Shubhranshu Singh

+1 412-214-2166 | shubhran@alumni.cmu.edu | linkedin.com/in/ShubhranshuSingh7 | github.com/ShubhranshuSingh

EDUCATION

Carnegie Mellon University *Dec 2022*
Master of Science in Electrical and Computer Engineering - Applied Study (GPA - 3.98/4.0) *Pittsburgh, PA*
- Societies: IEEE Eta Kappa Nu Honor Society, Sigma Chapter.

Indian Institute of Technology Gandhinagar *Aug 2020*
Bachelor of Technology in Electrical Engineering, Minor in Computer Science (GPA - 9.39/10.0) *Gandhinagar, India*
- Awarded Institute Gold Medal for receiving highest GPA in the discipline of Electrical Engineering.

EXPERIENCE

eBay *Sep 2025- Present*
Applied Researcher *Portland, OR*
- Evaluate large language models (LLMs) to enhance buyer–seller chatbot interactions

VOAIGE *Jan 2023 - Aug 2025*
AI Research Engineer *Pittsburgh, PA*
Details of majority of AI research with Voaige is confidential and under NDA.
- Achieved a **10x runtime improvement** for promptable segmentation model using refined prompts.
- Enabled perception system to filter objects based on their size through an estimate of the **3D geometry** of the object.
- Led ML pipeline development with MMEngine (deep learning framework) to **reduce experimentation time by 66%**.

NVIDIA *May 2022 - Aug 2022*
Deep Learning Software and Research Intern, AV Perception *Pittsburgh, PA (Remote)*
- Processed large-scale (550,000 images) AV datasets using SQL and Python to train **DiscoBox**, a weakly supervised network for instance segmentation from bounding box supervision.
- Developed automated **ETL pipelines** to improve experimentation cycle.
- Conducted a comprehensive analysis of DiscoBox's robustness to noisy bounding boxes, revealing a **2-6% decrease** in mean average precision for every **2% increase** in bounding box size.

Caltech *May 2019 - Jul 2019*
Summer Undergraduate Research Fellow *Pasadena, CA*
- Built and trained a **ResNet-based CNN** that reverses atmospheric distortion in telescope imagery, significantly improving faint-source detection while maintaining accurate flux measurements of known objects.

PUBLICATIONS

Adversarial Robustness Unhardening via Backdoor Attacks in Federated Learning *NeurIPS 2023 BUGS Poster*
*T Kim, J Li, N Madaan, **S Singh**, and C Joe-Wong* *[PDF]*

Characterizing Internal Evasion Attacks in Federated Learning *AISTATS 2023*
*T Kim, **S Singh**, N Madaan, and C Joe-Wong* *[PDF]*

Neural Network Based Block-Level Detection of Same Quality Factor Double JPEG Compression *SPIN 2020*
*AU Deshpande, AN Harish, **S Singh**, V Verma, and N Khanna* *[PDF]*

PROJECTS

Student-Teacher Knowledge Distillation with Adapters | *Course Project* | *CMU* *Oct 2022 - Dec 2022*
- Reduced student training time by **50%** in comparison to DistilBERT by introducing adapter modules.
- Achieved **1-2% higher accuracy and F1-score** with fewer trainable parameters on paraphrase identification (MRPC) dataset from GLUE benchmark.

Visual Grounding | *Course Project* | *CMU* [Project Website] *Feb 2022 - May 2022*
- Modified **detection transformer** to identify objects in an image based on a provided text prompt using **cross-attention** mechanisms.
- Combined image features from ResNet and text features from RoBERTa to attain **36.9% mean average precision**.

Few-shot Bioacoustic Event Detection | *Course Project* | *CMU* [PDF] *Sep 2021 - Dec 2021*
- Created a working implementation of **prototypical network** in NumPy from scratch to detect animal sounds given 5 exemplar vocalisations in a team of four.
- Attained **90.5% accuracy** and **2.65% F-score** using a logistic regression based network.

Model Compression | *Course Project* | *CMU* *Nov 2021 - Dec 2021*
- Partnered with classmate to apply magnitude-based pruning and sparse structure selection for convolutional neural network compression to reach **80% reduction in original size** with **only 3% drop in accuracy**.

SKILLS

Programming Languages: *Advanced* - Python; *Intermediate* - C/C++, SQL; *Familiar* - JavaScript
Libraries: *Advanced* - NumPy, PyTorch; *Intermediate* - TensorFlow, PySpark, Pandas, Open3D; *Familiar* - Scikit-learn
Tools: *Advanced* - Git; *Intermediate* - MATLAB; *Familiar* - AWS