Satyarth Praveen

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EDUCATION

University of Maryland College Park – *Class of 2021*
Master of Engineering in **Robotics** (PMRO)

Delhi Technological University (DTU) – *Class of 2017*
Bachelor of Technology in **Computer Engineering** — 71.54 %

SKILLS

- **Programming Languages**: C/C++, Java, Python, R, Matlab, Scala, SQL
- **Machine Learning:** OpenCV, TensorFlow, Caffe, Apache Spark
- **Database:** MySQL, Oracle, SQLite
- **Miscellaneous**: Robot OS (ROS), Nvidia CUDA, Hadoop, Pig, Hive

PUBLICATIONS

Breast Cancer Detection using Two-Fold Genetic Evolution of Neural Network Ensembles (TF-GENNE)
Proposed a unique architecture of neural network ensembles evolved using a multi-level genetic algorithm. The model poses an average accuracy of 99.90%.
Accepted and Presented at IEEE ICDSE'16, Kochi, India

Opinion Extraction from Quora using User-Biased Sentiment Analysis – ***Springer Best Paper Award***
Designed an award-winning algorithm (as a **Research Assistant under Dr. Akshi Kumar**) to mimic the opinion formulation for an individual. It relies on an intermediate representation of the data using sentiment analysis and attribute clustering for accurate mapping with the user interests. The results comply with the crowdsourced opinion asserting the reliability of the algorithm.
Accepted and Presented at Springer INDIA'17, Da Nang, Vietnam

Efficient Depth estimation using sparse Stereo-Vision with other perceptions techniques
Proposed an approach to disregard the desperate need for dense disparity maps; and rather better use the sparse alternative with other perception techniques to make more efficient and accurate depth estimations.
Accepted and Published by InTechOpen Intl. Open Access Publisher

WORK EXPERIENCE

Department of Mathematics, University of Maryland – Graduate Teaching Assistant (Linear Algebra) — **Aug'19 – Present**
- Responsible for teaching, conducting discussion sessions, and conducting and evaluating quizzes/exams for a total of 54 students.

Hi-Tech Robotic Systemz – Research Engineer — **Jul'17 – Mar'19**
- Reprojected the depth data from the Stereo camera pair to a calibrated Wide-Angle camera to create a ***Three – View Camera System***.
- Implemented the ***Stereo Block Matching Algorithm using NVIDIA CUDA (C++)*** to have greater control over the output FPS and resource allocation.
- Developed an ***Active Learning pipeline for Real-Time Semantic Segmentation*** by removing copious training data by uncertainty sampling, comparing with a state-of-the-art model, and monitoring the expected model change.
- ***Generated Balanced Training datasets*** by artificially scaling and placing rare objects over varying backgrounds.
- Improved the computational time of perception algorithms by using **Stixel (stick-pixel) world representation** instead of the pixel representation.
- Modeled a ***99.99% accurate Inexpensive real-time Day-Night Classifier*** using an SVM model with binomial probability distribution to decide the optimum window size.
- Reduced monocular depth estimation errors from ~50% to under 10% by generating improved, tighter, and consistent bounding box detections.
- Developed a variety of smoothing heuristics to ***densify stereo disparity maps*** and correct faulty disparity values.

vNative – Data Science Intern — **Oct'16 – Feb'17**
- Built a Native Recommendation Engine to show ads most relevant to the host website content based on TF-IDF keyword occurrences and user activity heatmap (implementation in R).

Oracle India Pvt. Ltd. – Research Intern — **Jun'16 – Aug'16**
- Formulated a Generic Recommender System following the "One-for-all" approach. It is a Hybrid Recommender System extending its capability to span across multiple types of datasets using a single learned model.

PROJECTS

Human Presence Detection using Dynamic Ensemble Voting Technique
Built an ensemble of custom learning models with the core smart enough to evolve the best models as sub-ensemble. Obtained 97.38% accuracy which is better than any individual model's performance.

Emotion Detection from Call Center Audio Recordings
Implemented Boruta algorithm to extract essential features and train a genetically evolved SVM model to get a 72.70% accurate mood detector.

VOLUNTEERING AND AWARDS

- **Volunteer / Mentor – Programming Club:** Taught enthusiastic junior school and underprivileged students about sophisticated technologies such as AI and Robotics.
- **Volunteer / Mentor – FIRST Tech Challenge:** Mentored a team to participate in 2017 Challenge where we ranked 5th among a pool of 20 in the Nationals.
- **Associate Editor** at DTU Times, The Official College Newsletter
- **Hostel President**, DTU, New Delhi
- **Winner,** Stratazenith – **Game Theory Competition**, Indian Game Theory Society – **IIT Kanpur, India**