**Yuan Liu**

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**EDUCATION**

**Northeastern University Shenyang, China**

**Master of Engineering of in Electronic Information (Artificial Intelligence) 09/2021-07/2024**

* Core Courses: Image Processing Analysis and Recognition, Principles of Machine Vision Detection, Fundamentals of Deep Learning, Theory and Methods of Multiple Indicator Decision Making, Systems Engineering and Decision Analysis, Principles and Applications of Machine Games

**Northeastern University Shenyang, China**

**Bachelor of Engineering of in Automation 09/2016-07/2020**

* Core Courses: Principles of Automatic Control, Computer Control, Modern Control Theory, Circuit Principles, Microcomputer Principles, C Language Programming, Control System Simulation and CAD, MATLAB Language and Applications, Digital Signal Processing, Numerical Analysis, Operations Research

**PROJECTS**

**Research Intern, Deep Learning & Advanced Decision-Making Lab at Northeastern University**

**Project**: Iterative algorithm designing and analysis on non-zero-sum imperfect-information Games

* Aimed at researching on the regret-based method in two person game decision problems with non-zero sum returns and non-perfect information
* Studied the numerical characteristics of the cumulative regret of the existing Counterfactual Regret algorithm in iterations
* Proposed a new regret iteration rule to address the numerical characteristics of returns in non-zero sum decision problems
* Obtained an iterative algorithm suitable for non-zero sum two person extended game decision-making problems
* (Publication) **Yuan Liu**, Jiao Wang\*, Longyue Fu.Regret-Grow CFR: A Novel Iterative Algorithm to Solve General-Sum Imperfect Information Games. *Artificial Intelligence (under review)*.
* (Publication) Jiao Wang\*, Longyue Fu, Minghao Liu, **Yuan Liu**. CFDR: A Novel Strategy Update Algorithm for Imperfect-Information Non-Zero-Sum Synchronous Games. *Information Sciences (in submission)*.

**Course Project, College of Information Science and Engineering at Northeastern University**

**Project:** Joint Estimation of 3D Depth Information for Autonomous Driving Based on Yolo V5 and PSM-Net

* Determined the objects that need attention in the field of view through Yolo V5
* Estimated object distance through PSM-Net
* Realized the capture of small objects and the restoration of depth and distance information

**Undergraduate Thesis, College of Information Science and Engineering at Northeastern University**

**Project:** Classification of Depression Patients Based on EEG Information Using VGG

* Carried out Harmonic analysis of EEG level information
* Selected three more frequency bands and synthesized the energy distribution images of each frequency band into multi-channel images
* Realized binary classification of depression patients in different categories (major depression or bipolar depression) through VGG network

**Contest Participant, National College Student Electronic Design Competition**

**Project**: High-precision frequency meter and oscillography system developing

* Received signals on the STM32 microcontroller and perform harmonic decomposition
* Modelled the leakage spectrum of rectangular windows directly
* Obtained a harmonic analysis and oscillographic program for stable phase triggering with frequency and amplitude errors<0.5%
* Solved the stable triggering problem of signals composed only of multiple harmonic components (i.e. signals without 1 harmonic component)

**Contest Participant, The Mathematical Contest in Modeling**

* Used genetic algorithm to solve the optimization problem of disaster relief material allocation in the case of limited drone range and load capacity

**SKILLS**

* Proficient in Python, C++
* Mastered Deep learning mainstream frameworks TensorFlow and PyTorch
* Grasped the basic operations of Unix and Linux