Personal Information

Name: AN Jingmin   Birth Date: 1997.01.25

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Educational Background

2016.09-2020.06 Chongqing Technology and Business University

Degree: Bachelor of Engineering   Major: Internet of Things Engineering

GPA: 3.6 / 5.0 — Overall Ranking: 3 / 44   **CET6**: 533

2021.09-now Institute of Zoology, Chinese Academy of Sciences & Northeast Agricultural University

Degree: Master of Science   Major: Biology and Medicine

GPA: 3.9 / 4.3   **IELTS**: 6.5 (6.0)

Scholarships: Comprehensive First-class Scholarship, Xiaoliyu First-class Scholarship, Science and Technology Innovation Scholarship

Research Experience

2019.01-2019.02   Field: Mathematical Modeling and Data Analysis

Topic: A solution to the dragon's growth status and practical needs (2019 MCM)

Achievements: Analysed the correlation of weight, food intake and other growth indicators of the three dragons in *Game of Thrones* and speculated on the possibility of increasing them in reality

- Applied my painting skills to research for the first time and drew a sketch of a dragon, marking heat distribution and depicting the use of their flames
- Used Grey Relation Analysis and Regression Analysis Prediction Method together to analyse the given dataset of dragons' growth indicators and make predictions
- Integrated biology, geography and reasonable imagination to resolve the problem

2019.04-2019.07   Field: Data Mining and Natural Language Processing

Topic: Fine-grained evaluation of film quality contained in numerous film reviews

Achievements: Proposed one efficient text pattern matching algorithm and won the first prize in the 2019 National Computer Design Competition for College Students

Academic Thesis: An, J.M. and Du, Y. A Multi-dimensional Evaluation of Film Quality Method Based on Text Mining [J]. *Engineering Applications of Artificial Intelligence.* **2022, Under review.**

- Employed Word2vec to generate synonyms, and then located them in the film reviews database with regular expression
- Deeply realised the importance of teamwork and perseverance in the face of difficulties
- Accomplished all the core works of this research project, including ideas proposal, data collection, model training and algorithm compilation
- Greatly cultivated creative thinking and confidence while delving deeper into new algorithms

2020.02-2020.05   Field: Reinforcement Learning and Image Processing

Topic: Simulation of human-machine interaction and exploration of AI behaviour pattern

Achievements: Deeply studied the AI decision-making mechanism of four ghosts within the game Pac-Man, and provided multiple pathfinding schemes for the agent

Academic Thesis: An, J.M. and Du, Y. Training Agent to Play Pac-Man under Authentic Environment Based on Image Recognition [C]. *2022 the 5th International Conference on Pattern Recognition and Artificial Intelligence (PRAI 2022).*

- Applied PyAutoGUI to simulate the player's operation and gave feedback on current game scores

to agent and console with image recognition at millisecond level

- Used visual tracking to give the real-time route of the four ghosts to accelerate the agent's learning progress
- Strengthened psychological quality and developed the capability of discovering, analysing and resolving problems

2021.06-2021.09   Field: Image Classification and Feature Fusion

Topic: Depicting the outlines of insects to recognise specific pests.

Achievements: Better extracting the features of insects and reducing background noises in images.

Academic Thesis: An, J.M. et al. Insect Recognition based on Complementary Expression of Multiple-View Features [J]. *Ecological Informatics.* **2022. Major revision.**

- Based on Grad-CAM to extract the features of insects according to the highlighted regions
- Fused three SOTA models to better depict the outline of insects by an elaborated fusion model
- Our fusion model outperformed baseline methods and proved robustness to data augmentation

2021.10-2022.03   Field: Multi-task Learning and Protein Language Models

Topic: Encoding protein structural and evolutionary information through analysis of sequences

Achievements: A multi-task architecture is employed to enable language models collectively decipher protein properties, and the encoded knowledge can well transfer to fine-grained structure- or evolution-related tasks in TAPE

Academic Thesis: An, J.M. and Weng X.G. Collectively Encoding Protein Properties Can Enrich Protein Language Models [J]. *BMC Bioinformatics.* **2022, Minor revision.**

- Proposed a multi-task architecture specifically designed for protein sequences processing
- Delicately improved the structure of a sophisticated natural language model Bert
- Proposed a delicate way to introduce strong protein knowledge through sequence analysis

2022.02-now Field: Machine Learning and Data Analysis (Under Study)

Topic: Establishing a quantified machine learning model to evaluate multiple parameters in organ fabrication

Target: Propose an evaluation model for organ simulation based on previous research

Academic Thesis: An, J.M. et al. A XGBoost-based Functional Index Prediction Model of Polymorphic Liver Tissue. TBA.

- Accurately filter appropriate parameters that impact specific organ functions in different organ fabrication methods
- Predict particular organ functional index using machine learning methods
- Establish a multi-organ fabrication database involving evaluative and predictive models

Honours & Awards

- First prize in the 2019 National Computer Design Competition for College Students
- First prize in the 2019 Youth Cup National Mathematical Modeling Contest for College Students
- Third prize in the 2017 & 2018 National English Competition for College Students
- Excellent Members of the League Youth in CTBU
- Outstanding Graduate of Chongqing Municipality
- Outstanding Merit Student of Chongqing Municipality
- Outstanding instructor of the 18th national science-popularising public activity held by the Chinese Academy of Sciences