DIWAKAR **RAVICHANDRAN**

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OBJECTIVE

Versatile student with great interpersonal skills and experience in organizing, volunteering, coordinating, public speaking and teamworking. Looking forward to quenching my inquisitive mind by learning all that I can to contribute to society by applying all that I have learnt and by solving real world problems

EDUCATION

Bachelor of Engineering, Mechanical Engineering | BMS College of Engineering
AUGUST 2015 – MAY 2019
Graduated with 8.1 CGPA on a scale of 10. Consistently performing at top 5% of my class of 60 students with top 3% in the department of 240 students. Being very strong in Mathematics and

EXPERIENCE

Volunteer AI Team| Heartfulness Institute
JANUARY 2021 – PRESENT
The heartfulness institute primarily a holistic wellness center, where seekers are provided meditation sessions for free of cost. At the heartfulness institute, we have collaborated with SVYASA institute to study brain wave patterns (EEG Data) to see effects of meditations on meditators who are new to meditation, who have been meditating for 5-6 years and veterans who have meditated for more than 10 years.

- Wrote scripts for EDA (Exploratory Data Analysis) working alongside Dr. Praveen Pankajakshan to try to truly understand brainwave patterns.

Data Scientist, AI Centre of Excellence | Jio Platforms Ltd.
JULY 2020 – PRESENT
Project 1 – Visual Document Understanding

- Responsible for realizing and implementing the evaluation metrics for OCR recognition on different documents.
- Incorporate heuristics to improve the quality of Text Detection and Text Recognition

Project 2 – Video Analytics

- Implemented an end-to-end pipeline for a surveillance use case, where it had FairMOT as its first version backbone for anchorless detection and tracking.
- The pipeline was deployed using Docker and Argo workflow.
- For further iterations, implemented Faster-RCNN for better detections and integrated with OpenCV tracker for tracking. Included reimplementation of NMS and ROI Align to run on PyTorch
- Final deployed iteration used RetinaNet backbone for high quality detections.

- Implemented PlaneRCNN for monocular depth estimation.

Project 3 – Drone Analytics

- Built a 3D Annotation tool based on 3DShapeNet dataset annotation tool.
- Currently work with drones on 3D reconstruction of Towers using Monocular SLAM.

Solutions Architect – AI/ML/Big Data | Amtrak Tech. Pvt. Ltd.

SEPTEMBER 2019 – JULY 2020

NVIDIA Partner

- Responsible for accelerating customers Deep learning models for both training and inference using NVIDIA TensorRT and AMP and aid customers to adopt AI into their current workflows.
- Taught basics of Machine Learning, Linear Regression, Logistic Regression and Back Propagation to students from IISc. (Indian Institute of Science)

Machine Learning Research Intern | NVIDIA Graphics Pvt. Ltd.

JANUARY 2019 – SEPTEMBER 2019

- Project 1 – Crowd Counting on Kumbh Mela Dataset from National Informatics Centre India. Implemented a deep neural network CSRNet from scratch in PyTorch, annotated data using LabelMe for drawing small localizations around the heads of people visiting Kumbh Mela in Allahabad one of the biggest gatherings of people in India. The challenge with this dataset is the varied dressing, smearing of ash, street vendors and hawkers etc. each of them have a different appearance and hence are not easy to identify as people and further count them.
- Project 2 – Trying to generate better synthetic data using Differentiable plasticity and GANs. After learning the basics of implementation from scratch and how to model DL code based on mathematical equations, worked with my mentor Ms. Kumari Deepshikha, Data Scientist with NVIDIA to try and apply Hebbian plastic layers to SeqGAN's discriminator, and increase the complexity of the generator network so that we are able to more effectively deal with the zero-sum game. While this method did give us promising results on synthetic data, we couldn't realize a similar consistency in quality on real data. However, we still went ahead to write a paper describing our approach and got positive reviews. The paper can be found in my website mentioned above.

Intern – Technical Support| MathWorks India Pvt. Ltd.

