Zhang Di

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Personal Information

- Postgraduate student,Robotics Laboratory, USTC, b. 1998
- Past main research interests : Machine Learning, Human-Robot Interaction
- Interested in: Improving human-machine interaction through natural language processing and other machine learning algorithms. Make technology development benefit more people.

Education Experience

- Master, University of Science and Technology of China, Computer Science and Technology, 2019.9~
- B.S., Hefei University of Technology, Municipal Engineering, 2015.9~2019.7

Internship & Works

- Intern algorithm engineer, Institute of Advanced Technology, University of Science and Technology of China, 2019.9 ~ 2021.1

  Participated in the development of software and hardware systems for several robotics projects

- Research internship,Microsoft Research Asia, 2021.03 ~ 2021.06

  Participated in the *Talking face with upper body gestures* project of Microsoft Research Asia and Multimedia Laboratory (MMLab) of the Chinese University of Hong Kong, and was responsible for survey of past researches and earlier data collection.

- Intern Machine Learning engineer, Ant Group (Alibaba Group), 2021.06 ~ 2021.07

  Internship in the Computational Intelligence department, CTO line, Ant Group. I participated in the development of Ray core, a distributed computing platform, and PyMars, a distributed scientific computing machine learning platform. I was responsible for the survey of existing distributed LightGBM projects and participated in the development of PyMars LightGBM interface, and also the Failover mechanism of Ray Core.

Project Experience

- **USTC Campus Invitational Algorithm Competition**, Champion

  After extracting multi-angle features from tax data and desensitized registration information like Community Discovering on interpersonal graphs and statistical features, we use a time-series convolutional neural networks to identify their risky probabilities. This algorithm has been deployed in Wuhu smart city big data platform after that competition.

- **Logistics robot hotlink optimization**, Cooperation project with EFORT Intelligent Equipment Co., Ltd.

  By planning the hotspot switching strategy for the robot's route through the factory, We can reduce the problems of robots caused by the hotspot switching, such as network delay or dropping.

- **"Jiajia" humanoid robot**, Cooperation project with National Grid

  Human-robot interaction, dialogue system, customer service robot, BERT

  Participated in the design for the emotion recognition module and the collection of a datasets in human-robot conversational interaction. We applying cutting-edge models such as BERT and TF-IDF to develop the emotion recognition algorithm in the dialogue system, so that business establishments can find what affecting their user's experience and service quality and make it better.

- **Alibaba Cloud Digital Intelligence Service Innovation Challenge 2020**, Top 4%

  Liking task scheduling on distributed platforms, to improve the task allocation efficiency of technicians in an ideal service platform, we developed a constrained search optimization algorithm to scheduling tasks and reducing the average waitting time of customer's jobs and average workflow stress of technicians.In addition, when priority preemption occurs, the preempt service must be transferred safely.

- **Giant Panda "humanoid" Robot**, Cooperation Project with Chengdu Giant Panda Breeding Basement

Participated in the design for the front-end interaction module of the robot, allowing the robot to interact with visitors to the site more naturally and intimately, including tour guidance, proactively seek out visitors to initiate interactions, and answer displays etc.

- **Smart Farm Agricultural Robot**, Funded by Anhui Province

  I participated in the development of robotic positioning and navigation over GPS, and part of integration of sensing and gripping systems.

- **A novel robot action planning algorithm based on sequence prediction and reinforcement learning**

  Through processing of robot action history sequences by an attention-based neural network and combined with traditional deep reinforcement learning methods, We implemented a new robot action planning algorithm.I was responsible for the part of research on attention-based action sequence segmentation and prediction models.

- **AI-Earth 2021 El Nino-Southern Oscillation Indicator Prediction Contest**,Top 10%

  This competition gives global weather data for the past years and asks for predicting the ENSO index in the coming year. After constructing higher-order interaction features, we extract the representation vectors of the weather maps through an attention-based convolutional neural network, finally the future ENSO index is predicted by a time-series Seq2Seq approach.

Summer school & MOOCs

- MLSS 2021 TAIPEI (Machine Learning Summer Schools)
- RLChina Reinforcement Learning Summer School, 2021.8
- GreedyAI.com - Advanced Machine learning Camp
- Stanford CS231N - Convolutional Neural Networks for Visual Recognition
- Stanford CS224W - Machine Learning with graphs

Open-Source practices

- In the field of robotic controlment, We have developed reliable and practical toolkits based on ROS and popular real-time communication systems and has deployed our robots in real industrial environments
- Actively participate in technical community activities and help Microsoft Chinese VSCODE community to organize several seminars for beginners
- Active in the open-source community, maintaining several active open source repositories in Github and actively participating in other projects' discussions on PR
- Actively helping peers to solve problems in technical Q&A communities such as Zhihu and StackOverFlow, and writes blogs to share development and algorithm researching experience

Technical Skills

- A good theoretical foundation in deep learning and reinforcement learning, rich experience in algorithm development and machine learning environment management
- Proficiency in Python/C/Golang and other mainstream programming languages
- Proficiency in Pytorch, Tensorflow/Keras, Flask and other mainstream technical frameworks
- Skilled in collecting information,literature management through Zotero or Endnote, and tracking the industry's cutting-edge development by mainstream scholarship toolchains
- Ability to quickly reproduce and master new technologies and algorithms such as Transformer and graph neural networks in the industry

Publications & Patents

- Submitted
  - CHENGUANG L, DI Z, BO Z, et al. Curriculum learning strategies based on service-oriented places such as electric power supply offices[J]. Computer Applications and Software, 2021.
  - CHENGUANG L, DI Z, BO Z, et al. Text empathy prediction based on transfer learning[J]. Journal of Chinese Computer Systems, 2021.
  - CHENGUANG L, DI Z, XIAOPIN C et al. Sentiment analysis dataset for dialogue systems in power business[J]. Journal of Computer Applications, 2021.
  - DI Z. A system of target selection model and actively interaction method for human-robot interaction[P]. 2021
- Preprint
  - DI Z. Juvenile state hypothesis: What we can learn from lottery ticket hypothesis researches?[arXiv]. 2021