LUO Ziyan

discat@foxmail.com

From: Changsha, Hunan, China – Incoming PhD student at Mila, McGill University

Education

Beijing University of Posts and Telecommunications (BUPT) <u>Sep. 2016 – Jun. 2020</u>

BEng in Computer Science and Technology

- **GPA**: 3.75/4
- **TOEFL scores**: 104 (R29, L27, S23, W25)
- A BUPT scholarship recipient in each academic year till now
- A member of YePeiDa Innovation College (top 60 students among 3600 undergraduates year-round)
- A Top 3 student in the major of Software Engineer in the first semester to have chance to switch major

- **Average Scores of Core Courses**: 91/100
- **GRE scores**: 327 (157 + 170 + 3.5)

Research & Professional Experience

(in chronological order)

Spatio-temporal Trajectory Prediction | *Data Mining, Deep Learning* <u>Apr. 2019 – Oct. 2019</u>

- Initiated the research and collaborated with researchers at the Institute for Network Sciences and Cyberspace of Tsinghua University, supervised by Wang Jilong, chair of the Asia Pacific Advanced Network (APAN)
- Processed human spatio-temperal trajectory data from publicly available GTSM datasets
- Designed an advanced deep learning model composed of an attentive mechanism which helped learn long-term knowledge and a well-designed convolutional network with hybrid dilated and separable filters, which effectively extracted high order sequential patterns and smoothed gridding artifacts of hybrid dilation
- **Second author** of the paper among 4 authors, which is **accepted by WSDM, 2020** (the **top 7%**, oral paper, DOI: 10.1145/3336191.3371846), a leading conference in data mining field

SRG, Microsoft Research Lab – Asia (MSRA) | *Reinforcement Learning, Information Retrieval* <u>Oct. 2019 – Now</u>

- Exploring Deep Reinforcement Learning algorithm for Inverted Index Match Plan Generation to replace current handicraft rules at the L1 stage of the query searching process in Bing
- Collaborating with the product team of Bing and researchers at Systems and Networking Research Group (SRG) of MSRA, supervised by Chen Qi, Xue Hui, Senior Researchers in MSRA
- Inventing **PASAC** to adapt to our scene (a **discrete-continuous hybrid action space**), maximizing both entropy & Q-value; **SPER** to address that highly prioritized samples center on a small range of the reward space
- As the **first and corresponding author** among **10 authors**, the paper is accepted by **WWW, 2021**
- <u>I'm proud that this technology is going to be applied in the production of Bing soon!</u>

APDC | *Natural Language Processing, Natural Language Generation, Reinforcement Learning* <u>Feb. 2020 – Sep. 2020</u>

- Inventing **Adaptive Prior-Dependent Correction (APDC)** to enhance RL in language generation tasks: Leveraging the distribution generated by computing the distances between the ground truth and all other words to correct the agent's stochastic policy, to alleviate the **deviation ignorance issue**
- **Advantage-function-weighted Policy Gradient (APG)**: Estimating the advantage function with the difference of the Q-values using the prior knowledge of "afterstate"
- On three tasks of NLG (NMT, image captioning, abstractive text summarization), our method consistently outperforms the state-of-the-art RL-based approaches
- As the **second author and presenting author** among **3 authors**, the paper **is accepted by AAAI-21**

RLMob | *Reinforcement Learning, Data Mining*   Apr. 2020 – July 2020
- Deep Reinforcement Learning for processing human sequential trajectory data
- Formulate the problem that predicting successive points as a MDP and create an simulator environment
- As the **first author** among **2 authors**, the paper is in submission to top conferences

ZTE-CE Internship | *Computer Networks*   Aug. 2019 – Sep. 2019
- Worked on 5G Wireless Network Product Operation and Maintenance Project, including networking and configuring base station as an implementation engineer
- Designed a topology structure of an enterprise Intranet with another intern that met all the needs of customers

Projects

Compiler from Pascal Language to C Language | *Compiler Principle and Technology*   Jul. 2019
- Collaborated with another student to complete a compiler from Pascal to C within 5 days
- Conducted grammar design, lexical analysis, syntactic analysis, semantic analysis, and the generation of target code using bottom-up techniques of S attribute

DNS Relay | *Computer Networks*   Mar. 2019 - May 2019
- Independently completed a simple DNS relay to implement DNS Protocol
- Realized packet parsing, relaying, database query, learning from new messages, etc.

Ether Forum System | *Software Engineering*   Nov. 2018 - Jan. 2019
- Independently designed a forum system with C++/QT, fulfilling all basic functions with elegant interface and user-friendly interaction

Skills & Core Courses

- Computer Skills: C/C++, Python, Pytorch, SQL, Matlab, UML, YACC, VHDL, Linux(Shell) ...
- Core Courses: Computer Networks, Algorithms & Data Structures, Operating System, Compiler Principle & Technology, Microcomputer System & Interface Technique, Software Engineering, Principles of AI, Principles of Database Systems, NLP, Computer Architecture, Mobile Communications…

Competitions & Awards

- The Web Conference (WWW) 2021 Scholarship recipient   Mar. 2021
- COMAP Interdisciplinary Contest in Modeling – **Meritorious Winner**   Feb. 2018
- National English Competition for College Students – **Third Award**   May 2018
- Chinese Chemistry Society's National Chemistry Olympiad for High School Students – **First Prize**
- Grade Certificate for Music Examination, **Piano Grade Ten**

Extracurricular Activities & Interests

- **Music Composition**: I am a well-known electronic music composer, creating experimental music in miscellaneous genres including piano improvisation, symphony, 8-bit, hardcore, dubstep. Up till now, I have done more than 20 music compositions (in 30+ hrs. for each) with 700,000+ plays and 1900+ followers at NetEase Cloud music and many of them are included in well-known music games.
  My Portfolio: https://soundcloud.com/sunsetray   Since Jun. 2018
- Student Union year-end work review presentation (Director)   Dec. 2017
- **Interests**: Music Composition, Sports (table tennis, badminton, tennis, basketball, billiard etc.), Chemistry