Romil Shah

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EDUCATION

Northeastern University, Boston, MA
Master of Science in Electrical and Computer Engineering   **Dec 2017**
Concentration: Computer Vision, Machine Learning and Algorithms (CVLA)

Nirma University, Ahmedabad, India
Bachelor of Technology in Electronics and Communication Engineering   **May 2014**

PROFESSIONAL EXPERIENCE

Amazon Web Services, San Francisco CA
Sr. Applied Scientist   May 2023 - Present
- Lead and manage development of GenAI training and inference pipelines for LLMs, VLMs
- EdgeFM Accelerator to scale FM inference for cheaper, faster and more efficient FM deployment

Applied Scientist II   Aug 2021 – May 2023
- Create/Deploy/Manage Deep Learning pipelines for Cloud and IoT Edge; Design AWS architecture for Edge IoT based ML solutions
- Lead multiple engagements to solve CVML related customer requirements; Dive deep to improve AI/ML AWS Services
- Own and Manage customized Edge ML pipelines; Develop MLOps for customers

Dolby Laboratories, Sunnyvale CA
Sr. Computer Vision & Imaging Engineer   Dec 2019 – Aug 2021
- Lead and Design/Optimize/Implement/Deploy CV + DL application pipelines for Dolby ATG and Dolby iAPI
- Train/Deploy/Optimize DL models for various Dolby vision applications
- Multimodal pipeline for 2D segmentation, classification, detection, GANs and pose estimation
- Optimizing model deployment for embedded devices for real-time applications

Strada Labs, San Francisco CA
Co-Founder and CTO (Part-Time)   Dec 2018 – Dec 2019
- Co-Founded the startup which focused on using Computer Vision for analyzing urban movements   *(Part-Time)*
- Analyze patterns to aid urban planning for creating smarter and safer cities

Ford Research and Innovation Center, Ford Motor Company, Palo Alto CA
AI Research Engineer   Jan 2018 – Dec 2019
- Application of research on AI & Mobility projects for AVs and Connected vehicles
- Working on projects for Ford Performance Racing (NASCAR)
- Research in CV/ML/DL/RL to publish internally & externally; Filing mobility & AI related invention; 7 Patents pending
- Worked on 3D data using SfM, LiDAR data
- Using Deep Learning for Motion Compensation-Estimation, Video Compression, Frame Interpolation; Pose estimation

Volvo Construction Equipment, Shippensburg PA
Computer Vision Research Engineer Co-Op (8-month-internship)   Jan 2017 – Aug 2017
- Object recognition-detection-tracking on CUDA-based embedded systems for semi autonomous construction vehicles
- Using DNN architecture and DL frameworks Caffe and Caffe2; Camera Calibration; Increased FPS by mixed precision training/deployment
- Worked on RADAR and monocular/stereo camera; handcrafted features for detection-tracking; TCP/UDP based communication and sensor fusion using ZeroMQ

ReGameVR Lab, Boston MA
Research Assistant   July 2016 – Dec 2016
- Rehabilitation oriented frontal/profile face detection using OpenCV libraries and Haar-like features using sensor fusion of camera system and IMUs; Using Kinect for tracking human body-joints to improve rehabilitation techniques and create a labelled dataset; UDP for IoT connection between Raspberry Pi and Arduino

Tellmate Helper Pvt. Ltd., Ahmedabad INDIA
Chief Developer and Co-Founder   May 2014 -Aug 2015
- Contributed in making of 'Tellmate', a device made using Kinect 360 and Intel RealSense camera integrated with   PandaBoard ES for visually impaired people; Real time OCR, Facial   Recognition;
- Selected for Top 20 startups in India from 1.9k participants; 200k INR seed funding by Intel Digital India challenge 2015

Florida Atlantic University, Multimedia Lab, Boca Raton FL
Summer Research Intern   May 2013 – July 2013
- Video processing, scene analysis-characterization-clustering, compression using motion estimation and motion vectors; using X264 and FFMPEG

PATENTS AND PUBLICATIONS

- Shah, R., et al. 2024. Systems and methods for tracking luggage in a vehicle. U.S. Patent Number 11,882,500. Granted Jan 2024.
- Shah, R., et al. 2023. Optimized recharging of electrical vehicles. U.S. Patent Number 11,609,571. Granted Mar 2023.
- Shah, R., et al. 2023. Vehicle damage identification and incident management systems and methods. U.S. Patent Number 11,562,570. Granted Jan 2023.
- Shah, R., et al. 2022. Vehicle yield decision. U.S. Patent Number 11,338,810. Granted May 2022.
- Shah, R., et al. 2019. Systems and Methods for seat selection in a vehicle of a ride service. U.S. Patent Number 11,170,459. Granted Nov 2021.
- Shah, R., et al. 2019. Systems and Methods of preventing removal of items from vehicles by improper parties. U.S. Patent Number 11,295,148. Granted April 2022.
- Shah, R., et al. 2019. Vehicle Yield Decision. U.S. Patent Number 11,338,810. Filed Feb 2020. Granted May 2022.
- Shah, R., et al. 2019. Vehicle Damage Identification and Incident Management Systems and Methods. U.S. Patent Application 20220108115, filed October 2020. Patent Pending.
- Shah, R., et al. 2019. Offline Proximity Rideshare Booking System. U.S. Patent Application 20210090067. Filed Sept 2019. Patent Pending.
- Shah, R., et al. 2019. Systems and Methods for tracking Luggage in a Vehicle. U.S. Patent Application 20220141621. Filed November 2020. Patent Pending.
- Rivera, A., et al. 2018. Object Locator with Fiducial Marker. U.S. Patent Number 11,010,919, Granted May 2018.
- Balasubramanian, SN., et al. 2019. Ride Request Evaluation Systems and Methods. U.S. Patent Application 20200293953. Filed May 2019. Patent Pending.
- McKenzie, M., et al. 2019. Optimized Recharging of Autonomous Vehicles. U.S. Patent Application 202102255633. Filed Feb 2020. Patent Pending.
- Patel, S., Shah, R. 2013. Femtophotography for detection of microbends in step index fiber. IEEE INDICON'13, IIT Bombay, India

PROJECTS

Graduate Projects:
- Detection-Tracking-Following using Toyota HSR; sensor fusion with ROS
- Benchmarking of algorithms for SPARC and x86 systems; Neural Network based Branch Predictor
- Computer Vision: Motion detection, Eigen-faces using PCA, Feature extraction techniques like SIFT & SURF, Image stitching, Barrel distortion, Surround   (Bird-Eye) View
- Document Scanner: Automated edge and corner-based document detection with perspective warping

Hackathons:
- *MintMo, PennApps (Spring 2016)*: Using REST API, Capital-One API and Twilio API, built a real time NLP based money transfer application using SMS
- *MyoWalk, BostonHacks (Fall 2015): Gait pattern analysis using Myo Armband on legs; Fall detection; Parkinson's gait detection*
- *AI21Labs, (Dec 2023): Grounded content generation for Amazon advertisements using GenAI*

SKILLS

- **Operating Systems**: Linux, Windows, Mac
- **Simulators**: MATLAB, Simulink, WireShark
- **Familiar with**: CUDA, LiDAR, PCL, ROS, SLAM

- **Libraries**: OpenCV, ZeroMQ, Gstreamer, Dlib, NumPy, FFmpeg, TFJS, Node.js
- **Programming Languages**: Python, C++, Javascript
- **Deep Learning Tools**: OpenVino, Caffe, PyTorch. TensorFlow, AWS Services