Akshay Krishna

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OBJECTIVE

Experienced Computer Vision and Image Processing individual with high analytical and quantitative skills currently pursuing a Master's degree, seeking an internship at your institution.

EDUCATION

M.Sc. Computer Science in University of Nevada, Reno GPA – 4.0 **Aug 2020***
Ph.D. student in University of Nebraska Medical Centre GPA – 3.6 **Jul 2020**
B.E. in Electronics and Communication Engineering
Visvesvaraya Technological University GPA – 3.71 **Jul 2019**

EXPECTED GRADUATION: May 2022

RESEARCH INTERESTS: Computer Vision, Deep Learning, Image Processing, Machine Learning

TECHNICAL SKILLS & PACKAGES: C++, Keras, PyTorch, Tensorflow, OpenCV, Python, Linux, NumPy

INTERNSHIP

***Intern,* NeenOpal Intelligent Solutions Pvt. Ltd.** **Aug 2018**

A company providing solutions to improve market & business strategies, with $1.2 Mn revenue and 20 employees.

- Performed feature engineering related to sales forecast for a client in Sri Lanka using Python 3.6 & Pandas; automated process of extracting weather data from different website like accuweather.com and wundergorund.com. Gained insights into building predictive models for sales forecasting and improving the accuracy.

RESEARCH EXPERIENCE AND PROJECTS

Automatic Detection of Helmetless Rider using Deep Learning **Jun 2019**

Developed a system to automate the process of detecting riders without helmets and extracting their license plates using OCR.

Phase 1: Object Recognition (Identifying motorbike and person)

- Developed models based on YOLO v3 and ResNet architectures which are trained on the COCO dataset using Python 3.6, Keras & TensorFlow to plot bounding boxes across motorbike and person.
- Compared results between the 2 architectures and observed YOLO v3 to show better results in accuracy and speed than ResNet architecture.

Phase 2: Recognize the Head

- Combined the resulting bounding boxes from phase 1 to recognize person sitting on motorbike.
- Extracted the head portion from the combined bounding box and feeding it to a custom classifier to identify whether the rider is wearing a helmet or not. Achieved an accuracy of 93%.

Phase 3: License Plate Recognition and Optical Character Recognition

- Performed license plate recognition by doing transfer learning on Fast R-CNN architecture and obtained a minimum loss of 0.8 units.
- Extracted the license plate from the detected frames and performed character segmentation using Otsu's Thresholding and Contour Detection.
- Built a custom model for classifying the segmented characters and obtained the highest accuracy of 98%.

Classification of Malaria infected blood cells using Keras & Deep Learning **Feb 2019**

Created a model to classify Malaria infected blood cells using Deep Learning among normal ones.

- Developed ResNet model from scratch to use it as a classifier.
- Trained the ResNet model on the training dataset (80% of the whole dataset).
- Performed data augmentation on the training, testing, and the validation dataset.
- Optimized the hyperparameters and attained accuracies of 96.50% on the training data, 96.78% on the validation data and 97% on the testing data.

Sales forecasting of Retail Stores using ML Techniques **Sep 2018**

Created a model to predict future sales of a retail store using past data.

- Developed 7 models (Linear Regression, Multiple Regression, Polynomial Regression, Lasso Regression, etc.) using Python 3.6 and compared them for their accuracy.
- Generated new features from available features using feature engineering and improved accuracy of predictions using boosting algorithms (AdaBoost, Gradient Boost, etc.).
- Observed Gradient Boost to have the least RMSE value (1088.64) and highest R^2 value (0.59).

Sentiment Analysis of Restaurant Reviews using ML Techniques **Feb 2018**

Developed model to detect sentiment of a customer based on the reviews given by the customer.

- Created 5 models (SVM, K-NN, Decision Tree, Random Forest & Logistic Regression) using Python 3.6; pre-processed the data using techniques like lemmatization, Bag of Words, TF-IDF, N-Gram, etc.
- Determined, SVM along with N-Gram model (n = 3) to be better performing model with an accuracy of 95.6%.

