Shrey Bansal

shrey.bansal.09@gmail.com | +91 9726822871| | https://shrey-bansal.github.io

EDUCATION

B.Tech, Computer Science & Engineering - CGPA: 9.426/10.0   New Delhi, India | July 2018 – May 2022
INDIAN INSTITUTE OF TECHNOLOGY DELHI

CBSE All India Senior School Certificate Examination 2018 - 94.4%   Surat, India | April 2002 – April 2018
LANCERS ARMY SCHOOL

HONORS AND AWARDS

- **JEE ADVANCED 2018**: Secured **All India Rank 72** among 2.4 million candidates in a national competition.
- **Indian National Chemistry Olympiad 2018**: Awarded Certificate of Merit (amongst top National Top 1%).
- **Indian National Physics Olympiad 2018**: Awarded Certificate of Merit (amongst top National Top 1%).
- **IIT Delhi Merit Prize 2018-19**: Awarded for 2 consecutive semesters for being in top 7 percentile in the institute.

PUBLICATIONS

[*1] M. Singh, S. **Bansal**, Vandana, B. K. Panigrahi, and A. Garg. **A Genetic Algorithm and RNN-LSTM Model for Remaining Battery Capacity Prediction**. Journal of Computing and Information Science in Eng, 22(4), 02 2022.
The proposed design uses Long–Short-Term Memory model to predict remaining capacity using physical properties. The proposed model's parameters are optimized through a genetic algorithm-based parameter selector.

[2] M. Singh, **Shrey Bansal**, S. Ahuja, R. K. Dubey, B. K. Panigrahi, and N. Dey. **Transfer learning–based ensemble support vector machine model for automated COVID-19 detection using lung computerized tomography scan data.** Med Biol Eng Comput, 825–839, 2021.
Designed a robust binary classification deep learning model to diagnose COVID-19 using CT scan images. Used different image processing techniques, transfer learning, truncated VGG-16 and ensemble to train the model.

[3] **Shrey Bansal**, M. Singh, R. K. Dubey, and B. K. Panigrahi. **Multi-objective Genetic Algorithm Based Deep Learning Model for Automated COVID-19 Detection Using Medical Image Data**. J. Med. Biol. Eng. 41, 678–689, 2021.
A new feature learning technique is proposed for screening COVID-19 patients using chest CT Scans. The model in the study uses a three-step architecture, consisting of a Convolutional Autoencoder based unsupervised feature extractor, a Multi-Objective Genetic Algorithm based feature selector and a Bagging Ensemble of Support Vector Machines based classifier.

RESEARCH EXPERIENCE

UNIVERSITY OF CALIFORNIA | RESEARCH INTERN   San Diego, USA | Dec 2020 - April 2021

- Worked on integrating machine learning solutions to the OpenROAD project - a layout generation flow (VLSI).
- Built macro placement solutions using deep **reinforcement learning** by designing agent environments and implementing RL algorithms like Deep Q Networks, Policy Gradient, etc.

STANFORD SCHOOL OF BUSINESS | RESEARCH ASSISTANT   CA, USA | Aug 2020 - October 2021

- Collaborated with **HealthifyMe**, a well-known fitness app. Used a combination of statistical methods and machine learning techniques to analyze user profiles and study the effect of logging behavior on health outcomes.
- Compared the role of AI and Humans in weight loss and the impact of AI on human behavior in goal setting.

CENTER FOR AUTOMOTIVE RESEARCH AND TRIBOLOGY | RESEARCHER   IIT Delhi | Dec 2020 - Dec 2021

- Worked on inter-disciplinary research in electric vehicle, power storage, blockchain and cybersecurity.
- Built a secure Battery Management System with LSTM model based remaining battery capacity prediction.

WORK EXPERIENCE

GRAVITON RESEARCH | Qᴜᴀɴᴛɪᴛᴀᴛɪᴠᴇ Rᴇꜱᴇᴀʀᴄʜᴇʀ   Gurgaon, India | June 2022 - Present
- Developed, and deployed models and systems involving intricate and sophisticated statistical formulas.
- Extensively analyzed market data and performed mathematically based technical configurations and designs.

GORILLA CORPORATION | Cᴏ-Fᴏᴜɴᴅᴇʀ & CTO   New Delhi, India | Jan 2022 - March 2022
- Focused on helping D2C brands scale fast and maximize revenue using tech in the e-commerce enablement space.
- As **Chief Technology Officer**, responsible for hiring and leading the tech team, accountable for prototype development, product management, technology stack, user experience, infrastructure, security, etc.

