SRINIVAS V

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Computer Vision & AI Engineer

Education

2013 - 2017

BE - Electronics and Communication Engineering

Rajalakshmi Engineering College - Anna University

Part of the research team which worked on Electro Wetting on Dielectric (EWOD) - Digital Micro Fluidics in making a micro LoC - Y Channel Mixer.

2011 - 2013

Senior Secondary - CBSE (Computer Science)

Modern Senior Secondary School

Actively involved in STEM club. Created an Agro Tech project, Natural Refrigerator - Drip Irrigator (Using the concept of Temperature and Density Gradients) which eventually got selected in National CBSE Science exhibition under Agro Tech Section.

Work experience

Feb 2020 - Present

Machine Learning Engineer - 2

Toyota Connected India Pvt. Ltd

Changing the Way Mobility and in-car infotainment works in Toyota and Lexus Cars. A part of a highly dynamic team built on the values of Toyota's lean agile methodologies which works on transforming Automobile engineering into next-generation mobility engineering inside the vast Toyota Ecosystem.

Currently working on NLP and leading and driving Computer Vision projects as a part of Toyota Connected Research labs

July 2019 - Feb 2020

Member Technical Staff - Center of Excellence - Analytics and AI

HCL Technologies Pvt. Ltd.

Working as a Research Engineer - Data Science at HCL Engineering & RnD (ERS) in Centre of Excellence - Analytics.

Focus area of Work :

Medical AI Research - AI based Muscoloskeletal Analyser

- Worked on an AI Powered Musculoskeletal analyser called OrthoIndex, A Radiologist assist tool. Architected and Developed the entire AI Stack , Web application stack and user interface.
- Built a robust and scalable web architecture for model serving from Kubeflow + Seldon Core (REST)
- Researched on model optimization and fast serving strategies.
- Implemented Background Task Worker on Celery and RabbitMQ Message broker to procedurally fetch X-Ray images from PACS (Picture Archiving and Communication System) Server to send it to our AI Stack (Kubeflow + Seldon Core) for processing.

Platforms and frameworks I have worked with :

- Deployment platforms : Docker, Kubernetes, Kubeflow, Seldon Core, TF executor, TF jobs, TF Serving.
- Message Brokers : RabbitMQ, Kafka
- Cloud Services : GCP (GKE), Azure (AKS).
- Frameworks : Pytorch, Tensorflow, Tornado, flask, Django
- Languages : Python, C++, Javascript, HTML

Dec 2017 - April 2019

Project Engineer - Computer Vision and Deep learning

E-con systems India Pvt. Ltd.

My work here deals with writing, choosing and researching on new, state of the art, computer vision and Deep learning algorithms and optimizing them for the edge computing platforms like Nvidia Tegra TX2, Freescale NXP Imx6, Freescale NXP imx8 and other ARM devices. I have experience working with :

- Languages : c++, python
- Vision frameworks : OpenCV, VTK, PCL
- Build System : CMake
- Pipeline Frameworks : Gtreamer, DeepStream (Basics)
- Parallel programming and GPU computing frameworks : OpenCL, CUDA (Basics)
- AI Frameworks : Tensorflow, Keras, TensoRT
- Robotic Platforms : ROS
- Simulators : Gazebo

May 2017 - Nov 2017

Full Stack Web Developer

Zoho Corporation Pvt. Ltd.

- Member Technical Staff : May 2017 - November 2017
- Project Trainee : Jan 2017 - March 2017
- Incubation Trainee : June 2016 - September 2016

Worked on and developed for the product Manage Engine Desktop Central. Have experience working with Java, Postgres, Hibernate, ORM, REST API, JavaScript, JSP, XML, HTML,jQuery, AJAX, Apache Ant, Apache Struts 1.2.

Work, Research and Extra Curricular Experiences in Detail

Feb 2020 - Present

Large scale Vehicle awareness and road analytics Engine

Toyota Connected

One of the most impressive projects am working on, although certain details of the project cant be revealed, have experience in architecting Large scale ML pipelines on the cloud which ingests TBs of data, batches it and trains our multi task learning architecture to detect various aspects of road scene. A complete ML CI/CD has also been deployed.

August 2019 - December 2019

Orthoindex.ai - An intelligent Radiologist PACS Server which indexes and annotates Radiological images

HCL

An Computer vision powered precision Musculo-skeletal analyzer which procedurally fetches images from medical grade HMS PACS Server, processes it through our Kubeflow DL processing pipeline (SR-CNN is used for regional upsampled segmentation and prediction) and pushes the annotated images back to PACS and indexes by severity, and assigns to a radiologist to verify and check and helps him to arrive to quick diagnosis and prioritize the images as well.

Feb 2019 - July 2019

Deep learning based Color Shade Copier using a concept inspired from Neural Style Transfer

Personal Research

Used a Gram Matrix Style loss and Color Re-balancing loss to map AB (LAB color space) Bins from feature vectors of source to target image for accurate color copying. Research Paper under preparation.

Dec 2018 - May 2019

Novel, Fast and Accurate Head Detection and Tracking for People Counting

E-con Systems India Pvt. Ltd.

-> Implemented Depth wise Seperable Convolution to replace (3x3) 512 and 1024 channel filters of Darkent-19 to improve inference time

-> Implemented the concept of Feature Pyramid Network in Darknet-19 to achieve better accuracy than traditional YoloV2.

