of Computer Science in order to help them restart their career.
- Undertook weekly classes, elucidated core basics & hands-on over general-purpose industry tools

**Mentor – Google Code-in at TensorFlow**　　　　12/2019 – 01/2020
- Mentored students to get started with open source developments for TensorFlow.
- Developed problem statements on BERT model, beginner friendly resources, reviewed submissions, provided constructive feedback & guidance

## Invited Talks

**Process Automation with Chatbots**
Think Outside the Valley, The DMZ (Ryerson University), World's leading accelerator for Tech Startups [Link] ⧉
**Ok, Google! Let's build an Action for Google Assistant**
HackOn, A Pan-India Virtual Hackathon [Link] ⧉
**Chatbot Development for Marketing**
Youngest Guest Speaker at Shri Ram College of Commerce, University of Delhi
**The Power of Technology - Developer Student Clubs**
Google Developer Groups DevFest 2019, India's Largest Developer Conference

## MOOCs

Machine Learning, Stanford University - *Coursera - July'20*
Intro to TensorFlow 2.0 for Deep Learning - *Udacity - June'19*
Google Cloud Platform Big Data and Machine Learning Fundamentals - *Google Cloud, Coursera - April'19*