MICROSOFT | Dᴀᴛᴀ Sᴄɪᴇɴᴄᴇ Iɴᴛᴇʀɴ   Hyderabad, India | May 2021 - July 2021
- Worked on Heterogenous Graph Representation by generating node embeddings using **Graph Neural Networks**.
- Researched and implemented various inductive GNNs including GraphSAGE, HinSAGE, Heterogeneous Graph Transformers, Heterogenous Attention Networks.
- Designed several downstream tasks like nearest neighbors, link prediction, etc. to evaluate different models.

ANASAKTA LABS | Mᴀᴄʜɪɴᴇ Lᴇᴀʀɴɪɴɢ Iɴᴛᴇʀɴ   Noida, India | May 2020 - July 2020
- Developed a GNN-based solver for Electronic Design Automation Cell Placement problem. (VLSI)
- Connected the traditional solver with the ML pipeline and designed loss functions to evaluate predicted layouts.

PROJECTS

REAL TIME LICENSE PLATE RECOGNITION   Pʀᴏꜰ. Aɴꜱʜᴜʟ Kᴜᴍᴀʀ, IIT Dᴇʟʜɪ | Aᴜɢ 2019 - Fᴇʙ 2020
Designed a system to localize and recognize license plates, working at 11.4 ms/frame with 96.3% ACC, based on CNN using FPGA based hardware acceleration. Implemented algorithms for localisation and segmentation in C++ and Verilog.

CYBERSECURITY FOR IOT DEVICES   Pʀᴏꜰ. BK Pᴀɴɪɢʀᴀʜɪ, IIT Dᴇʟʜɪ | Jᴜɴᴇ 2020 - Dᴇᴄ 2020
Designed a ML based real-time monitoring system to secure devices against DDoS and Botnet Attacks. Techniques like unsupervised clustering, random forests were used on the qualitative features extracted from network flows to build the model. The proposed system was placed 10th in **HCL IITK Cybersecurity Challenge** 2020.

NLP BASED WORD SENSE DISAMBIGUATION   Pʀᴏꜰ. Mᴀᴜꜱᴀᴍ, IIT Dᴇʟʜɪ | Sᴇᴘ 2021 - Oᴄᴛ 2021
Built a WSD classifier using pretrained BERT model, encoded LSTMs and Feature extraction techniques including Lemmatization, PoS tagging and NER.

PACMAN AI BOT   Pʀᴏꜰ. Rᴏʜᴀɴ Pᴀᴜʟ, IIT Dᴇʟʜɪ | Sᴇᴘ 2020 - Jᴀɴ 2021
Designed a reflex pacman agent using A^* search, Heuristics and Monte Carlo search. **Winner** in the AI class competition.

EXTRA CURRICULAR ACTIVITIES

- **HCL Hack IITK 2020**: Merit Prize (10th Rank) in International Cyber Hackathon by HCL.
- **MindShare Young Researcher 2021**: Winner of Research Paper Competition conducted by National Service Scheme.
- **TVS E.P.I.C IT Challenge, 2020-21**: 2 Times Winner of the All India Hackathon based on Fintech Innovation.
- **I-Hack Challenge 2021**: Winner of All India Hackathon on Startup Innovation, organised by E-Cell, IIT Bombay.
- **Quadeye Excellence Scholarship Recipient, 2021**
- **Junior Reviewer 2020**: Reviewer at International Journal of Infectious Diseases.
- **Treasurer at ACES-ACM 2021**: Treasurer at ACES-ACM, the society for Computer Science Engineering, IIT Delhi.
- **Volunteer at Chhanydo 2020-22**: Chhanydo is an NGO based in Surat, India. I have had the honor of working closely with them during COVID-19 pandemic on their project related to food distribution drives.
- **Co-Organizer at TRYST 2022**: TRYST, IIT Delhi, India's most significant science and technological festival.

SKILLS

Languages: C++, C, Java, Python, VHDL, SML, OCaml, HTML5, JavaScript, CSS, R
Libraries: NumPy, Pandas, Scikit, TensorFlow, OpenCV, Pytorch, Pytorch Geometric, Keras, DGL, SciPy
Technologies: AWS, MATLAB, Xilinx ISE and Vivado, AutoDesk, Latex, Git, Android Studio