

# 2023 NCHC Open Hackathon 7<sup>th</sup> Dec Final Day - Lunchbox Survey by 30<sup>th</sup> Nov.

If you don't need one, please help to choose "No, I don't need a lunchbox".

<https://forms.office.com/r/1aQrg3YXHJ>

1. So far so good? \*

very bad very good

2. Team Name \*

Enter your answer

3. Lunchbox? \*

Yes, Vegetarian  
 Yes, Non-Vegetarian  
 No, I don't need a lunchbox

4. Any thoughts/feedbacks/comments?

Enter your answer



**Kick-off Meeting  
(Nov 16)  
Virtual**

- 02:00PM - 02:05PM: Welcome and event overview (Jay, CK)
- 02:05PM – 02:10PM: NCHC opening (王順泰組長@NCHC )
- 02:10PM – 02:15PM: Hackathon team opening (Bharat)
- 02:15PM - 03:00PM: Round table self-introduction (Team & Mentor).
- 3 mins for each team lead
- 1 mins for two mentors per team
- 03:00PM - 03:05PM: 5 mins break
- 03:05PM - 03:15PM: Introduction to computing resources (Kuan-Ting)
- 03:15PM - 04:00PM: Introduction to Nsight Analysis Tools (Leo Chen)
- 04:00PM - 04:30PM: breakout rooms (Team & Mentor)

**Day 1  
(November 23)  
Virtual**

- 02:00PM - 03:00PM: Scrum #1 (5 mins presentation per team)

**Day 2  
(November 30)  
Virtual**

- 02:00PM - 03:00PM: Scrum #2 (5 mins presentation per team)

**Day 3  
(Dec 07)  
In-Person**

- 10:00 AM - 10:30 PM: Welcome and event description
- 10:30 AM - 12:00 PM: Final presentation (12 mins presentation +3 minutes QA per team)
- 12:00 PM - 01:30 PM: Lunch time
- 01:30 PM - 03:00 PM: Final presentation (12 mins presentation +3 minutes QA per team)
- 03:00 PM - 04:00 PM: Wrap-up session

Welcome and Event Overview		10:00~10:25
AM Session		10:25-12:00
Team-1	Schrödinger's cat	10:30
Team-2	haofan2023	10:45
Team-4	NTUST CFD Lab	11:00
Team-5	CWA- mesh generation for MPAS model	11:15
Team-7	CWA_GVER	11:30
Team-9	氣象署-興大應數聯隊 (氣興聯隊)	11:45
Lunch Time		12:00~13:25
PM Session		13:25-15:00
Team-3	NTHU-LSALAB	13:30
Team-6	CYCU BME	13:45
Team-8	WTMH	14:00
Team-10	YSS	14:15
Team-11	TXM_AI_group	14:30
Team-12	NCHC Speedrunning team	14:45
Wrap-up Session		15:00~

**Total presentation time is 5 minutes = 4 minutes presentation + 1 minutes QA or any inputs.**

# **Team Name**

**Please discuss with your Mentors to setup final objectives after the Scrum Meeting.**

**Total presentation time is 12 minutes + 3 minutes QA**

Team Name

Team Members (Name and organization)

Mentors (Name and organization)

## App Name

- Problem trying to solve
- Scientific driver for the chosen algorithm
- What's the algorithmic motif?
- What parts are you focusing on?

## Evolution and Strategy

- What was your goal coming here?
- What was your initial strategy?
- How did this strategy change?

## Results and Final Profile

- What were you able to accomplish?
  - Did you achieve speed up?

**(\*show multi-core CPU vs GPU numbers)**

- What did you learn?
  - Create a new algorithm?
  - Achieved new scientific goals?

## Energy Efficiency

The calculator will compare energy consumption of a number of CPU only nodes with dual CPUs required to perform the same amount of work as 1 GPU node with 2 CPUs and 8 GPUs.

INPUTS			
# CPU Cores	64		
# GPUs (A100)	6		
Application Speedup	20.0x		
Node Replacement	13.3x		
GPU NODE POWER SAVINGS			
	AMD Dual Rome 7742	8x A100 80GB SXM4	Power Savings
Compute Power (W)	14,667	6,500	8,167
Networking Power (W)	619	93	526
Total Power (W)	15,286	6,593	8,693
Node Power efficiency	2.3x		
ANNUAL ENERGY SAVINGS PER GPU NODE			
	AMD Dual Rome 7742	8x A100 80GB SXM4	Power Savings
Compute Power (kWh/year)	128,480	56,940	71,540
Networking Power (kWh/year)	5,424	814	4,610
Total Power (kWh/year)	133,904	57,754	76,150
\$/kWh	\$ 0.18		
Annual Cost Savings	\$ 13,707.04		
3-year Cost Savings	\$ 41,121.13		
Metric Tons of CO2	54		
Gasoline Cars Driven for 1 year	12		
Seedlings Trees grown for 10 years	892		
(source: <a href="#">Link</a> )			

1. Use this [calculator](#) for your report
2. Add your acceleration numbers in the INPUTS section
3. Modify \$/kwh number if necessary
4. Paste a screenshot similar to the one on the right in this slide to report energy efficiency of your project

# What problems have you encountered?

- Problems with legacy app structure
- Issues with algorithm
- Tool bugs
- Tool lack of features
- System setup

