Songheng Zhang

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https://github.com/BigSongz

EDUCATION

Singapore Management University (SG)   **2021 – Present**

☐ **Ph.D. in Computer Science**

University of California, Irvine (Irvine, CA)   **2016 - 2021**
  B.S. in Computer Science
  (Completed Courses: Computer Languages, Data Structure, Machine learning, Computer Vision, Algorithm)
  B.S in Mathematics
  (Completed Course: Calculus, Linear Algebra, Optimization, Differential Equations, Numerical Analysis)

LANGUAGE
Cantonese: Native proficiency; Mandarin: Native proficiency; English: Working proficiency

SKILLS & TALENTS
Skills: Python, Javascript, Vue, C/C++, SQL, Pandas, Scikit-learn, Pytorch, Matlab, Javascript, NLP, VBA, MongoDB
Experience in VSCode, Eclipse, Jupyter Notebook, Excel, Word, Skype

RESEARCH
AI Customer Churn Predictor (Teletrac Navman, CA Irvine)   Dec 2019 – June 2020
- Use Pandas to clean and analyze data (csv, xlsx) from company's different departments. And then extract feature-related data according to departments' advice
- Use Scikit-learn and fast.ai framework to implement different ML models (i.e. Random Forest, Linear/Logistical Regression, Tabular Deep Neural Network). Fine-tune these models and compare models' result. According to the model prediction, issue a warning of possible customer loss
- Exploit the trained model's interpretability to find out high relevant feature related to customer loss and provide business advice to departments depending on these extracted features

Shoe Albedo Segmentation   April 2019 – July 2020
- Design and implement a User interactive segmentation tool
- The tool is able to auto load images and restore to previous state before modification
- User can click on loaded image to merge or separate segments in the image

Multimodal Dialogue   Sep 2020 – Dec 2020
- Survey on related multimodal dialogue research
- Implementing the baseline model

Crowdfunding Investor Visual Analysis   Dec 2020 – Sep 2021
- Design and implement a visual analysis system which enables crowdfunding creators to find appropriate investors

INTERNSHIP
Business Intelligence (LianYi Technology, China)   July 2020 – Oct 2020

- Communicate with implementation engineers to understand project requirement
- Analyze and extract the provided data; design and build Business intelligence dashboard

Text Mining (China Telecom Research, China)   Oct 2020 – March 2021

- Exploit Gradient Descending and Apriori Algorithm to extract a set of correlative hot words from user comments. Define a set of hot words as a hot topic
- Dynamically calculate the weights of hot word to build a hot topic time series model. If the model's score exceeds the predefined threshold, an alert is issued
- Implement Dynamic Time Warping algorithm to calculate similarity between different timer series and find historical hot topics similar to the current topic
- Implement new domain phrase from users' comments by mutual information and right, left entropy. Using community discovery and FP-growth algorithm to find hot topics given the extracted phrases

EXPERIENCE

Machine Learning Experience

Neural Machine Translation with Attention

- Use Pytorch to implement the LSTM based Seq2Seq translation model.
- With the help of attention mechanism, the model translates Spanish into English
- Encoder and decoder are one layer bidirectional and unidirectional LSTM respectively
- The loss function is Cross Entropy Loss and the BLEU score is 22.6

Neural Machine Translation of Rare Words with Subword Units

- Implement a character level encoder which consists of CNN and Highway Network. The encoder produces word embeddings instead of simply looks up word embedding tables
- Implement a LSTM-based character decoder. When word-level Seq2See decoder returns <UNK> token, the character decoder generates a sequence of characters and concatenate the sequence as new word instead of <UNK> .
- The word level Seq2Seq with attention is maintained. The model BLEU score is 26.9

Volunteer Experience

Place Called Home and Dream Center Volunteer (Los Angeles, CA)   Dec 2017 – Jan 2018

- Help children and teenagers aged 8-21 to pursue higher education and become a leader
- As part of a group of 11 students to help distribute Christmas food and gifts in unserved community

Leadership

Anteater AI (Irvine, CA)   2019 – 2021

Introduce the knowledge of artificial intelligence to interested people

Mentor enthusiasts without a programming background. Explain the ML algorithm and assist them to implement related algorithm.

Toastmaster (Irvine, CA)   2019 – 2021

Broadening public speaking and communication skills

Organizing and hosting meetings following the Toastmasters guidelines

Member of Chinese Union in Computer Science (Irvine, CA)   2017 – 2021

Mentor lower-division students regarding to course assignments

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weekly events to assign find sponsor and new members, then assign task