Yingying Zhuang

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Education Background

Beijing University of Posts and Telecommunications (BUPT) **09/2016 - 06/2020 (Expected)**

◎ **Major:** E-Commerce Engineering with Law;

◎ **Major GPA:** 87.34/100;

◎ **Core Courses:** C Programming Fundamentals (93); Discrete Techniques for Computing (92); Probability Theory and Mathematical Statistics (96); Engineering Mathematics (95); Intro Java Programming (92); Web Search (92).

Publications

1. X. Jiang, J. Yu*, Z. Qin*, **Y. Zhuang**, X. Zhang, Y. Hu, Q. Wu; ***DualVD: An Adaptive Dual Encoding Model for Deep Visual Understanding in Visual Dialogue***, 34th AAAI Conference on Artificial Intelligence, New York, USA, February 2020. (accepted)
2. **Y. Zhuang**, Y. Chen, J. Zhen; ***Music Genre Classification with Transformer Classifier***, 2020 4th International Conference on Digital Signal Processing (ICDSP 2020), Chengdu, China, February 2020. (accepted)

Research Experience

Text driven music generation with transformer networks **11/2019 – present**

Beijing University of Posts and Telecommunications

◎ Supposed to collect music melodic data through musical media and transfer them to form what is available for computer to process with transformer networks;

◎ Aimed to use English text data as a driven factor to generate music and establish reasonable links between the input and the results;

◎ Introduced a new type of network called transformer network making use of self-attention mechanism, in order to transfer music and text information effectively;

◎ Adopted Pytorch framework and Python to complete the project.

Research on Sentiment Analysis and Relation Extraction **07/2019 – 09/2019**

StatNLP Lab-Singapore University of Technology and Design

Project I. Research of Sentiment Analysis

◎ Conducted experiments for a cooperation project on sentiment analysis over data collected from Twitter in *StatNLP Lab* and *DSO* (*Singapore's national defence research and development organization*);

◎ Investigated different shuffle methods including Sequential and Random applying distinct network structure with pretrained word vector on SST-2 dataset, and evaluated the influence of shuffle methods over sentiment analysis task;

Project II. Independent Study of Relation Extraction Models

◎ Implemented relation extraction models on the largest document level relation extraction DocRED, including BiLSTM, Context-Aware, CNN, LSTM;

◎ Applied Graph Convolutional Network and Transformer structure respectively to extract relation on DocRED and tried to optimize model structure.

Development of An Adaptive Dual Encoding Model for Visual Dialogue **03/2019 – 09/2019**

Intelligent Computing and Machine Learning Lab-Beihang University

◎ Developed a novel model to depict an image from both visual and semantic perspectives, captured the appearance-level information such as objects and their relationships based on the visual view;

◎ Optimized a feature selection framework to capture question-relevant information hierarchically in fine-grained level and achieve state-of-the-art results on benchmark Visual Dialogue datasets;

◎ Processed the dialog content and developed image captions solution and the semantic module;

◎ Explored methods to fuse multimodality information and establish the late fusion and discriminative decoder;

◎ Tested the model and analyzed the result data, and a paper of "*DualVD: An Adaptive Dual Encoding Model for Deep Visual Understanding in Visual Dialogue*" is accepted as listed in Publication

Music Genre Classification with Self-attention Mechanism **08/2018 – 11/2018**

Beijing University of Posts and Telecommunications

◎ Designed a transformer classifier to classify music genre, comparing with traditional RNN or CNN models, the classifier would decrease the limitations on learning dependencies between distant positions in a sequence;

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◎ Applied attention mechanism inspired by a research on NLP to analyze the relationship between different audio frames accurately, then achieve better performance in Music Genre Classification;
◎ Submitted a paper of "*Music Genre Classification with Transformer Classifier*" which is accepted as listed in Publication.

Small-footprint Keyword Spotting on Microcontrollers **09/2017 – 06/2019**

iVip Research Group-Tsinghua University

◎ Performed neural network evaluation and exploration for keyword spotting on resource-constrained microcontrollers;
◎ Trained various neural network for keyword spotting on Google speech commands dataset, to compare their accuracy and memory requirements vs. operations per inference, from the perspective of deployment on microcontroller;
◎ Designed a novel light-weight GRU with the weights quantized to fixed-point 4-bit and the negligible loss in accuracy. The Alternating Direction Method of Multipliers are adopted as network compression framework;
◎ Deployed the designed GRU network to the actual microcontrollers with the demo system.

Competition Experience

Project for the Visual Dialog Challenge 2019 of CVPR **05/2019**

◎ Applying neural networks in visual dialog task, increased the accuracy of answer option prediction and enhanced the multimodal machine learning association representation;
◎ Enhanced the word representation by combined word embedding (GloVe) and character embedding (ELMo);
◎ Generated caption for each image using DenseCap model and added information represented by natural language to optimize the image information representation;
◎ Won the sixth place of the contest, and the experimental result was better than the winner's of last year.

Coursework

Design and Development of a Web Search Engine **06/2019**

Web Search Coursework

◎ Designed and developed a web search engine for house rental information, including functions of full-text field search, price sorting search, price range search, and field search;
◎ Adopted Elasticsearch and Django as framework to implement the functions, and wrote a Python crawler to obtain data.

Establishment of an Outdoor Smart Car Company: CRETOCE **09/2018**

2018 Summer Practical Training Program Group Project

◎ Designed an outdoor smart robot, including establishing circuit, control system, official website and market strategy;
◎ Applied Mysql to construct a database to store and manage data orderly;
◎ Applied Java to develop the official website for the company, with online shopping function.

Design and Development of an Online Supermarket Management **09/2017**

2017 Summer Practical Training Program Group Project

◎ Designed and developed an online supermarket management system with functions including goods management, customer registration and management, administrator model;
◎ Applied C to develop the system structure, function and interface of administrator mode.

Honors and Awards

◎ Outstanding Student Leader, BUPT **2019**
◎ 6th of the Visual Dialog Challenge 2019 **2019**
◎ Honorable Mention of Mathematical Contest in Modeling **2018 &2019**
◎ Second Class Scholarship, BUPT **2018**
◎ First Class Scholarship, BUPT **2017**
◎ Merit Student (twice), BUPT **2017 &2018**

Other Information

◎ **Computer Language:** Java, C, Python, Matlab, Arduino, HTML, Mysql, CSS;
◎ **Machine Learning Toolkits:** PyTorch, TensorFlow;
◎ **Application Skills:** Linux.