RANRAN CAO

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PROJECTS

Large Scale Movie Recommender System --- GitHub Oct.2016-Nov.2016

- Developed a movie recommender system using Netflix dataset (**1G**) and the **Hadoop** platform (**Docker, HDFS, MySQL**).
- Calculated movie rating matrix from Netflix dataset using collaborative filtering algorithm.
- Implemented **MapReduce Java** code for co-occurrence matrix generation and multiplication of co-occurrence matrix and movie rating matrix to obtain recommendation list.

Hadoop Page Rank Project --- GitHub May.2016-July.2016

- Using MapReduce in **Hadoop** with **Java** to realize Google page rank algorithm (**Docker, Linux**).
- Established transition matrix as web page relationship representation using wiki data, with the help of **MapReduce** in huge matrix multiplication.
- Established the final rank of webpages by the **PageRank algorithm**, involving **HDFS**.

Machine Learning 8-Puzzle Solver and KNN Classifier Projects --- GitHub Sep.2016-Nov.2016

- Solved the Eight Puzzle problem by **Java** using Uniform Cost Search, A* with the Misplaced Tile heuristic search and A* with the Manhattan Distance heuristic search respectively.
- Used **Pandas** to deal with **missing data** and implemented a **Nearest Neighbor Classifier** by **Python** using forward selection algorithm and backward elimination algorithm.
- Improved the classification accuracy for big dataset from **90% to 93%** by integrating annealing algorithm with backward selection algorithm.

WORK EXPERIENCE

Deep Learning Research Assistant July.2017-Present
University of California, Riverside
***Deep Learning** series projects (Techniques: **Python, Pandas, Scikit-learn, TensorFlow, Keras, GPU**):*

- Implemented **the neural style transfer algorithm** to generate novel artistic images.
- Constructed the building blocks of **ResNets** and combined them to develop and train a neural network for **image classification (**Residual Networks).
- Using **Cloud Vision API** to detect labels and bounding boxes in images dataset.
- Developed a **real time object detection** system on a car detection dataset using **YOLO model** (GPU **k80**)and tackled **bounding boxes** problem.
- Conducted **10K** number plate images from Supervise.ly to **CNN** to extract image features.
- Implemented **LSTM** RNN and **decoding algorithm** to those features to get final labeling and **visualized** probability distributions from each **RNN** step as a matrix.

EDUCATION

UNIVERSITY OF CALIFORNIA, RIVERSIDE Sep.2015 – Jun.2017
Master of Science, Electrical Engineering
Coursework: Artificial Intelligence, Data Structures & algorithms, Convex Optimization, Stochastic Process.

BEIJING UNION UNIVERSITY Sep.2011 – Jun.2015
Bachelor of Science, Automation (concentration in Internet of Things)
Coursework: Data Structures, Java, Database Design & Development.

TECHNICAL SKILLS

Languages: Python; Java; SQL; HTML/CSS/JavaScript.
Tools: Git/Github; Linux; Docker; NumPy; Pandas; Scikit-learn; Jupyter Notebook ; TensorFlow; MySQL; MapReduce; Hadoop; HDFS; Google Cloud.