-> Used TensorRT to achieve 30 FPS in Nvidia Jetson TX2.

Oct 2018 - Jan 2019

DeepFind : A SegNet inspired dynamic background subtraction network to d etect new objects in the scene

Personal Research

Used a Branched SegNet With Subtract Layer for subtracting two feature vectors from two branched encoders and the subtracted features are later upsampled to get pixel wise probabilities of New and old objects in the scene (Used Pixel wise Binary Cross entropy loss)

Oct 2018 - Dec 2018

3D Package Volume estimation using Stereo Cameras - Voxel Volumetric Estimation method

E-con systems India Pvt. Ltd.

-> Used ARUCO for extrinsic calibration and pose estimation of stereo cameras

-> Used the following Stack : ROS, VTK, PCL, OpenCV, ApproxMVBB

-> Transformed filtered PointClouds obtained using Stereo Reprojection of disparity maps from two stereo cameras to a common reference plane and merged the clouds using iterative closest point algorithm (ICP)

Oct 2018

An improvement to Document image Enhancement and Text Recovery from Mei et al using Sequential Highway Connections of ResNet Blocks

Personal Research

Used SHC (Sequential highway connections) for Resnet blocks instead of the normal Convolution layers used by Mei et al for Document image enhancement task. Improved the results greatly.

Aug 2018 - Oct 2018

FlyRun - A Comprehensive Dynamic Training Pipeline Library written on top of Keras used for building Smart Checkout Application for Messe-StuttGart Vision Show

Extended Work from Workplace

Used Keras, Tensorflow, SKLearn Pipeline and OpenCV to build a Dynamic Training Pipleine framework.

June 2018 - July 2018

Deep Object Re-identification Using Siamese Inspired Network (VGG16 pretrained network branches as Shared Weights)

Extended Research from Work place

Used pre-trained VGG-16 as branches of Siamese networks (for shared weights) and used a Normalized Cross Correlation Layer to find correspondence between vectors from the branches to re-identify the same pill from different angles. Implemented Contrastive Loss for the task.

May 2018 - June 2018

Group Anomaly Detection Using Template Matching and touching Objects separation using canny edge & Contour Hierarchy method

E-con systems India Pvt. Ltd.

Used OpenCV's Template Matching to match touching grouped objects. Wrote a seperation algorithm using Contour Hierarchy obtained by applying contour on Canny Edge Detection.

May 2018 - June 2018

Coin Recognition and Anomaly detection using Deep learning for Boston AIA Vision Show

E-con systems India Pvt. Ltd.

Used VGG16 features to recognize and used the same features to fit to LSAnomaly to detect coin anomalies.

April 2018 - May 2018

One class Neural Networks using VGG16 and LSAnomaly

E-con Systems India Pvt. Limited

A Research and analysis project to evaluate the effectiveness of Least Squared Anomaly detection using VGG16 features.

Dec 2017 - February 2018

Negative Class Image Generator Using DC-GAN for One Class Classification using CNNs

E-con Systems India Pvt. Limited

Used Deep Convolutional GAN to generate Negative classes for Pills in One class classification problem in CNN.

Feb 2017 - April 2017

Publication : Real Time Accident Detection and Analytics

Rajalakshmi Engineering College

A system to detect accidents and generate a real time heat map to identify accident prone zones. The collection of data is crowd sourced from the people's smartphones. I Worked on the Accident Detection algorithm part. Used LSTM to detect the anomalous Time series Sequences of Accelerometer and Gyroscope Values obtained from IMU Sensors in the Smart Phone

Project Repositories

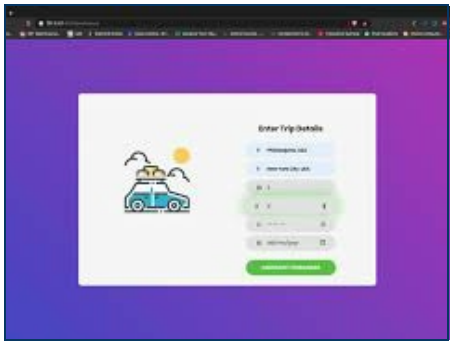
All my project implementations are in personal repositories listed here : https://bitbucket.org/SrinivasVishal7/ https://github.com/Vi-Sri

Project Portfolio

More projects can be seen in my personal repositories in Github and bitbucket

Smart Checkout Application

Real Time Accident Analytics



Trip Slate - An intelligent Tour itinerary gen..

Skills

- Python
- Keras
- Scikit-Learn
- OpenCV
- Tensorflow
- Numpy
- PyQT5
- Java, JSP, Javascript, Jquery, HTML, CSS
- Golang
- C++

Awards & Recognition

2013 — Srinivas Ramanujan Award for Best Math Student

Srinivasa Ramanujan Society of Mathematics

Secured 1st place (Best Math Student Award) in the state in the set of exams and olympiads held by Srinivasa Ramanujan Society of Mathematics

Summary

Thank you for taking time into reading my resume. I am a proactive learner with Never-Say-Die attitude. I am more inclined into roles which put me on an edge for learning and implementing new things and solving new problems. I am interested in both Research and applicative Deep learning alike.

Connect to me on Linkedin : Vishal Srinivas

Created with VisualCV