JUNE 2018 – AUGUST 2018

Was part of Simulink Unit Testing Team.

- Realized a "CodeSearch" engine which would take snippets of code as input and return all files of the MATLAB code base containing the code snippet along with where it is located in code.
- Wrote multiple unit tests for functions for MATLAB Code Generation

SKILLS & TOOLS

- Python, C++, MATLAB
- Deep Learning
- Docker
- Argo
- Computer Vision
- TensorFlow
- PyTorch
- TensorRT

ACTIVITIES - PART OF COURSEWORK DURING UNDERGRAD

- Presented a technical paper titled “Equipping robots with dynamic gesture recognition using computer vision and AI” as part of my final year project. Used 3D CNN LSTMs, 3D ResNets and CLDNNs as a part of our study and generated our own data sets.
- Prepared a robotic snake model which was presented for e-Yantra robotics competition as a part of our self-study in the field of Mechatronics and also made a RC Car from scratch using Arduino and Arduino during December 2018.
- Presented a technical review paper on Hybrid engines and the current trends in Hybrid engines on 3rd December 2018 along with a report.
- Presented a technical review paper on the practical applications of PID controllers and to comment on the stability of various controllers based on Bode plots, Nyquist plots and Root locus and plotting the same using MATLAB
- Presented the effect of volute casing in a turbine and its ability to ensure safety of the shaft by minimizing radial shocks and loads.
- Prepared a MATLAB script for Finite element modelling for beam loaded with UDL and hence observed its characteristics and comparing the script results with theoretical calculations from formulae derived in Mechanics of Materials.
- Completed a MOOC (Massive Online Open Course) on Machine learning on Coursera by Andrew Ng of Stanford University on 11/03/2018
- Presented a model of a Mass-Spring-Damper system and its vibration characteristic and comparison with a finite element model in a report on 10/03/2018.
- Effect of shape of fins on heat loss from surfaces was studied and analyzed and presented as a report on December 2017.
- Participated in a workshop on 3D Printing conducted by ‘Dwail Pvt. Ltd.’ during Phase Shift-2017, a national level annual tech symposium of BMS College of Engineering held on 15th and 16th September 2017.
- Presented a review paper titled ‘A Review on Reuse and Recovery of Carbon fibers’ in INNCOM-15, a national conference on composites conducted by ISAMPE (Indian Society for Advancement of Materials and Process Engineering) in association with NAL (National Aerospace Laboratories) during 2nd and 3rd March 2017.
- Worked as an event coordinator and conducted a quiz named ‘Think Quick’, a mechanical quiz during Phase Shift 2016, a national level annual tech symposium of BMS College of Engineering held on 23rd and 24th September 2016.
- Analyzed the Deflection in 3 different types of beams, namely Simply supported, Overhanging, and Cantilever beams and their deflection behavior under same loading conditions was noted and presented as a report on April 2016.
- Presented a poster on the Effects of shapes of Orifice meter on Fluid flow and detailed description of the vena contracta and other effects to fluid flow were observed on April 2016
- Simulation analysis of a slider crank mechanism and a model of a 4-bar mechanism and to observe the graphs pertaining to velocity of various members using the software MSC Adams on November 2016.
- Design analysis of Power Screw in a Scissor Jack by conduction of a practical load analysis and referring to standard design formulas to determine the factor of safety of the given power screw on November 2016.

CERTIFICATIONS

- Machine Learning
- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter tuning, regularization, and optimization
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models
- MATLAB Fundamentals

ADDITIONAL SKILLS AND AWARDS

- Awarded a grant of INR 15000 for our final year project. 1 among 3 project groups chosen for the grant in the year 2019
- Awarded best delegate in the Model United Nations conference conducted by BMS College of Engineering in the year 2015.
- Proficient in Tamil, Kannada, Telugu, Hindi, English with partial knowledge of French and Urdu.
- Active member of the Rotaract club of BMS College of Engineering.
- Coordinator for Mechanical Engineering Association of the institution.
- Chess player with an international FIDE rating of 1116 as on December 2021