PAPER PUBLICATIONS

- **Akshay Krishna**, Akhilesh V, Animikh Aich, Chetana Hegde. "Analysis of Customer Opinion using Machine Learning and NLP Techniques". International Journal of Advanced Studies of Scientific Research, Vol 3 No. 9, 2018.
- **Akshay Krishna**, Animikh Aich, Akhilesh V, Chetana Hegde. "Sales Forecasting of Retail Stores using Machine Learning Techniques". 2018 3rd International Conference on Computational Systems and Information Technology for Sustainable Solutions (CSITSS), pages 160-166, IEEE, 2018.
- **Akshay Krishna**, Akhilesh V, Animikh Aich, Chetana Hegde. "Sentiment Analysis of Restaurant Reviews using Machine Learning Techniques". Emerging Research in Electronics, Computer Science and Technology, pages 687-696, Springer Singapore, 2019.
- Animikh Aich, **Akshay Krishna**, Akhilesh V, Chetana Hegde. "Preprocessing Web-based Data using Huffman Encoding for Efficient Storage in Machine Learning Applications". International Conference on Information Processing (ICInPro 2019).
- Animikh Aich, **Akshay Krishna**, Akhilesh V, Kumari Akanksha, Vipula Singh. "Automatic Detection of Helmetless Riders using Deep Learning". (Manuscript under preparation)

PAPER PRESENTATIONS

- Presented paper on "Analysis of Customer Opinions using Machine Learning and NLP Techniques" at the International Conference on Cyber Security, Oct 2018.
- Presented paper on "Sales Forecasting for Retail Stores using Machine Learning Techniques" at the 3rd International Conference on Computational Systems & Information Technology for Sustainable Solutions, Dec 2018.
- Presented paper on "Sentiment Analysis of Restaurant Reviews using Machine Learning Techniques" at the International Conference on Emerging Research in Electronics, Computer Science and Technology, Aug 2018

CERTIFICATIONS

- Data Mining (Mar 2018); Machine Learning (Oct 2018) NPTEL (National Programme on Technology Enhanced Learning), India

WORKSHOPS CONDUCTED & ATTENDED

- Conducted a 2-day workshop on Basics of Image Processing using Python for 60 students, Mar 2019.
- Conducted a 2-day workshop on Introduction to ML and its Application for 55 students, Oct 2018.
- Attended a 1-day workshop on Hands on Introduction to ML using TensorFlow organized by IEEE-IISc Student Branch, Indian Institute of Science, Nov 2018.
- Conducted a 3-day workshop on Basics of Machine Learning using Python for 55 students, Apr 2018.
- Conducted a 5-day workshop on Basics of Python, Web Scraping & Introduction to AI for 60 students, Apr 2018.
- Attended a 1-day workshop on Robotics and Automation Society RAS Hackathon 2017 organized by Robotics & Automation Society, IEEE RNS Institute of Technology Student Branch, Oct 2017.
- Conducted a 2-day workshop on Sensors & Arduino and Construction of Common Bots for 60 students, Oct 2017.
- Attended a 2-day workshop on Internet of Things with Arduino organized by RNS Institute of Technology in association with IEEE & Tenet Technetronics, Aug 2016.

ACHIEVEMENTS

- Awarded Best Paper for "Sentiment Analysis of Restaurant Reviews using ML Techniques" among 90 at International Conference on Emerging Research in Electronics, Computer Science & Technology, Aug 2018.
- Ranked among top 5% in Data mining among 820 and Introduction to Machine Learning among 3147 certification courses offered by NPTEL, Mar 2018 & Oct 2018.
- Awarded best project for Automatic Detection of Helmetless Rider using Deep Learning among 1100 at BITES – Xcelerator Student Project Awards, Jun 2019.

EXTRA CURRICULAR ACTIVITIES

- Represented Mysore division in state level Basketball Tournament, Oct 2012.
- Participated in National Integration Camp, a national level NCC camp and secured Sergeant rank in the Army wing, Jun 2010 Jun 2012.