YI-CHENG HSIAO

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EDUCATION

- **National Tsing Hua University** — Hsinchu, Taiwan
  Bachelor of Computer Science — *Sep 2017 - Jun 2021*

COMPETITION EXPERIENCE

- **ISC 2021 Student Cluster Competition** — Frankfurt, Germany
  Contestant — *Jun 2021*
  - Co-organized by the HPC-AI Advisory Council and ISC Group.
  - Accelerated GPAW, an open source program package for quantum-mechanical atomistic simulations.
  - 50X speedup of GPAW by utilizing MPI and OpenMP and scaling on Supercomputer from 1 to 384 CPUs.
- **ASC 20-21 Student Supercomputer Challenge** — Shenzhen, China
  Student Coach — *Jan 2021*
  - The world's largest supercomputing hackathon.
  - Trained the NLP model on multiple GPUs, tuned the performance and found valid datasets to make the accuracy higher.
  - Led a 5 students team to participate in the competition and designed skills training to finish 5 HPC and AI tasks.
- **2020 APAC HPC-AI Competition** — Singapore
  Contestant — *Oct 2020*
  - Co-organized by the HPC-AI Advisory Council and Singapore National Supercomputer Center.
  - Accelerated NEMO (Nucleus for European Modeling of the Ocean) by utilizing MPI and OpenMP.
  - 400X speedup from a single node (24 CPUs per node) to 32 nodes (15 CPUs per node).

WORK EXPERIENCE

- **National Center for High-Performance Computing** — Hsinchu, Taiwan
  Research Assistant — *Jul 2021 - Current*
  - **Optimizing the science model with Containerized technologies**
    - Build NAMD, GROMACS, OPENMM and OPENMOLCAS by Singularity ***HPC*** container on Taiwania2 Supercomputer.
    - Helped Taiwan researchers to use the science models in containerized and high performance computing environments.
  - **Biology software Installation**
    - Supported building National Biomedical Digital Data and Analysis Computing Cloud Service Platform.
    - Installed ***96 biology software*** on Taiwania3 Supercomputer for Taiwan's biology researchers and students doing research.
- **Academia Sinica** — Taipei, Taiwan
  Research Intern - Prof. Wang, Chien-Min — *Jul 2022 - Aug 2022*
  - **Brain and Computer Interface Research**
    - Designed more high-level models for the HAT representations and MADRL environments.
    - Neoro RL can adopt more precise and accurate ***BCI*** context models to build a accountable human-autonomy system.
    - Published the paper, ***Bootstrapping Human-Autonomy Collaborations by using Brain-Computer Interface of SSVEP for Multi-Agent Deep Reinforcement Learning***
- **KKBOX Subsidiary - KKStream** — Taipei, Taiwan
  Assistant Engineer — *Jun 2021 - Nov 2021*
  - **TELASA video streaming APP**
    - KKBOX is a music streaming service developed in 2005 by Asia's leading media technologies service consultant.
    - Serviced ***1 million users*** in Japan and provided high-quality video, movies, and series streaming.
    - Developed new features and quality assurance multimedia applications to ensure the quality of users' experience.
- **Industrial Technology Research Institute** — Hsinchu, Taiwan
  Software Developer Engineer Intern — *Apr 2021 - Oct 2021*
  - **AIoT System for Economic Cycle**
    - Build an ***AIoT*** system that were installed on a trucks and classify the types of rocks.
    - Trained a AI model to detect and deploy a web to show the result and deploy on ***Jetson nano*** to gain high performance.

SOFTWARE PROJECTS

- **Attack on Lazy Virtual Reality Game**
  Project Manager, Engineer, Designer *Jun 2022*
  - Used ***Unity*** to develop a ***VR*** game that lets people fitness with different movements at home during covid pandemic.
  - Combined with the anime, Attack on Titan, and VR. People can do different movements to exercise in virtual world.
- **Computer Special Effects on Physical Based Simulation**
  Student Project *May 2022*
  - Used ***C++*** and ***OpenGL*** to implement basic physical based simulation and acquire knowledge of computer animation.
  - Implement the ***collision of Particle System***, ***Forward Kinematics***, ***Inverse Kinematics*** algorithms.
- **Build an end-to-end Automatic Surveillance AIoT System On a Cloud-edge Integrated Platform**
  Engineer *Jan 2021*
  - Build an ***AIoT*** system that could deploy AI models automatically and continuously from cloud to edge.
  - After cloud node continuously receives new data and retrains model to deploy, which forms a Cloud-edge ***ML*** Pipeline.
  - By ***Kubernetes*** cloud orchestration and ***Docker*** virtual environment, edge devices could scale without system restrictions.
- **TSMC Microsoft Career Hackathon**
  Team leader *Feb 2021*
  - Developed a smart ***AIoT*** helmet that was equipped with a micro camera and deployed a ***AI*** model, tiny Yolo.
  - To detect dangerous things like stairs, nails, cars, etc. It protects laborers from danger and builds a smart factory.

Skills Summary

- **Languages**
  C, C++, Python, OpenGL, GLSL Shading Language, Unix scripting, MPI, Openmpi, CUDA
- **Tools and Fields**
  Kubernetes, Docker, Singularity, Computer Graphics, Virtual Reality, High-Performance Computing, Cloud and Edge Computing

HONORS AND AWARDS

- **ALL-STAR SPORTS VR — Second Prize** *Jun 2022*
  Virtual Reality Project Competition.
- **Presidential Hsing Chien Award** *May 2021*
  Presented by National Tsing Hua University in recognition of outstanding achievements in extracurricular activities.
- **ASC 20-21 Student Supercomputer Challenge — Champion** *May 2021*
  The world's largest supercomputing hackathon.
- **2020 APAC HPC-AI Competition — Second Prize** *Oct 2020*
  Co-organized by the HPC-AI Advisory Council and Singapore National Supercomputer Center.

PUBLICATION

Bootstrapping Human-Autonomy Collaborations by using Brain-Computer Interface of SSVEP for Multi-Agent Deep Reinforcement Learning *Aug 2022*
3rd IEEE International Conference on Human-Machine Systems (ICHMS).

CONFERENCE TALK

- **SITCON 2021 (Students' Information Technology Conference) — Speaker** *Sep 2021*
  Share how to use open source software in cloud computing and use my experience to promote Cloud Native knowledge.
- **COSCUP 2021 (Conference for Open Source Coders, Users, and Promoters) — Speaker** *Aug 2021*
  Cloud Native topic and shared the experience of developing a cloud-edge integrated platform.

EXTRACURRICULAR ACTIVITIES

- **YI-CHENG HSIAO Art Sole Exhibition** *Apr 2020*
  Showed my artworks and paintings on campus and invited about 5 hundred people to visit.
- **National Tsing Hua University Art Team Leader** *Sep 2019 - Aug 2020*
  Were a team leader and led 30 students team to hold 3 art exhibitions on campus and 2 art training camps.
- **Best Artwork in General Education Courses** *Oct 2019*
  My artworks were picked to show at Taiwan's General Education Courses conference.
- **Shanghai Jiao Tong University Exchange Student** *Jul 2018 - Aug 2018*
  Exchanged at Shanghai Jiao Tong University during the summer vacation.