Abhinav Jain

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EDUCATION

Oregon State University　　　　　　　　　　　　　Sept. 2021 – Jul 2023 (Expected)
M.S. in Robotics　　　　　　　　　　　　　　　　　　　　　　Corvallis, OR, USA

Coursework
- Introduction to Robotics
- Learning Based Control

Sardar Vallabhbhai National Institute of Technology　　　　　　Aug. 2016 – Jul 2020
Bachelor's of Technology, Electronics and Communication Engineering　　Surat, India

CGPA: 7.62/10

Relevant Coursework
- Fundamentals of Computer Programming
- Image Processing and Computer Vision
- Neural Networks and Fuzzy Logic
- Control Systems

EXPERIENCE

Samsung Research Institute, Bangalore　　　　　　　　　　Jan 2021 - Aug 2021
Engineer　　　　　　　　　　　　　　　　　　　　　　　　　Bangalore, India
- Engineer in the 5G NR MAC team
- Contributed by writing Unit Tests and Block Tests according to the Google Test framework and increasing the Test coverage metric from 2.1 to 3.2, beyond the required threshold of 3
- Awarded Software Professional Certification for skills in Data Structure and Algorithms

RBCCPS LAB, Indian Institute of Science (IISc)　　　　　　Jul 2020 – Jan 2021
Research Intern　　　　　　　　　　　　　　　　　　　　　Bangalore, India
- Research Intern at Robert Bosch Centre for Cyber-Physical Systems, IISc Bangalore, under Dr. Chiranjeeb Bhatacharyya.
- Adapted state of the art models of Image Inpainting in PyTorch to the problem of Dynamic to Static LiDAR Reconstruction. Used ROS to run SLAM on the LiDAR output obtained to compare which method adapts better.
- Proposed an architecture for the metric "LiDAR Quality Index", this metric ranked the quality of a LiDAR frame without any reference.
- Explored the literature for "Interpretability in Deep Learning Models". Proposed modifications to TCAV and Automatic Concept Extraction algorithms by using hierarchical clustering to propose better human interpretable concepts.

Zujo, Coruscate　　　　　　　　　　　　　　　　　　　　May 2019 – Jan 2020
Machine Learning Analyst　　　　　　　　　　　　　　　　　　Surat, India
- Interned at Zujo during the semester break of my junior year and continued to work part time. Reported directly to the CTO, Mr. Arun Kava.
- Applied novelties from the paper titled "Flow Guided Feature Aggregation" to increase accuracy for object detection in videos as compared to the previously used frame by frame object detection methods (Mask-RCNN, YOLO)
- Engineered a deep learning model to solve the problem of choosing the best thumbnail for a video for a video platform being made.

PUBLICATIONS

Prashant Kumar[1], Sabyasachi Sahoo[1], **Abhinav Jain**, Vanshil Shah, Vineetha Kondameedi, Akshaj Verma, Chiranjib Bhattacharyya, Vinay V. (Sep 2020). "DSLR : Dynamic to Static LiDAR scan Reconstruction using adversarially trained autoencoder". AAAI Conference on Artificial Intelligence 2021 (conference submission)[web-page]

[1]equal contribution

Research Works

Abhinav Jain[1], Sabyasachi Sahoo[1], Vineetha Kondameedi, Chiranjib Bhattacharyya. (In Progress). "Global Interpretability in black box deep learning model".

Abhinav Jain[1], Dhruv Patel[1], Kalpesh Prajapati, K.P. Upla. (In Progress) "Image Super-Resolution using generative networks in an unsupervised learning setting"[GitHub]

Projects and Extra-Curricular

Fetch-Fetch (In Progress) | *Python, ROS, Deep Learning, Pytorch*
- Advisor: Dr. Cindy Grimm
- In this project, we aim to play a scavenger hunt using a fetch robot.
- We perform SLAM in a known environment and use 2D object detection to find the required object.
- A Robotic arm is manipulated to grasp the object.

Birding | *Python, Flask, TensorFlow 2, Deep Learning*
- Advisor: Dr. K.P. Upla
- The project aimed to convert a given text description of a bird into the corresponding image. Collaborated in a team of 4 to complete this project.
- Generative Adversarial Networks were used to convert the text description into an image, used the concept of self-attention to improve on results.[GitHub]

Seminar: Synthesis of Data using Deep Learning Techniques
- Advisor: Dr. Z.M. Patel. The seminar covered the techniques like Auto Encoders, Variational Autoencoders, GANs, DCGANS, cGANS to generate new data based on a dataset.[Seminar Report][Seminar Presentation]

Predicting upcoming Coronavirus Hotspots | *Python, Scikit-Learn, Machine Learning*
- Implemented clustering algorithms like DBSCAN and K-Means to identify coronavirus hotspots. Data from people not tested but showing symptoms can be used to predict potential clusters.[Blog Post]

Drishti | *Python, GCP, Tensorflow, Computer Vision, NLP*
- Drishti is an assistant for the visually impaired, this bagged the second prize in Dotslash Hackathon 2019.
- The assistant used Image Processing and NLP techniques to answer things like, description of the surroundings, whether an object is present in the sight or not, answer general questions and perform other tasks like face recognition, OCR, danger analysis etc.[GitHub]

Robocon 2018 | *C, C++, Embedded Systems, Control Systems, Arduino, AVR*
- Robocon is a robotic contest organized by Asia-Pacific Broadcasting Union (ABU).
- Part of a 20-man team and personally handled the autonomous motion for a 3-wheel holonomic drive via feedback from various sensors like LSA line sensor, Gyroscope, IMUs, encoders.
- Secured 12th rank in the nationals out of 120 participating colleges. Video:(Blue Team) [Video]

Courses and Certifications

Deep Learning Specialization, Coursera
- Course 1: Neural Networks and Deep Learning [certificate]
- Course 2: Improving Deep Neural Networks [certificate]
- Course 4: Convolutional Neural Networks [certificate]
- Introduction to Tensorflow [certificate]

Stanford University Machine Learning, Coursera [certificate]   Score: 96.7%

Harvard CS50x, EdX   No certification

Technical Skills

Languages: Python, C, C++, Embedded C, Git
Frameworks: Flask, PyTorch, TensorFlow, Keras, ROS
Libraries: pandas, NumPy, Matplotlib, OpenCV