Xiaohan Zou

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Education

Boston University, Massachusetts, USA   09/2021 – 06/2023 (Expected)
M.S. in Computer Science

Tongji University, Shanghai, China   09/2016 – 07/2020
B.Eng. in Software Engineering

Publications and Submitted Manuscripts

- **Xiaohan Zou**, Cheng Lin, Yinjia Zhang, and Qinpei Zhao. "To be an Artist: Automatic Generation on Food Image Aesthetic Captioning", The 32th International Conference on Tools with Artificial Intelligence, **ICTAI 2020** (Acceptance Rate: 25%, **Oral Presentation**) [Paper] [Code] [Slide]
- **Xiaohan Zou**. "A Survey on Application of Knowledge Graph", The 5th International Conference on Control Engineering and Artificial Intelligence, **CCEAI 2020** [Paper]

Research Experience

Food Image Aesthetic Captioning, Tongji University, Link   04/2020 – 06/2020
Advisor: Prof. Qinpei Zhao
Worked on generating critiques related to art and aesthetics for food images, **published in ICTAI**

- Proposed a novel compositional framework consisting of a single-attribute captioning module and an unsupervised text summarization module for generating comprehensive aesthetic captions for food images
- Designed a data filtering strategy inspired by TF-IDF method for building a dataset for this new task
- Introduced two new evaluation criteria to assess the novelty and diversity of the generated captions
- Outperformed baselines and existed methods substantially in terms of diversity, novelty and coherence

Fault Diagnosis for Microservice Architectures, Tongji University   09/2018 – 01/2019
Advisor: Prof. Qingfeng Du
Worked on building a fault diagnosis system for microservice architectures, sponered by Huawei

- Represented the microservices of a cloud platform and the causal relationships between them by a Bayesion network against the observed performance metrics dynamically using PC algorithm
- Identified the culprit microservices when an anomaly occured using random walk
- Fault injection experiments showed that our method outperformed traditional approaches with 6.56% identification accuracy improvement, without any expert knowledge

Semi-Supervised Machine Translation, Peking University   07/2018 – 08/2018
Advisor: Prof. Tong Lin
Worked on semi-supervised machine translation using structure duality

- Proposed a dual learning framework based on shared hidden space to utilize the structure duality to boost the learning of two dual tasks and better regularize the model
- Designed two denoising auto-encoders consisting of encoders and decoders of two traditional Seq2Seq neural machine translators to make use of unpaired data
- Outperformed strong baselines by 1.0 - 2.9 BLEU on IWSLT'15 (English-Vietnamese) and WMT'14 (English-German), the improvement is more obvious when labeled data is little

Projects

Flint: A toy deep learning framework implemented in Numpy from scratch, Github 01/2021 – Present

- Implement an autograd engine, Linear, Convolution, Pooling, Flatten, RNN, Dropout and BatchNorm layers, 6 optimizers, 4 loss functions, 3 activation functions, 5 initializers and a data loader in pure Numpy
- Wrote complete documentation and comprehensive unit tests

Metallic: A lightweight and modularized PyTorch meta-learning library, Github   10/2020 – Present

- Implemented 7 meta-learning algorithms (supported almost all commonly used optimizers) and data loaders for popular datasets with complete documentation

Speech Emotion Recognition, Github   04/2019 – 06/2019
- ○ Implemented several models and features extracting methods for speech emotion recognition
- ○ Achieved 7.2 - 12.2 accuracy improvement over baseline on four benchmark datasets: CASIA (Chinese), EMODB (German), SAVEE (English), and RAVDESS (English), got over 200 Github stars

PROFESSIONAL EXPERIENCE

Software Engineer Intern, Acoustic-Optic-Electronic Co., LTD. of China Electronics Technology
Group Corporation, Chongqing, China   10/2020 – Present
- ○ Visualized Sanxingdui's 3D excavation site and sensor data using Cesium and Vue
- ○ Developed a demo for a real time person pose estimation model
- ○ Wrote scripts to label ancient handwritten characters and generate OCR training files automatically

Game Engineer Intern, Banana Interactive, Shanghai, China   10/2019 – 05/2020
- ○ Participated in the development, updating and testing of 3 H5 games using JavaScript and Construct 3, developed and maintenanced a skin system, shop system and item system
- ○ Ported a game packaging and deployment tool from Windows to Linux and MacOS

AWARDS AND HONORS

Bronze, China Collegiate Programming Contest (CCPC)   2018
Honorable Mention, ACM International Collegiate Programming Contest (ICPC) Asia Regional 2018
Bronze, Internet+ Innovation and Entrepreneurship Contest for University Students   2018
Second Prize, Programming Contest of Tongji University   2017, 2018
Second Prize, China Mathematical Contest in Modeling (CUMCM)   2017, 2018
Second Prize, Programming Contest of East China Normal University   2017

LEADERSHIP AND ACTIVITIES

Vice Chief Technology Officer & Chief Experience Officer, Tongji Microsoft Student Club
- ○ Gave lectures about data structure and algorithms as well as their applications in machine learning on technology courses.

CORE COURSES

- ○ **Statistics & Mathematics:** Probability and Mathematical Statistics, Discrete Mathematics, Calculus, Linear Algebra, et al.
- ○ **Computation:** Data Structure, Algorithm, Database, Operating Systems, Principles of Compilers, Object-Oriented Programming, SOA and Web Services, Web System and Technology, Distributed System, et al.

SKILLS

Programming Languages: Python, JavaScript, HTML/CSS, C/C++, Java, MATLAB
Tools and Frameworks: Git, PyTorch, Keras, Linux, Vue, Django, LaTeX
Languages: Chinese (native), English (proficient, TOEFL: 106, GRE: 322)