Jiyuan SHEN

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EDUCATION

Nanyang Technological University, Singapore   08/2022 - 06/2024

Research Master in Computer Science and Engineering, under Prof. LAM, Kwok Yan   GPA: 4.17/5.0

Shanghai University, Shanghai, China   09/2018 - 06/2022

B.E. in Intelligent Science and Technology   GPA: 3.54/4.0

PUBLICATION

Jiyuan Shen, "Efficient Dataset Distillation through Alignment with Smooth and High-Quality Expert Trajectories", *under review (2023)*

Jiyuan Shen, "Effective Federated Learning Using Ensemble Knowledge Distillation for Intrusion Detection in Heterogeneous Internet-of-Things Networks", *under review (2023)*

Jiyuan Shen, "An efficient training strategy for multi-agent reinforcement learning in card games", *2nd International Conference on Artificial Intelligence, Automation, and High-Performance Computing (AIAHPC 2022)*

PROJECT & RESEARCH EXPERIENCES

Structures of Datasets in Learning; Supervisor: Prof. LAM, Kwok Yan   11/2022 - now

➢ Dataset Distillation: Explore data-efficient machine learning, what makes for a good train set and dataset understanding.

➢ Distil information from real-world datasets into tiny and compact synthetic datasets while maintaining their ability to train a well-performing model. Improve the efficacy, effectiveness and robustness of DD, making it a practical data-efficient technique.

MatchCLIP: Viewing Object-Relation Classification as A Matching Problem   09/2022 - 10/2022

CE7454 Class Project: PSG Classification Challenge; Supervisor: Asst. Prof. Ziwei Liu

➢ Task: Classify three most salient object-relations in the image.

➢ Used CLIP as image feature extraction and applied text prompt engineering. Proposed a Transformer-based model called MatchCLIP to explicitly query the relationship between different objects.

Deepfake Detection   01/2022 - 05/2022

B.Eng. Thesis; Supervisor: Prof. Xing Wu

➢ Task: Distinguish real portraits, virtually generated portraits, and part-edited portraits created through face-swapping.

➢ Chose the Xception model as a baseline and established a deepfake detection model based on spectrum analysis (FAD and LFS).

➢ Applied cross-model graft attention to better fuse the original images and frequency domain information.

➢ Utilized multi-task learning with an auxiliary segmentation head, applying semi-supervised learning for partially lacking masks.

Improved Yolov5 Target Detection Method Based on Label Smoothing   10/2020 - 12/2020

2nd National Prize of First Ocean Target Intelligent Perception International Challenge (Top 3/200); Supervisor: Prof. Xing Wu

➢ Task: Constructed a target detection model for complex marine vessels (including islands and reefs).

➢ Improved YOLOv5 by solving a series of problems: partial overlap of ships, islands and reefs, labeling noise, abundant targets in a single picture, unbalanced target categories, and changes in light and shadow.

The Application of Artificial Intelligence in Daily Life   09/2020 - 11/2020

3rd national prize of Artificial Intelligence Application Competition (Top 9/2100); Supervisor: Prof. Jun Shen

➢ TaskA: Predict disease based on the tabular data. Chose XGBoost as baseline, analyzed tabular dataset, synthesized new strong correlation features, evaluated by Five-folds Cross-validation.

➢ TaskB: Classify the weather based on image data. Selected EfficientNet-b4 as baseline, applied data augment (e.g., fliping, brightness, saturation changes) and random data enhancement. Assisted the neural network with Pseudo-Labeling and Model Ensemble.

WeChat Applet Application Development | Leader   03/2020 - 06/2020

2nd prize of the East China Division of the WeChat Applet Application Development Competition; Supervisor: Prof. Jun Shen

WORK EXPERIENCES

Bosch China Investment Co., Ltd. | Visual Algorithm Intern CR/RIX-AP   01/2022 - 07/2022

➢ Explored and developed the Human Action Recognition project (Know Your Motion), including document writing, cameras testing, algorithm comparison, model training, using Flask to deploy and apply the project's patent.

SKILLS & QUALIFICATIONS

Programming: C/C++, Python, Pytorch, paddlepaddle, sql, Matlab, js, html&css

Language: Mandarin (native), English (TOEFL 100, GRE 319+3.5)