YUAN MA/马远

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DEEP LEARNING RESEARCHER & CLASSICAL PIANIST

Deep Learning Researcher with a specialization in Vision Transformer and Detection Transformers, complemented by a robust foundation in mathematic and signal processing. Beyond my technical expertise, I'm also a passionate pianist who favoring Chopin and Liszt.

EDUCATION

Illinois Institute of Technology; Chicago, IL — 08/2022-Present

M.S, Electrical Engineering, GPA: 3.84/4.00

Currently working as research assistant in MMCOM under supervision of Dr.Joohee Kim

Relevant coursework: Image Processing and Computer Vision, Statistic Signal Processing, Secure Machine Learning, Random Signal processing; Musicianship, Applied Piano(at Vandercook College of Music)

Suzhou University of Science and Technology; Suzhou, China — 09/2017 - 06/2021

B.S , Electrical Engineering

National Exam for Graduate Candidates: 117/150 in Math (57.1 average score)

Relevant coursework: Digital Signal Processing, Signal and System, Calculus, Statistic, Image Processing

RESEARCH PROJECTS

Detection Transformer with Deformer Attention/Multi-scale Structure — 03/2023-present

- Designed a efficient deformable attention mechanism for DETR(Detection Transformer) which is inspired by Vision Transformer with Deformable Attention, having better performance on large object.

- Proposed a efficient method for multi-scale structure, achieving optimal performance with fewer parameters.

- Our proposed model accelerating convergence of the model while achieve competitive accuracy with state-of-art model.

Adversarial Robustness towards Various Vision Transformer—04/2023-05/2023

- Did a comprehensive investigation regarding to Vision Transformer, then categorized existing models into distinct groups: Vision Transformers with multi-scale structures, Vision Transformers with locality properties, and Vision Transformers with efficient attention mechanisms.

- Conducted a series of adversarial attacks/adversarial training on the various categories of vision transformers.

- Concluded that Vision Transformers with strong generality and the capacity to grasp high-complexity contextual information are crucial for enhancing model robustness.

[A Wearable Ultrasonic Sport Injury Testing Equipment](#) —09/2021-11/2021

- Conducted market research on sports injuries, delving into its market size and potential prospects.

- Analyzed the competitive landscape and identified our product's superior capability in monitoring deep tissues and long-term injuries.

- Designed the holistic architecture of the wearable ultrasonic sports injury testing equipment, detailing its functional modules. This included the use of a stretchable phase-array and the incorporation of a deep learning model.

COMPETITION

An Unmanned Aerial Vehicle — 10/2018 - 05/2019

Participated in developing an UAV which could achieve autonomous flighting and stimulate to throw a bomb. Responsible for the airframe assembly and welding, and motor assembly, as well as the debugging of flight control and GPS module, and the motor. Awarded the third prize in the College Student Robotics Competition in Jiangsu Province, China.

PIANO REPERTOIRE

Liszt:
    Sonata in b minor
    La Campanella
Chopin:
    Etude, Op10, No.1; Op25, No.10, No11, No12
    Andante spianato et grande polonaise brillante, Op22
    Ballade.No1, Op23; No2, Op47
    Op60, Barcarolle

SKILLS/INTERESTS

Programming: python, C/C++, python

Reading: I enjoy reading at a leisure afternoon with a cup of black sugar milk tea

Piano