

Ranjeet Singh

I'm a passionate and hands-on data scientist with both industrial and academic research experience in Machine learning and Deep learning. I'm especially fascinated about deep learning inspired computer vision. My experience involves applications of Deep learning to Speech Recognition and Computer Vision both. With these skills, I have assisted my organisations in improving the user experience of their products and services.



Data Scientist at **Roadzen**, New Delhi, India

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Skills

Python, Tensorflow, Keras, PyTorch

OpenCV, NLTK, XGBoost, sklearn

Docker, SQL, GCP, AWS

Experience

Data Scientist at Roadzen, New Delhi - Oct 2018 till now

Working on classical and deep learning based computer vision with application to insurance Primarily focused on building artificial intelligence systems for automating claim process, detecting damages and frauds

Machine Learning Engineer at Quantiphi Inc, Mumbai - Feb 2018 - Sept 2018

Worked on state of the art Language Modelling techniques for Deep Learning based end to end Speech Recognition system for Trading

Data Scientist at Jugnoo, Chandigarh - Jan 2017 to Feb 2018

Built data driven intelligent applications for Jugnoo's various verticals - ride allocation, churn prediction using classical Machine Learning

Education

Bachelor of Technology, 2016 - Major in Electronics Minor in Computer science
Lovely Professional University

Master of Technology, Dropout - Digital Signal Processing
Lovely Professional University

Thesis - Demographics estimation using Deep learning

Thesis overview - *This work tackles the problems of demographics estimation from image and video with potential application in targeted advertising.*

Research

MIDAS Lab, IIT Delhi - Visiting Researcher - Dec 2018 - May 2019

Computer Vision and Speech Recognition

Publications

Gender classification techniques from Machine learning to Deep learning

International Journal of Control Theory and Applications, 2016

Projects

Demographics Estimation using Deep Learning

Objective- Build demographics estimation model using Deep Learning to recognize age and gender of the person

- Transfer learning from AlexNet architecture, using features from 7th fully connected layer
- Using those features, build custom classifier achieving 75% accuracy
- Build multi-task Convolutional Neural Network architecture for further improvement
- Custom heads for age and gender in single network
- Used 50k images achieving 81% accuracy on balanced test set of 10k images

Tools used - Python, Tensorflow 1.x

Vision based Claims Engine for Motor Insurance

Objective- Automate manual pre-inspection and claims process using Computer Vision for Motor Insurance

- Formulated the problem, conducted literature review for relevant computer vision techniques
- Got the 4 thousand claims cases having 35k images labelled by Ops team with in-house tagging tool
- Trained model to recognise and localise car and parts using object detection and semantics segmentation
- Trained model to localise and classify any damage present on the car
- Used 'Focal Loss for Object Detection' paper based architecture
- Achieved 75% MAP score for car and parts detection and 55% MAP score for damage recognition
- Deployed model with Tensorflow-serving in production

Tools used - Python, Tensorflow, Keras

Speech Recognition for Trading - Cloud9

Objective- Build a Speech To Text model for trading for JP Morgan. This is called Cloud9, Cloud9 is Deep learning based ASR model trained on 4000 hours of trading speech data incorporates state of the art research papers in the domain of speech and language

Automatic Speech Recognition system

- Worked on deep learning based end to end Automatic Speech Recognition system
- Implemented class based language model, language model interpolation

Hierarchical Language Model Switching

Objective : Predict most probable language model for given audio

- Build a CNN-LSTM architecture for dynamic language model switching while inference for Cloud9
- Provides dynamic Language Model selection out of 50 interpolated language models
- Achieved 79% accuracy on 4000 hours of speech dataset

Tools - Python, Tensorflow, Flask

Probabilistic Ride Allocation Model for Jugnoo Autos

Objective - Build a probabilistic model for continuous ride-acceptance probability assignment to Jugnoo drivers.

- Worked with sole ownership of project
- Extracted data from MySQL database, Data preprocessing
- Feature engineering for manual design of useful feature for the given task
- Model building, hyper-parameter tuning using Grid search and Random search
- Designing REST endpoint for production use

Tools used- SQL, Bigquery, Python, Scikit-learn, Flask

Seminars & Achievements

University Of San Francisco - International Fellowship, 2018

Presented paper in International Conference on Intelligent Circuits and Systems 2016

Attended workshop on Computational Social Systems, IIT, Delhi 2018

Computer Vision Summer School, IIIT-Allahabad, 2019

Blogs

https://medium.com/@ranjeet_thakur
