NSTCCore Facility for Scientific Computing and Big Data Analysis

- Services are provided by Academia Sinica Grid Computing Centre (ASGC)
  - Core Facility of big data and scientific computing for Taiwan funded by AS and NSTC
- Reliability and efficiency are top priority
- User-oriented approach
  - Flexible collaboration model; Ease-of-use; Workflow Integration
  - Services of infrastructure, platform and software keep improving
- 4x training events a year
  - Thematic, GPU, and application-specific topics
- Thanks for the great support from Prof. Yi Yang, NCKU and all NCKU colleagues

Accelerating Discovery and Innovation With Advanced Computing Services

- **Service:**
  - Computing, storage & long-term backup, data transmission, analysis facility, machine learning (ML) environment, performance tuning
  - Software deployment and integration: ML application framework; making good use of available resources; virtualization and containerization; service collocation
  - User support: Training and promotion; technical and usage consultation; Weekly user meeting on Wed (13:30)
- **Resource: 3,000 CPUCores (2024), 5,000 (2025), 7,200 (2026)**
  - Able to support 1,000 CPUCore parallel computing; 384GB RAM in a work node; 8xA100 GPU (80GB RAM) per node; 10PB+ disk storage space
  - CPU: AMD Genoa 1,920 Cores; AMD Rome 768 Cores; Intel Xeon E5 528 Cores
  - GPU: NVIDIA A100 (24), V100 (48), 3090 (24)
  - Storage System：Ceph filesystem 10+ Petabyte; Tape storage 12 Petabyte
- **Resource plan in 2024**
  - New Intel computing servers: Intel Xeon Gold 6448H (512 Cores/2 WNs)
  - New NVIDIA GPU: L40S or better model
  - More storage for Ceph: +3PB
  - New WN: +2,000 CPUCores

Support and Service of ML-Enabled Data Analytics by ASGC

- **ML/AI application platform service is available NOW - SW library, HW, integration and application**
  - **Build up customized ML platforms for user specified projects - Deploy ML packages ready envirnonment in order to help ML development smoothly and provide on-demand computing power**
  - **Upkeep of the application framework**
  - **Workflow and data pipeline integration**
  - **Efficiency Improvement**
- **Potential use cases**
  - **Users who bring existing source code - ASGC could help to setup a virtual environment and confirm source code running normally**
- **Approaches**
  - **Supporting Kubernetes/Jupyter lab for development purpose**
    - **Create Kubernetes/Jupyter lab environment with user specified ML packages ready.**
    - **Support on-demand scalable CPU/GPU computing power.**
  - **Supporting containerized environment (e.g, Docker image) for deployment purpose**
    - **Create takeout images in Docker format as an option for user who wants to train/predict model**
    - **Docker images could be downloaded from ASGC server and deployed on users' Docker Desktop on Windows/Linux.**

9:00 AM → 9:30 AM **報到 Registration**

9:30 AM → 9:40 AM **一: 高效能計算服務教育訓練工作坊介紹 Opening & Introduction**

- 運算資源、服務內容和計價模式 (Resource, Service & Pricing)
- 計算服務架構 (Introduction of Computing Service)

9:40 AM → 10:00 AM **二: 高效能科學運算服務 Computing Service Hands-On**

- 科學運算服務平台(Computing Service Platform)介紹：SLURM & DiCOSApp
- DiCOSApp Computing Service：虛擬化SaaS計算服務
- SLURM計算服務
- 資料服務

10:00 AM → 10:40 AM **三: SLURM計算服務**

- SLURM執行工作操作
- SLURM參數介紹
- 多核心程式編程及操作 Multi-Core Jobs

10:40 AM → 11:00 AM **休息 Break**

11:00 AM → 11:30 AM **四: 虛擬化SaaS雲端計算服務 - DiCOSApp**

- 計算資源
- 服務架構
- 軟體部署

11:30 AM → 12:00 PM **五: 資料服務 (Data Service)**

- 資料傳輸
- 資料操作

12:00 PM → 1:00 PM **午餐 Lunch**

1:00 PM → 2:30 PM **六: Topic: NVIDIA GPU platform for High-Performance Computing and other SDKs**

I. Overview of NVIDIA GPU platform for HPC, AI and Omniverse
- NVIDIA - An accelerating computing platform company
- NVIDIA GPU latest technology & features update

講者 Lecture: NVIDIA 技術講師 CK Lee

2:30 PM → 2:50 PM **休息 Break**

2:50 PM → 3:50 PM **七: 科學研究計算 Q & A**

軟體技術問題交流與討論

3:50 PM → 4:00 PM **問卷調查 Questionnaire**

https://indico4.twgrid.org/event/42/