Shuyue Jia

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Education

Northeast Electric Power University (NEEPU), Jilin, China — Sep 2016 - Jun 2020

- Bachelor of Engineering / Intelligence Science and Technology Major, GPA - 80.26/100
- Supervisor: Prof. Yimin Hou, Research area: Deep Learning
- Thesis: Brain-Computer Interface Signals' Classification and Its Applications based on Deep Learning Methods

University of California, Irvine (UC Irvine), CA, United States — Jul - Sep 2017

- Summer School, Computer Science, GPA - 4.0/4.0
- Selected coursework: Computer Systems and Architecture (A+), University Writing and Communication (Pass)

Experience

Tencent Technology Inc., Beijing, China — **RS Research Intern** — Oct - Dec 2020

- Assist with the unified architecture w.r.t. the *Rerank* Module for Tencent Video Recommendation System (RS).
- Conducted research on the Dynamic Graph Convolutional Neural Networks (DGCN) Survey and learned Reinforcement Learning models.

Philips Research, Shanghai, China — **NLP Research Intern** — Jul - Oct 2020

- Medical Concept Mapping: three levels → BPE and FMM & BMM Algorithms for Sub-words (Syntax-level), Word Vector Cosine Similarity (Semantics-level), and Knowledge Graph (Pragmatics-level).
- Medical NER: compared the performances of different models → CRF++, Character-level BiLSTM + CRF, Character-level BiLSTM + Word-level BiLSTM / CNNs + CRF, and deployed the models using Flask and Docker as web apps. Codes are available here, and the Docker Images are available on Docker Hub.
- Dynamic Webs Crawling: learned and crawled 620,000 words from NSTL using Python parallel package threading and other tricks to prevent Anti-reptile.

Tsinghua University, Beijing, China — **NLP Summer Intern** — Jun - Aug 2019

- Natural Language Processing (NLP) Intern at State Key Laboratory of Intelligent Technology and Systems, Tsinghua University, China.
- I was in a team that was responsible for building a salesman training system, which was a piece of insurance dialogue systems. During intern, I led the effort to create a Chinese Chat Title Named Entity Recognition (NER) via the BERT-BiLSTM-CRF model, and then matched the formal name with the recognized title through rules.
  NER Dataset: 30,676 samples, 96.73% accuracy on 550 samples.
- I also assisted in testing the sales training review system, and integrated salesman's dialogue according to different difficulty levels, in verifying the reliability of the system.

Publications

- A Novel Approach of Decoding EEG Four-Class Motor Imagery Tasks via Scout ESI and CNN. [Paper] [Code]
  Yimin Hou, Lu Zhou, **Shuyue Jia**, and Xiangmin Lun.
  Journal of Neural Engineering, 2020; 17(1):016048.

- Improving Performance: a Collaborative Strategy for the Multi-data Fusion of Electronic Nose and Hyperspectral to Track the Quality Difference of Rice. [Paper]
  Yan Shi, Hangcheng Yuan, Chenao Xiong, **Shuyue Jia**, Jingjing Liu, and Hong Men.
  Sensors & Actuators: B. Chemical, 2021; 129546.

- Origin Traceability of Rice based on an Electronic Nose Coupled with a Feature Reduction Strategy. [Paper]
  Yan Shi, Xiaofei Jia, Hangcheng Yuan, **Shuyue Jia**, Jingjing Liu, and Hong Men.
  Measurement Science and Technology, 2020; 32(2):025107.

- GCNs-Net: A Graph Convolutional Neural Network Approach for Decoding Time-resolved EEG Motor Imagery Signals. [Paper] [Spectral-GCN-Presentation] [Dynamic-GCN-Presentation] [Code]
  Xiangmin Lun, **Shuyue Jia (Corresponding Author)**, Yimin Hou, Yan Shi, and Yang Li.
  arXiv preprint arXiv:2006.08924, 2021. (Under Review)

- Deep Feature Mining via Attention-based BiLSTM-GCN for Human Motor Imagery Recognition. [Paper][Code]
  Yimin Hou, **Shuyue Jia (Corresponding Author)**, Xiangmin Lun, Yan Shi, and Yang Li.
  arXiv preprint arXiv:2005.00777, 2021. (Under Review)

- Attention-based Graph ResNet for Motor Intent Detection from Raw EEG signals. [Paper][Code]
  Shuyue Jia (Corresponding Author), Yimin Hou, Yan Shi, and Yang Li.
  arXiv preprint arXiv:2007.13484, 2021. (Rejected by MICCAI 2020)

Selected Projects

EEG-DL: A Deep Learning library for EEG Tasks (Signals) Classification [Code] May 2020
- EEG-DL is a Deep Learning (DL) library written by TensorFlow for EEG Tasks (Signals) Classification. (*Undergraduate graduation project*)
- Implemented 20+ popular algorithms including DNN, CNN, RNN-based, GCN with hands-on tutorials.
- Finished writing *three papers* based on this project as shown in my *Publications*.
- Comprehensive codes for EEG signals processing and classification *research*, and got 100+ GitHub stars.

Shipwreck Sonar Image Segmentation based on Entropy Method [Code] Jun - Sep 2018
- Pre-processed sonar images to enhance the contract between the hull and reverberation area, which consists of discrete cosine filtering (DCT)→edge detection (Roberts Operator)→threshold segmentation via a one-dimensional histogram to locate the ship→morphological expansion by tapered concentric rings through Matlab.
- The proposed method improved segmentation accuracy (86%+) compared with that without the pre-processed stage (no more than 80%) on dozens of sonar images.

Third China Data Mining Competition, Butterfly Recognition [Website] [Code] Oct 2017 - May 2018
- Successfully implemented YOLO-V2 and Faster-RCNN object detection algorithms under Windows & Ubuntu OS using the official butterfly dataset.
- Used affine transformation, noise addition, contrast enhancement, rotation, symmetry changing, and other methods to extend the dataset.
- YOLO-V2 Results (Team A106): 71.42% Averaged IoU, and unsatisfactory classification accuracy.

Awards

2019 Interdisciplinary Contest In Modeling (United States) ***Honorable Mention*** Apr 2019
2018 Mathematical Contest In Modeling (Jilin, China) ***First Prize*** Aug 2018
2018 Interdisciplinary Contest In Modeling (United States) ***Successful Participant*** Apr 2018
2018 NEEPU Outstanding Student Leader Oct 2018
Innovation Scholarship of NEEPU ***Winner*** 2018/2019
Academic Excellence Scholarship of NEEPU ***Third Prize*** 2017/2018/2019/2020
Jilin City International Marathon, Half Marathon, Placed *148 / 5000* Jun 2017
Student Member of IEEE, ACM, and CCF 2019/2020/2021
2015 National High School Math League ***Second Prize*** Sep 2015
The 32^{nd} Chinese Physics Olympiad ***Third Prize*** Oct 2015

Professional Skills

Languages: Proficient in Python and Matlab; Familiar with C/Embedded C, R, and JavaScript
Libraries: TensorFlow (Preferred), PyTorch
Other frequently-used tools: Git, Vim, Markdown, Shell, LaTeX, Docker, K8s
English Language: Fluent in English, CET-6 581, CET-4 577, Duolingo 110