Yizhuo Rao (饶逸卓)

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EDUCATION

Academy of Military Science (AMS) Beijing
M.S. in Computer Science Expected June 2022
Research interests include Knowledge Graph Reasoning, Inconsistency Detection in Graph.

National University of Defense Technology (NUDT) Changsha, Hunan
Coursework in Computer Science. Sep. 2019 – Aug. 2020
Awarded 2019 – 2020 Excellent Postgraduate Student of the College of Computer Science, NUDT (top 15%);
GPA B+/A (top 10%)
Summer School in Artificial Intelligence and Big Data. Summer 2019
Awarded Excellent Student of 2019 Artificial Intelligence and Big Data Summer School (top 20%)

Changsha University of Science & Technology (CSUST) Changsha, Hunan
B.Eng. in Electrical Engineering; Minors in Applied Mathematics. June 2019
Award for Outstanding Graduate of CSUST (top 10%); GPA 3.37/4.0 (top 15%)

RESEARCH EXPERERIENCE

Academy of Military Science Beijing
Deep Data Mining for Bank Account Fund Supervision System Sep. 2020 - Present

- Modeling the bank account funds supervision data as a heterogeneous information network (HIN)
- Design GNN classifier and train to screen out the user nodes with abnormal transactions in HIN

Academy of Military Science, National University of Defense Technology Beijing
Research on Data Quality Control Method Based on Graph Data May 2020 - Present

- Parallel mining semantic constraints (graph dependencies) in knowledge graph (KG) by FP-Growth-like method
- Detect inconsistency of KG by using these constraints
- Combine ML classifier with semantic constraint mining method to predict links and mine dependencies with probably missing links in KG

National University of Defense Technology Changsha, Hunan
Ship Target Recognition and Direction Detection Mar. 2020 – June 2020

- Designed a method to detect ship target and its direction in remote sensing images based on YOLO
- Train a pre-classification network for ship detection of different sizes, to resolve the size differences between different ship types
- Predict the GSD of original remote sensing images by identifying ground objects, and transforming the images to a unified scale space to solve the multi-scale problem in remote sensing image

National University of Defense Technology Changsha, Hunan

UAV Path Planning in Uncertain Environment Feb. 2020 – Feb. 2021

- Propose an improved ant colony algorithm to solve the path planning problem of UAV in 3-D space with uncertainty
- Combine environmental uncertainties and path planning objectives into one goal by using reliability function
- Improve ant colony heuristic to make it suitable for ant path search in uncertain environment

OTHER RESEARCH EXPERERIENCE

- *Caltech256 Image Dataset Classification Experiment Based on PyTorch* (Python/ML Course Experiment) 2019
- *SimpleDB Database Management System Implementation* (JAVA/DBMS Course Experiment) 2019
- *Realization of Click Customized Protocol Software Router Forwarding System* (C++/ Computer Network Experiment) 2019
- *Design of Distributed File Management System Based on Python* (Python/ Distributed System Course Experiment) 2019
- *Fault Diagnosis Model of Bearing Vibration Data Based on KERAS* (Python/DC Data Competition) 2019
- *Troubleshooting of Wind Turbine Blades Through UAV and Micro-Robotic System* (MATLAB/ Undergraduate Graduation Design) 2019
- *Design of Optical Imaging System Through Translucent Medium* (MATLAB/ 2018 Photoelectric Design Competition) 2018
- *Fault Detection and Classification of Mechanical Transmission Mechanism Based on Wavelet Decomposition and Neural Network* (MATLAB, C++/ Undergraduate Research Project) 2018

PUBLICATIONS

Y. Rao, "Weak-GNN：A Weakly-Supervised GNN for Financial Fraud Detection". (In preparation)

Y. Rao, J. Cao, Z. Zeng, C. Duan and X. Wei, "An Improved Ant Colony Algorithm for Unmanned Aerial Vehicle (UAV) Path Planning in Uncertain Environment," 2021 International Joint Conference On Neural Networks (IJCNN), China, 2021. (Accepted, CCF C）

Y. Rao, C. Duan and X. Wei, "Review on Deep Adversarial Learning of Entity Resolution for Cross-Modal Data," The 2020 2nd International Conference on Information Technology and Computer Application (ICTA), Guangzhou, China, 2020 (Published, Oral, EI)

Y. Rao, B. J. Xiang, B. Huang and S. Mao, "Wind Turbine Blade Inspection Based on Unmanned Aerial Vehicle (UAV) Visual Systems," 2019 IEEE 3rd Conference on Energy Internet and Energy System Integration (EI2), Changsha, China, 2019, pp. 708-713. (Published, Oral, EI)

B. Huang, B. J. Xiang and **Y. Rao**, "Non-Destructive Detecting Method for Wind Turbine Blade by Using Robots," 2019 IEEE 3rd Conference on Energy Internet and Energy System Integration (EI2), Changsha, China, 2019, pp. 2280-2285. (Published, Poster, EI)

Y. Rao, et al. “Wind Turbine Semi-Physical Simulation Platform Condition Monitoring Software”, 2018SR695161, 2018. (Published, Software Copyright)

SKILLS

Language: English CET-6.

Programming language: Proficient in Python and MATLAB; Familiar with C++.

SELECTED AWARDS

The second prize of "Huawei Cup" National Post-graduate Mathematical Contest in Modeling 2019

The second prize of "Hamamatsu Cup" National College Students Photoelectric Design Competition 2018

The third prize of "Electrician Cup" National College Students Mathematical Contest in Modeling 2018

The first prize of "Huazhong Cup" Mathematical Modeling Invitational Competition in Central China 2018

The second prize of Hunan province of "Higher Education Society Cup" Contemporary Undergraduate Mathematical Contest in Modeling 2018

The second prize of "Higher Education Society Cup" Contemporary Undergraduate Mathematical Contest in Modeling 2017

POSTGRADUATE STUDENT ACADEMIC RECORD

No	Course	Score
1	Machine Learning	A
2	Group Theory	A
3	Presentation of Academic Papers in English	A
4	Itelligent Games	B+
5	Computer Network Protocol Experiment	B+
6	Database Management System	B+
7	English Translation for Science and Technology	B+
8	Xi Jinping Thought on Socialism with Chinese Characteristics for A New Era	B+
9	Matrix Analysis	B
10	Advanced Data Mining	B
11	Pattern Recognition	B
12	Distributed System	B
13	Introduction to Dialectics of Nature	B
14	Principles of Artificial Intelligence	C