

# HARIHARAN MANIKANDAN

(412) 708-5696 • hmanikan@cs.cmu.edu • <https://www.linkedin.com/in/hmanikan/>

## EDUCATION

- Carnegie Mellon University – School of Computer Science** Pittsburgh, PA  
Master of Science in Machine Learning – Applied Study | CGPA: **4.09/4.00** Dec. 2023  
• *Coursework:* Multimodal ML (11777), Graphical Models (10708), Statistics (36700), Independent Study (16720).
- Vellore Institute of Technology** Chennai, India  
Bachelor of Technology in Computer Science and Engineering | CGPA: **9.89/10.0** | Gold Medal Sep. 2020  
• *Relevant Coursework:* Machine Learning, Natural Language Processing, Large Scale Data Processing, Linear Algebra.

## SKILLS

**Programming:** Python, C, C++, NoSQL, CUDA.  
**Frameworks:** PyTorch, PySpark, OpenCV, AWS, Faiss, Airflow, Github, Scikit-learn, Numpy, Pandas, Seaborn, MongoDB.

## PROFESSIONAL EXPERIENCES

- Adobe** San Jose, CA  
*ML Engineer Intern* May – Aug. 2023  
• Enhanced regional relevance of Search by finetuning CLIP for non-US markets. Set to boost user engagement on the platform.
- Cisco** Bengaluru, India  
*Software Engineer 2 (AI)* Aug. 2020 – Jul. 2022  
• Devised [neural networks for detecting vulnerabilities in software](#). Prevented 95% exposures ahead of time. Collaborated with senior leaders to drive cross-team adoptions, filed patent and paper.  
• Developed [NLP for defect triaging from logs](#). QA teams reported reduction of 66% triaging time.  
• Deployed GPT-powered auto-code completions in IDE for Python and C. Saved 30% keystrokes to boost productivity.  
• Improved detection of static analysis alerts by 4x times using Roberta leading to 70% dev time savings.

## RESEARCH PUBLICATIONS AND PROJECTS

- Carnegie Mellon University** Pittsburgh, PA  
*[Large Language Models are Weak learners](#)* / Advised by Zico Kolter, CS Dept. Fall 2022, Spring 2023  
• Showed that prompt-based language models can function as weak learning hypothesis inside a boosting framework. [US Patent: 18/208,083; [ICML'23 Workshop Poster](#); NeurIPS'23 submission].
- [Locate Anything for Embodiment](#)* / Advised by Yonatan Bisk, LTI. Spring 2023  
• In team of 5, developed a multi-modal architecture for embodied instruction-following based on foundation models. (SAM).  
• Improved task success rate on unseen indoor environments by 4% (compared to SOTA on ALFRED dataset).
- [Adversarial Diffusion](#)* / 10708 Project / Advised by Andrej Riteski, MLD. Fall 2022  
• As two-member team, investigated ability of DDPM, Score SDE, Guided Diffusion models to generate adversarial examples.  
• Assessed generalizability to different target architectures, and potential for combining useful properties from multiple attacks.
- Vellore Institute of Technology (VIT)** Chennai, India  
*[COVID care Vision Toolkit](#)* / Capstone advised by R Karthik, Cyber Physical Systems, VIT Spring 2020  
• Developed CNNs for learning COVID-19 biomarkers and prognostics from chest CT scan/X-rays, published four papers.  
• Formulated [optimization technique to control affinity of convolutional filters](#) towards COVID and classes of pneumonia.  
• Designed a parameter efficient segmentation module that meshes [contour-awareness and cross-attention decoding](#).  
• Devised [weakly supervised refinement of masked regions](#) in non-local attention networks for COVID severity assessment.  
• Published literature survey outlining [future trends in COVID vision studies](#).
- [Ischemia Lesion Segmentation \(ISLES\) Challenge](#)* Fall 2019  
• Reviewed ISLES competition papers and offline approaches. Identified gaps, devised [multi-point losses for faster convergence](#), added patch-sampling to offset skewed class distributions, leading to SOTA performance.
- [Computer Vision papers](#)* Spring 2019  
• Designed a [crop disease detector harnessing spatial attention](#), achieving 98% benchmark results on PlantVillage data.  
• Investigated digital image forensics, first by [recognizing camera sensor noise](#), and further [modeling high-order image statistics](#). Published papers in Springer, ScienceDirect.

## AWARDS AND HONORS

- Four-time CS Rank 1 award; Merit Scholarship; Three-time MathMind Event Lead, TechnoVIT. VIT, India
- First Prize in Cisco EN Hack'21, Winner Data Science Awards'21, Two-time runners NeXT Challenge Cisco, India