



Zhang richen

EDUCATION

Master of Science, Computer Science, Brown University - Providence, RI, GPA:3.7 *Dec. 2016*
Master of Science, Physics, Brown University, - Providence, RI, GPA: 3.74 *May. 2013*
Bachelor of Science, Physics, University of Science and Technology of China, - Hefei, China *Jun. 2011*

SKILLS

Programming: Python, Matlab, R, C, Java **Data Tools:** Amazon AWS, Amazon Elastic MapReduce
Machine Learning: Professional Industrial and teaching experience with machine learning algorithms
TensorFlow, Keras, Sci-Kit Learn, Sci-Py, NumPy, Pandas, NLP Algorithms
Visualization: Matplotlib, D3, R, SeaBorn **Databases:** MySQL, SQLite, MongoDB **OS:** Linux, Unix, Win

INDUSTRIAL EXPERIENCE

Avatr Technology, Shanghai, *June 2022 - Oct 2022*
* Lead a group and interns to develop over 94% accuracy in vehicle intention recognition and can detect the command from the passengers' speech
* Developed over 90% customer call recommendation system, recommending answers to the customers' questions

Biomedical Data Scientist, Medal, San Francisco, CA, *Jul.2017 – Jul 2021*
• From **Scratch**, within 5 months of on-boarding, **innovated and developed higher than industrial standard** Deep Learning Statistical **De-Identification** and **Identification** System for various EMRs sources and format (structured and unstructured) with over **98% Precision, over 99% Recall** (Work Submitted for **publication**)
• Built Highly Accurate and Robust Neuro Entity Recognition models for Problem&Diagnosis, Medication, Signs&Symptom, Lab, Allergy extraction from various medical records.
• The system was **productized, and advertised** by the company and validated by customers and partners
• Innovated and implemented the **Ensembler Model** and **Meta Classifier** to balance corpus/document similarity, **used in production**.
• **Productized** the Medical NLP system and engaged with **constant deployments** and update/re-training of the NLP models. Engaged in build **TeamCity CI/CD** pipelines for constantly model re-training/testing.
• Constantly Engaged in the NLP **system optimization** - shorten the text processing **time** and memory usage in training/testing and production by more than **10 time**.
• Innovated Algorithmic and Machine Learning fixes for Google and Azure **OCR** result for Chart/Tabular/Two Column Image/PDF pages' text processing and classification
• Built **Active Learning** System and positive feedback loop to **guide human experts' annotations**, shortened the model converging and re-training time – built a enterprise level machine learning **ecosystem**.
• Held Multiple Training Sessions for Machine Learning/Deep learning across the Company and successfully on-boarded multiple new employees.

Machine Learning Intern, Ventana Medical Systems, Mountain View, CA *May. 2015 - Jul.2015*
• Implemented **Probabilistic Latent Component Analysis (PLCA)** Algorithm to realize **Unsupervised Color Decomposition** of H&E stained images with Improved Accuracy and Robustness
• Pre-processing of H&E images to improve SVM classifier's performance on H&E images

PUBLICATIONS:

- **Using routinely collected patient data to support clinical trials research in accountable care organizations** (submitted <https://arxiv.org/abs/1807.00668>) Jun 2018
Dr. Andrew McMurry, Richen Zhang, et al
- **Synthesis and characteristics of multifunctional Fe₃O₄-SiO₂-CdS magnetic-fluorescent** May 2011
Richen Zhang, Ling Liu, Prof. Xiaoliang Xu Chin.Phys.B, 20(08), 0866101, (2011)
(SCI)

RELEVANT ACADEMIA PROJECTS

Deep Learning on Hand-Written Digits Recognition and Language Model *Oct. 2016 – Dec. 2016*

- Implemented Neural Nets and Convolutional Neural Nets on Hand Written Digits Recognition.
- Implemented Feed Forward Language Model and Recurrent Neural Network on Bigram Model
- Human Pose Estimation with Recurrent Neural Network and Markov Random Field.
- Implemented Feed Forward Language Model with Bigram on SQL Query Data with **Improved Perplexity**

Personalized Movie Recommender System (Python,php,MySql), *Mar. 2015 – May. 2015*

- Served as a Team Captain; Design Project Blueprint and in charge of direction of the project
- Built a Movie Recommendation Engine with Python; Implemented Collaborative Filtering Algorithm (Both Item-Based and User Based)
- Built a Website (<http://watsonly.com/project/signin.php>) that Assemble the Algorithm with SQL Database
- Hypothesis testing on the correlation between movie score against user's age, region and gender.

Airline Delay Prediction with Machine Learning Methods (in Matlab), *Sep. 2014 – Nov. 2014*

- Predicted Airline Delay using Machine Learning methods using historical data provided online
- Implemented Regularized Linear Regression, Neural Network and Decision Tree methods with Matlab.
- Improved the prediction accuracy to **86%**

Linear Regression Model and Analysis of Systolic Blood Pressure (in R), *Oct. 2013 – Dec. 2013*

- Performed feature selection using “Lasso” L-1 regularization to predict Systolic Blood Pressure (SBP)
- Performed Stratified analysis, studied the relation between two key genes for SBP, and constructed a new variable by merging two key genes

TEACHING EXPERIENCE

Teaching Assistant, CS142 Machine Learning *Brown University, Jan. 2015- May. 2015*

- Held Office Hour for Students' Questions and Graded Homework and Exam with Class Size of 120

Lecturer & Teaching Assistant, Physics 30/40 Lab *Brown University, 2011 – 2013*

- Lectured Physics Concept and Lab Procedures Instructions in classroom; Hold Group Discussion Sessions

AWARDS

- Computer Science Master Program Tuition Scholarship for Masters' Students 2015
- Best Undergraduate Thesis Award(Top 5%), University of Science and Technology of China 2011
- Outstanding Academia Student Award, University of Science and Technology of China, 2008-2010

