

Satyarth Praveen

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EDUCATION

University of Maryland College Park – Class of 2021

Master of Engineering in **Robotics** (PMRO)

Delhi Technological University – 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 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

Hi-Tech Robotic Systemz – Research Engineer Jul'17 – Mar'19

• **Three - View Camera System**

Reprojected the depth data from the Stereo camera pair to the Wide-Angle camera calibrated with the stereo unit.

• **CUDA C++ implementation of Stereo Block-Matching Algorithm**

Implemented the Stereo BM Algorithm using NVIDIA CUDA C++ to have greater control over the output FPS and resource allocation.

• **Densification of Stereo Disparity Maps**

Developed a variety of smoothing heuristics leading to denser disparity maps and correction of faulty disparity values.

• **Active Learning pipeline for Real-Time Semantic Segmentation**

Removed copious training data by uncertainty sampling, comparing with a state-of-the-art model, and monitoring the expected model change.

• **Highly accurate Inexpensive real-time Day-Night Classifier**

Used an inexpensive SVM model with binomial probability distribution to decide the optimum window size to obtain 99.99% accurate classifier.

• **Object Detection refinement**

Reduced monocular depth estimation errors from ~50% to under 10% by generating improved, tighter, and consistent bounding box detections.

• **Training data generation**

Balanced training dataset labels by artificially placing rare objects, resized using vanishing point, over varying backgrounds.

• **Stixel World Implementation**

Improved the computational time of perception algorithms by using Stixel (stick-pixel) world representation instead of the pixel representation.

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.

Programming Club – Volunteer / Mentor

Dec'16 – May'17

Taught enthusiastic junior school students and underprivileged students across various age groups to comprehend sophisticated technologies such as Artificial Intelligence and Robotics easily. Further mentored them to participate in the First Tech Challenge 2017 where they ranked 5th in the Nationals.

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.

Breast Cancer Detection using Evolutionary Smart Neural Network (ESNN)

Analyzed the trade-off between input data compression and network performance to improve efficiency via the Genetically evolved productive collaboration of lesser essential features for a 96.20% accuracy.

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.

AWARDS AND RECOGNITION

- **Winner, Stratazenith – Game Theory Competition**, Indian Game Theory Society – IIT Kanpur
- **Associate Editor** at DTU Times, DTU, New Delhi **Official College Newsletter**
- **Hostel President**, DTU, New Delhi