Vikram Bharadwaj

Email: vikrambharadwaj1995@gmail.com **Mobile**:+1-617-685-1483
Github: github.com/vikrambharadwaj1995 **LinkedIn**: linkedin.com/in/vikrambharadwaj1995

Summary

Experienced machine learning engineer with specialization in deep learning and computer vision. Skilled in PyTorch, TensorFlow, python, neural networks and software development. Committed to delivering innovative solutions that drive business value through research and innovation.

Education

- **Northeastern University - Khoury College of Computer Sciences** Boston, MA
  Master of Science - Artificial Intelligence(Computer Vision) *Sep 2021 - May 2023*
- **Sir M Visvesvaraya Institute of Technology - Department of Computer Science** Bangalore, India
  Bachelor of Engineering - Computer Science *Aug 2013 - Aug 2017*

Skills

- **Programming**: Python, C++, Java, Bash, Flask, pandas, NumPy, TensorFlow, Keras, PyTorch, scikit-learn, SQL
- **Cloud**: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform
- **Tools**: Docker, Postman, CUDA, TensorRT, Nvidia-Tranfer Learning Toolkit(TLT), Git, JIRA
- **Design**: Microservices, CI/CD, Spring(MVC, Boot), REST API, Apache Solr, Apache Nutch, Elasticsearch(ELK)
- **Technologies**: Software Engineering, Machine Learning(Regression, SVM), Data Science, Deep Learning(Neural Networks)
- **Computer Vision**: Convolution Neural Networks(CNN), Variational AutoEncoder(VAE), Object Detection, Instance/Semantic Segmentation, Vision Transformer(ViT), Sensor Fusion, Generative AI(Diffusion Models, GAN)
- **Natural Language Processing**: OpenAI GPT, LlaMa, Langchain

Experience

- **Mercedes Benz Research & Development - Autonomous Driving Team** Sunnyvale, CA
  Machine Learning Research Intern - Sensor Fusion *Sep 2022 - Dec 2022*
  - Developed a **rotation invariant object detection** framework that used camera, LiDAR, and radar sensor data. Employed a **vision transformer** to achieve an AP@0.75 score of **44**.
  - Performed **profiling of neural network architectures** to identify bottlenecks in training and data loader pipelines to obtain **1.5x speed-up** in training time.
- **Atneva Labs** Bangalore, India
  Deep Learning Engineer *May 2020 - Jul 2021*
  - Spearheaded R&D for inventory consolidation product using **object detection & semantic segmentation**, resulting in a **$30,000/year** reduction in pilferage losses of manufactured items.
  - Facilitated a team of 3 to build a **Siamese neural network** for one-shot duplicate product recognition, reducing manual labor for client's catalogue by over **200 hours** per month.
  - Developed a real-time **Mask-RCNN** model for drone imagery segmentation, optimized it using **TensorRT** for **sub-0.5s** response times in deployment through docker and kubernetes.
- **Indian Institute of Science** Bangalore, India
  Machine Learning Researcher *Aug 2019 - Mar 2020*
  - Collaborated with researchers to develop a human action recognition framework from videos using a shared **3D-CNN** backbone. Secured **7000$** funding for scaling and launching the product.
- **Mindtree** Bangalore, India
  Data Scientist *Jul 2017 - Jul 2019*
  - Partnered with cross-functional teams of product managers and data engineers to build a robust search stack using **Elasticsearch** incorporating semantic vector search with **image and text embeddings**.
  - Built an active auto-indexer for Apache Solr; helped improve result fetch time by **45%** and enabled more than **50%(200GB)** of data to be indexed per day.

Projects & Patents

- **Correspondence Transformer** - Developed a novel architecture for image pair correspondence identification using vision transformer and self-supervised DINO backbone - **[GitHub]**.
- **Embedding based image retrieval using Segment Anything(SAM) and FAISS** - Application for similar image and patch retrieval using a vector datastore - **[GitHub]**.
- **Question answering using GPT and FAISS** - A Langchain based application for question answering from indexed documents - **[GitHub]**.
- **Vikram Bharadwaj**, Thomas Monninger, Aaron Brown: "**Backend learnable decoder** to facilitate autonomous vehicles" - Filed in December 2022 [**18/107,649**].
- **Vikram Bharadwaj**, Thomas Monninger, Aaron Brown: "**On-board autoencoder** for autonomous vehicles" - Filed in December 2022 [**18/107,651**].