Zeren Shen

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EDUCATION

University of Toronto Toronto, Canada
Master of Engineering, Mechanical and Industrial Engineering - Emphasis in Analytics *Sept 2021 - Sept 2022*
University of Waterloo Waterloo, Canada
Bachelor of Mathematics, Major in Statistics and Actuarial Science, Minor in Computer Science *Sept 2016 - April 2021*

PROFESSIONAL EXPERIENCE

Research Assistant *Sept 2021 - April 2022*
The Laboratory for Extreme Mechanics & Additive Manufacturing, University of Toronto Toronto, Canada

- Responsible for implementing computer vision models including FCN, UNet and Deeplabv3 in pores tracking tasks in the Laser Powder Bed Fusion (LPBF) process by using Python.
- Produced a feasible solution for detecting and tracking the bubbles during the LPBF process in industrial production by comparing the performance of different machine learning models.
- Completed a comprehensive report independently about semantic segmentation models for melting pool analysis.
- Collaborated with other research team members to accomplish a scientific research paper.

Research Assistant *May 2018 - Aug 2018*
ESE Engineering Center, Zhejiang University Hangzhou, China

- Participated in self-driving vehicle technology research. Responsible for collecting data from the driving environments and specific experiments to support further training.
- Enhanced the database in data collection and management by collecting and analyzing data from several different types of roads. Reported the latest technologies of data storage for autonomous vehicles.

PROJECT EXPERIENCE

Distracted Driver Detection Project *Jan 2022 - Apr 2022*

- Aimed to classify each driver's behaviour from a dataset of camera images into ten different classes.
- Applied data cleaning and augmentation methods to the raw dataset. Implemented six different architectures including MobileNet, ResNet and GoogleNet. Used ensemble methods to boost the performance of the model.

Tweets Sentiment Analysis for Canadian Election *Jan 2022 - Apr 2022*

- Implemented machine learning techniques for analyzing the sentiment of Canadian election tweets using Python.
- Constructed multiple ML Classifiers including Logistic Regression, KNN, Naïve Bayes, SVM, Decision Tree, Random Forest, and XGboost to predict tweets sentiment based on WF and TF-IDF features.
- Performed hyperparameter tuning through grid search to further optimize models.

Balance-Scale Analysis and Prediction Project *Sept 2021 - Dec 2021*

- Cleaned the balance scale dataset by using SQL in Azure SQL on the Azure Cloud Platform.
- Applied predictive analytics such as machine learning and data mining techniques to forecast the balance scale in Azure Machine Learning. Used Automated ML to evaluate the performance of different models.

Google Landmark Recognition Project *Sept 2020 - Dec 2020*

- Participated in Google Landmark Recognition 2020 Competition. Aimed to recognize the correct landmark in a large image dataset which contains more than 81K classes.
- Implemented convolutional neural network models based on Efficient-Net and ResNet families by using Python.

Application of Model-Based Clustering on HBE Mucosal Fluid Data *May 2020 - Aug 2020*

- Aimed to classify human bronchial epithelial (HBE) mucosal fluid data into clusters. Implemented the clustering algorithm based on approximate hierarchical GMM and Bayesian approach using R.
- Divided fluid data into four logical clusters. Found model-based clustering identical to weight-based clustering.

TECHNICAL PROFICIENCIES

- Programming Skills: Python, R, SQL, C++, C, Linux, HTML, CSS, Javascript
- Frameworks: TensorFlow, PyTorch, OpenCV, JAX, scikit-learn, Apache Hadoop, Apache Spark