Edwin Arkel Rios 冉恩達
edwinarkel.rios@gmail.com https://arkel23.github.io/

Education

National Yang Ming Chiao Tung University Hsinchu, Taiwan
PhD in Electrical Engineering and Computer Science, Cumulative GPA: 4.24/4.30 *July 2019 - Nov. 2024*

National Cheng Kung University Tainan, Taiwan
Bachelor of Science in Energy Engineering, Cumulative GPA: 3.76/4.30 *Sept. 2015 - June 2019*

Experience

NYCU PCS Lab & NTHU MIS Lab *July 2019 - Nov. 2024*

- Proposed several metrics to enable the performance prediction of a fine-grained visual recognition system based on our large-scale study designed to quantify the impact of the different components of such a system in terms of classification accuracy and training and inference computational costs.
- Proposed an efficient method for fine-grained image recognition that reduced classification error by 10.23% across 10 datasets spanning a wide variety of tasks, at a significantly lower cost in terms of memory requirements while attaining a higher inference throughput.
- Supervised multiple students at the masters and undergraduate level on a wide variety of topics including the design of a deep-learning enhanced heart rate monitoring system, evaluation of a diffusion model for consistent image generation, and the design of software acceleration techniques such as knowledge distillation, parameter-efficient transfer learning, and input pruning for fine-grained object classification. The latter received an excellence award in their undergraduate thesis competition at National Tsing Hua University Department of Computer Science.
- Designed a challenging dataset for anime character recognition with almost 500K images and more than 3K anime character classes and proposed a Vision Transformer-based method that improved relative classification accuracy by up to 28%.
- Conducted a study on the design of a remote photoplethysmography system. Proposed a simple metric to evaluate the accuracy vs cost trade-off that allows us to optimize our camera-based bio-signal monitoring platform to reduce computational costs by up to 47%.

Skills

Languages: Spanish (native), English (fluent), Mandarin Chinese (proficient)

Software and programming: Python (NumPy, matplotlib, pandas, sci-kit learn, TensorFlow, Keras, PyTorch), Linux, Git, Bash, MATLAB, C++, OpenCV, SolidWorks, LaTeX

Achievements

2020 Academic Achievement Award during R.O.C. Academic Semester 108-1 and 108-2 *NYCU, Hsinchu*

2018 Outstanding Student during R.O.C. Academic Year 105 and 106 *NCKU, Tainan*

Publications

- **Global-Local Similarity for Efficient Fine-Grained Image Recognition with Vision Transformers**. Under review.
- **Anime Character Recognition using Intermediate Features Aggregation**. *ISCAS 2022*.
- **IFACD: Intermediate Features Augmented Contrastive Distillation**. *ICLR CSS Workshop 2022*.
- **DLPrPPG: Development and Design of Deep Learning Platform for Remote Photoplethysmography**. *ISCAS 2022*.
- **Parametric Study of Performance of Remote Photoplethysmography System**. *ISCAS 2021*.
- **DAF:RE A Challenging, Crowd-Sourced, Large-Scale, Long-Tailed Dataset for Anime Character Recognition**. Preprint: https://arxiv.org/abs/2101.08674