KUEI-CHUN KAO

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EDUCATION

NATIONAL YANG-MING -- CHIAO-TUNG UNIVERSITY (NYCU) *Hsinchu, Taiwan*
B.S. in Computer Science, Overall GPA: 3.99/4.3 (3.83/4.0) *Sept. 2018 – Dec. 2022*
Honors: Scholarship for Academic Excellence performance 2 times (1% of computer science department per semester); NYCU GPE programming exam Ranked 1% (out of 200 students of NYCU); Best People's Choice Award - Poster in Taiwan Association of Computer Human Interaction (TAICHI'21)
Teaching Experience: *Teaching Assistant of Introduce to Natural Language Preprocessing (2022 Spring)*

WORK EXPERIENCE

Appier *Taipei, Taiwan*
Machine Learning Scientist and Data Analyst Intern (AI Bidding Team) *Sept. 2021 – June 2022*

- Improved User Lookalike models to produce the distinguished user score for each unique user id based on existing client site activities and deployed models online by using CI/CD pipelines, enhancing **20%** improvement on AUROC compared to baseline.
- Extracted user behavior patterns from **1000K+** conversion funnel data and analyzed the Click-Through Rate of different campaigns using PySpark, SQL and Pandas, resulting in **120%** revenue growth within 3 months.
- Decreased the uncertainty for outlier and lose bidding data in bidding models, saving up **30%** of the trouble shooting time.
- Surveyed and used calibration and auto-tuning approaches on our bidding models, increasing model stability on unseen data.
- Integrated different data pipelines in MLOps systems, causing **40%** of pipeline storage reduction within 1 month.

Umbo CV *Taipei, Taiwan*
AI Engineer Intern *Aug. 2021 – Sept. 2021*

- Investigated research and employed model compression techniques such as structural pruning and quantization to person re-identification model on real-time streaming cameras, speeding up **20%** of FPS and **3x times** fewer FLOPs.

Cinnamon AI *Taipei, Taiwan*
AI Bootcamp Summer Intern *July 2021 – Aug. 2021*

- Cooperated with 3 interns to work on an AI-based trip advisor and constructed an MLOps system to enable deep learning models, reducing **50%** of ML engineers' deployment time.
- Implemented a Seq2Seq-based model to recommend tourist attractions based on personal interest and arrange suitable trip routes deployed on Gradio to make a fast user interface.

RESEARCH EXPERIENCE

Algebra Word Problem Solver *(Institute of Information Science Academia Sinica, Taipei, Taiwan)* *July 2021 – Present*

- Utilized deep learning methods and conducted experiments to Knowledge-Guided Algebra Word Problem Solver, achieving better equation accuracy and problem accuracy on English algebraic datasets.
- Designed and built a two-stage neural model, which adopts the concepts of the solving strategies by humans, generating multiple expression trees explicitly and representing the reasonable solving process behind the model's solution equation.

Predicting Smartphone Users' Kill Time Moments *(NYCU, Hsinchu, Taiwan)* *July 2020 – Present*

- Leveraged deep learning fusion model to investigate users' kill time behavior based on **1000K+** mobile phone-sensor and screenshot data, which is collected by our developed Android App.
- Employed a two-stage clustering approach to separate users into four groups according to the patterns of their phone-usage behaviors, and then built a fusion model for each group, yielding overall strong performance on AUROC.

Model Compression For Object Detection *(NYCU, Hsinchu, Taiwan)* *July 2020 – June 2021*

- Applied model compression using structural pruning and knowledge distillation on YOLOv4. The developed models not only fit for embedded systems (Ex: Jetson TX2) but also achieve higher FPS and mAP at the same time on the multi-spectral infrared dataset.
- Winner of the award: "2021 ACM ICMR Embedded Deep Learning Object Detection Model Compression Competition for Traffic in Asian Countries" -- **Final Round**.

PUBLICATIONS

- **First Author** of: "Solving Algebra Word Problem using human logic" (ACL'23, expect submitted).
- **Co-Author** of: "Are You Killing Time? Predicting Smartphone Users' Time-killing Moments via Fusion of Smartphone Sensor Data and Screenshots" submitted in Proceedings of the 2023 ACM CHI Conference on Human Factors in Computing Systems (CHI'23, minor revision & resubmit)
- **First Author** of: "Killing-Time Detection from Smartphone Screenshots" published in Adjunct Proceedings of the 2021 ACM International Conference on Pervasive and Ubiquitous Computing (UbiComp'21).

SKILLS

- **Programming:** C/C++, Python (Package: PyTorch, Tensorflow, PySpark), SQL, Shell Script, HTML, CSS, MATLAB, Verilog
- **DevOps & Tools:** GCP, Docker, Kubernetes, Git, Jenkins, CI/CD, Airflow, System and Network Administration, Grafana, LaTeX