Cheng-An Hsieh

(+886) 933-923-671 | chenganhsieh | chenganhsieh1997@gmail.com | chenganhsieh

RESEARCH INTERESTS

Multimodal Learning, Recommendation System, Human Computer Interaction(HCI)

EDUCATION

National Taiwan University (NTU)   Taipei, Taiwan

Master of Science   Sept. 2020 - July 2022
- Overall GPA: 4.21/4.30 (4.00/4.00)
- Machine Learning Courses: Computer Vision, Natural Language Processing, Applied Deep Learning
- HCI Courses: Game Design, Game for Life: Reading and Re-designing Games for a Purpose

Bachelor of Science in Engineering   Sept. 2015 - June 2020
- Overall GPA: 3.84/4.30 (3.76/4.00), Major GPA: 3.93/4.30
- Machine Learning Courses: Machine Learning, Digital Image Processing, Web Retrieval and Mining
- HCI Courses: Human-computer Interaction with Mobile Phones and Services, Introduction to Human-Computer Interaction and Design

RESEARCH EXPERIENCE

Information Retrieval Lab, NTU   Taipei, Taiwan

Graduate Researcher, Supervised by Prof. PJ. Cheng   Sept. 2020 - July 2022

Multimodal Retrieval
- Utilized Wikipedia to generate three types of text-based queries with different modality information.
- Filtered and analyzed the effectiveness of our dataset based on POS tagging, LCS, and human labeling.
- Provided a multimodal training paradigm with contrastive loss and achieved 50.7 MRR@10 for mixed query.

Mobile & HCI Lab, NTU   Taipei, Taiwan

Undergraduate Researcher, Supervised by Prof. Mike Y. Chen   July 2018 - Feb. 2020

Fitness Gamification [MobileHCI '20]
- Utilized Unity to create a prototype game that is inspired by FlappyBird.
- Devised and implemented a fitness system with wearable sensors to control exergames.
- Applied for dynamic tempo variation to improve both the entertainment level 5.96 out of 10 and training tempo accuracy from 64% to 74%.

Miniature Haptics: Experiencing Haptic Feedback through Hand-based and Embodied Avatars
- Developed the system to control the movement of the motion platform for haptic experiences.

Impact Force Feedback using Wearable, Miniature Air-propulsion Jets
- Designed an IronMan game with Unity to operate our air-propulsion system for force feedback of VR headsets.

INTERN EXPERIENCE

Verizon Media (Yahoo)   Taipei, Taiwan

Summer Intern, Search and Ads Team   July 2021 - Aug. 2021
- Implemented BERT model to detect users' intentions and achieved higher F1-Score than the previous system.
- Reduced search latency and accelerated the model inference by ONNX Runtime.

Computer system and Communication Lab, Academia Sinica   Taipei, Taiwan

Summer Intern, Supervised by Prof. Jan-Ming Ho   July 2019 - Aug. 2019
- Collected 20 users' electrocardiogram (ECG) signals with Acer smartwatch, which complied with IRB regulations.
- Implemented auto-encoder as a noise filter and applied end-to-end RNN model for ECG Authentication.

TEACHING EXPERIENCE

***Lecturer*, Introduction of Machine Learning**   Tainan | Taichung , Taiwan

Invited by Dr. Ellis Chang   Jan. 2022 - Dec. 2022
- Assisted 60+ high school students at National Tainan First Senior High School and Taichung Municipal Taichung First Senior High School in realizing the fundamental knowledge of machine learning.
- Explored the machine learning application from basic regression, classification, computer vision, and nature language processing.

PUBLICATIONS

- **Cheng-An Hsieh**[*], Cheng-Ping Hsieh[*], and Pu-Jen Cheng, "Mr. Right: Multimodal Retrieval on Representation of ImaGe witH Text", published in the arXiv and will be submitted to *the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2023)* 📄
- Sih-Pin Lai, **Cheng-An Hsieh**, Yu-Hsin Lin, Teepob Harutaipree, Shih-Chin Lin, Yi-Hao Peng, Lung-Pan Cheng, and Mike Y. Chen, "StrengthGaming: Enabling Dynamic Repetition Tempo in Strength Training-based Exergame Design", published in the *22nd International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '20)* 📄

HONORS & AWARDS

Image Recognition Competition 4th Place out of 468 Teams
Hosted by E.SUN Commercial BANK, Ltd.   June 2021
- Designed a neural model using EfficientNet that classified images of Chinese handwriting with 98.6% accuracy.

Medical Decision Prediction Competition 4th Place out of 368 Teams
Hosted by AI CUP   June 2021
- Developed a framework with the MacBERT model for disease risk assessment and question answering.

TSMC x Microsoft Careerhack 1st Place out of 1000+ Teams
Hosted by Microsoft and Taiwan Semiconductor Manufacturing Co., Ltd.   Jan. 2021
- Designed a COVID-19 chatbot and provided medical information with text-style transfer techniques.

Information retrieval for news position 2nd Place out of 599 Teams
Hosted by AI CUP   Jan. 2020
- Attempted conventional and neural model methods and achieved 40% accuracy with the TF-IDF method.

SELECTED PROJECTS

LARP game with AR technology at National Concert Hall 🔗 G   Feb. 2022 - July 2022
- Wrote a story based on previous student activism and awakened the public to the importance of history.
- Developed the cross-platform AR App using the Vuforia engine and my custom model.

Unity Game - Undercurrent 🔗   Sept. 2020 - Jan. 2021
- Designed a survival and cooperative game with four teammates.
- Entered the final round of the competition held by the National Taiwan University of Science and Technology.

BoardGame Platform App 🔗 G   Feb. 2019 - Sept. 2019
- Created a board game platform for people to share information and check out the rules of boardgames.
- Surveyed users' preferences for different interface designs and implemented the most famous UI in the app.

Weight Training Equipment Reservation System 🔗   Feb. 2019 - June 2019
- Developed an equipment reservation system to improve the fitness experience.
- Designed a queue algorithm to reduce the waiting time.

EXTRACURRICULAR ACTIVITY

Actor, Be Found - NTU Musical 2018 Annual Performance 📘   Feb. 2018 - June 2018
- Acted as the lead singer of Take me or Leave me and attracted more than 150+ students to watch the musical.

Actor, Outsider - NTU Art Festival 24th 📘   Feb. 2018 - May 2018
- Acted as a bookworm and satirized people who can only read.
- Hosted in the school's largest restaurant and attracted more than 100+ students.

Sports President, NTU Faculty of Liberal Arts Student Union   Sept. 2018 - June 2019
- Organized multi-sport competitions including basketball, volleyball, badminton, and baseball.
- Formed the League of Liberal Arts to participate in the intercollegiate championship.

SKILLS

Natural Languages	Chinese (Mandarin), English
Programming Languages	Python, JavaScript, HTML/CSS, C#, C/C++, Shell, Matlab, Dart, Kotlin, LaTeX
Deep Learning Libraries	PyTorch, Tensorflow
Software Knowledge	Unity, Android Studio, Flutter, Adobe XD, WordPress, Git, ONNX, MongoDB, Firebase