KESHAV BHARADWAJ VAIDYANATHAN

(650)-660-0341| keshavbharadwaj98@gmail.com | LinkedIn | Github | Portfolio | Available: Immediately for Full Time

Seasoned Machine Learning Engineer/Data Scientist with 2 years of expertise in Machine Learning, Deep Learning, and working with Large Language Models. Demonstrated proficiency in addressing end-to-end data science challenges, encompassing tasks from data cleaning and feature engineering to deploying models and monitoring performance.

TECHNICAL SKILLS

- **Programming Languages** - Python, C/C++, R, SQL, Shell scripting, HTML
- **Software/ Tools** - AWS, Postgres, MongoDB, Docker, Elastic Search, Git, CI/CD, OpenVINO, TensorRT, Apache Spark, Kubernetes
- **Packages** - NumPy, Pandas, Flask, Tkinter, PyTorch, PyTorch-lightning, OpenCV, Keras, SciKit, NLTK, Dash, OpenGL

WORK EXPERIENCE

Silicon Synapse Lab **Sep 23 – Present**

Computer Vision Research Assistant | YOLO, AutoEncoder, Transformer, OpenVINO, TensorRT, YOSO, mask2former

- Integrated real-time scene segmentation and object detection into the robot's perception domain. Conducted thorough data analysis, and preprocessed RGB data, achieving a 0.78 IoU for the ground class. Currently implementing instance segmentation models.
- Optimized and deployed segmentation models by utilizing network quantization in OpenVINO/ TensorRT for NVIDIA Jetson Orin.

Abiomed Inc (Johnson & Johnson) **Feb 23 – Sept 23**

Data Scientist | Time-Series, LSTM, RNN, Transformer, Signal Processing, Data Visualization, Data Analysis, Regression, SQL,

- Developed cardiac output prediction models for patients on mechanical circulatory support, utilizing Apache Spark to extract high-frequency time-series device data. Achieved a significant **5.2%** reduction in error rates.
- Collaborated on research and implemented a Domain-Adversarial Neural Network (**DANN**) to forecast aortic pressure in different patient cohorts, leveraging computer simulations to generate high-volume data.

Mad Street Den **Dec 20 – Jul 21**

Machine Learning Engineer | Recommendation System, Docker, SQL, CNN, Classification, AWS, Elastic-search, NLP, OCR

- Developed ML models to generate tags for an Elastic search-driven recommendation system. Constructed indexing and search scripts, and fine-tuned the scoring function for optimization.
- Designed and deployed multiple models, such as Seq2Seq LSTM OCR, CNN for handwritten text/table classification, and a language-based SVM classifier utilizing Kubernetes. Achieved significant monthly cost savings of **$10,000** on OCR.
- Designed and implemented data processing pipelines and tag storage across Redshift, S3, Dynamo, and Redis databases and optimized by eliminating redundant operations, resulting in a **15%** reduction in response time.

PATENTS

Q-CerGen (Quick Certificate Generator) | *Flask, OpenCV, Tkinter, WebGL, Brython, HTML, Python* **Mar 21**

- Devised a novel application for swift generation of over **3000**+ E-certificates/ E-trophies with a user-friendly interface, and a website.

ADAM *(Automatic Disassemble and Assemble Machine)* | *Python, OpenGL, OpenCV, SIFT algorithm, scikit-learn* **Jun 21**

- Led the brainstorming, design, and development of a robotic pick-and-place arm prototype adept at disassembling and reassembling patterns made from basic units for object recognition and pattern mapping, while also designing a 3D GUI for pattern customization.

ACADEMIC PROJECTS

Advanced Computer Vision **Sept 22 - Dec 22**

SegMask for 3D Object Detection | 3D Object detection, LiDAR data, Multimodal, Autonomous driving, PSPNet Segmentation mask

- Developed a novel approach on Frustum-PointPillars to enhance accuracy by integrating RGB and LiDAR data on pre-trained PSPNet segmentation masks, resulting in a **3%** improvement in car AP scores on the KITTI-hard dataset for 3D object detection.
- Employed Frustum PointPillars with YOLO, achieving a notable **78 mAP** with a multi-sensor approach.

Natural Language Processing **Jan 22 - Apr 22**

Question Answering System | Large Language Model - BERT, LSTM, RNN, Natural Language Processing

- Obtained a **63.5%** accuracy and **66.7** F1-score with the baseline Bi-Directional LSTM model on SQuAD2.0, and a **77.3%** accuracy with Distilled BERT, achieving an **85.4** F1-score for question-answering tasks.

Deep Learning **Jan 22 - Apr 22**

Visual Question Answering | Transformers, LxMERT, VGG, LSTM, CNN, Multimodal

- Achieved **57%** accuracy with the baseline LSTM Question + norm image model with VGG image embedding and **70.68%** accuracy with the transformer-based LXMERT model for visual question answering on the VQA dataset.

EDUCATION

Master of Science in Computer Engineering, Northeastern University **Dec 23**

Specialization in Computer Vision, Machine Learning and Algorithms **GPA: 3.88**

Courses: Machine Learning, Deep Learning, Natural Language Processing, DBMS, Advanced Computer Vision, Assistive Robotics.

Bachelor of Engineering in Electronics and Communication, Visvesvaraya Technological University **Aug 20**

Head of Falcon's technical team, organized project expos, technical seminars, national conferences, and workshops. **GPA: 8.43**