## Wishlist

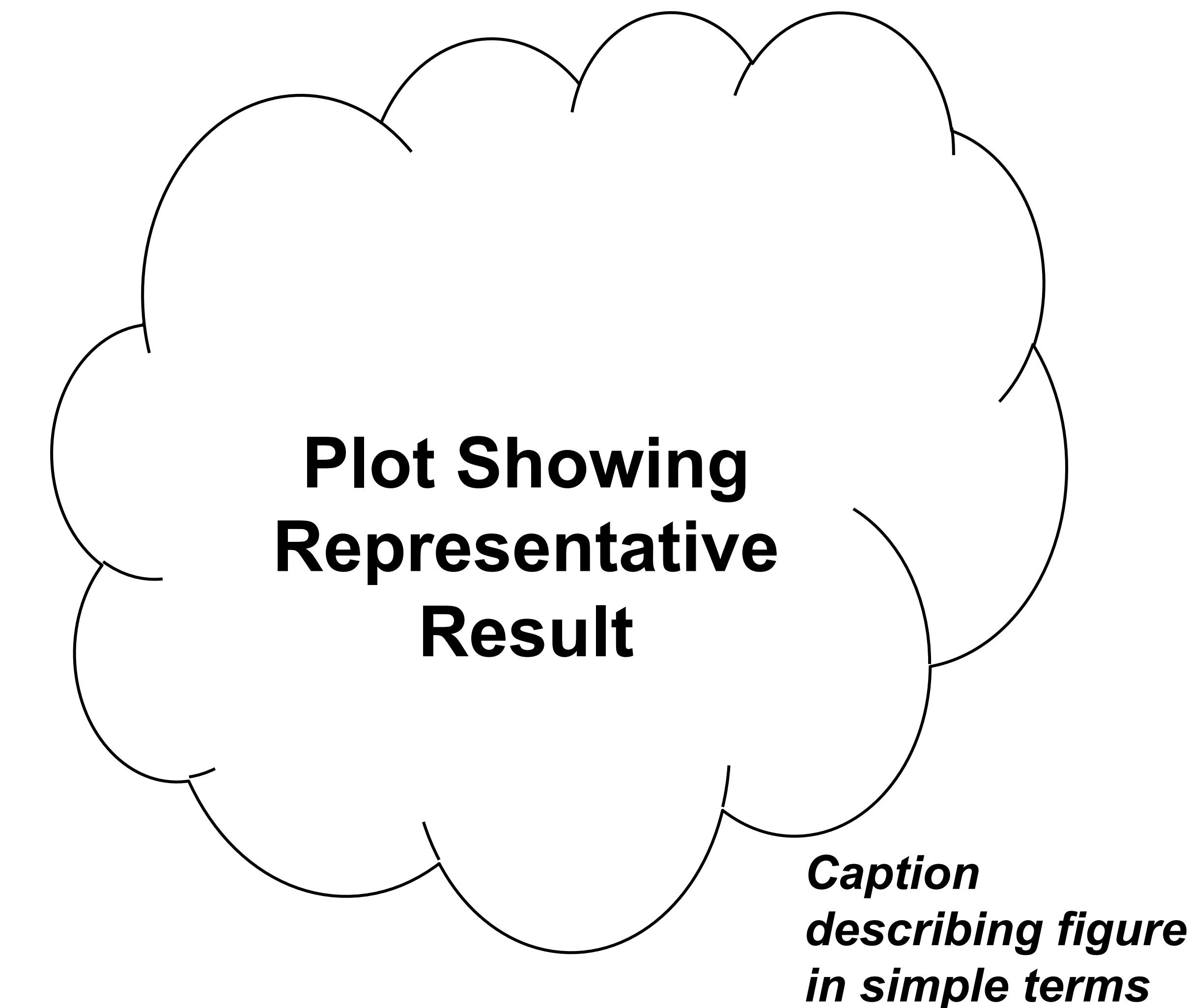
- What do you wish existed to make your life easier?
  - Tools
  - Language standards
  - Event
  - Systems

## Was it worth it?

- Was this worth it?
- Will you continue development?
  - Next steps, future plans
- What sustained resources/support will be critical for your work after the event?

## Application Background

- . High-level description of application and uses
- . Light on domain-specific jargon; should be appropriate for general technical audience
- . Computational motifs targeted at hackathon



## Hackathon Objectives and Approach

- . Programming models
- . Profiling / hot spots
- . Refactorings
- . Libraries
- . Performance tuning
- . Other

## Technical Accomplishments and Impact

- . What were you able to achieve at the hackathon?
- . How did you achieve it?
- . Speedup
- . Why does it matter / what does it enable?

Please use 100 words to summarize your team's achievements during this Hackathon

# PROMOTING YOUR WORK: AVAILABLE OPPORTUNITIES

- **Papers and Talks:** Please acknowledge the Open Hackathons program and OpenACC Organization in any planned or upcoming papers, presentations, or talks.

“This work was completed in part at the [Event name], part of the Open Hackathons program. The authors would like to acknowledge OpenACC-Standard.org for their support.”
- **Social Media Support:** Please feel free to promote your participation across your social media channels. Tag **@OpenACCorg** and **#OpenHackathons** and we are happy to amplify.
- **Blogs and Technical Write-ups:** Create a blog post or technical article that highlights the work being done and results achieved.
- **Quotes and Testimonials:** Highlight your quote or feedback on our channels (i.e. social, website, etc.).

**\*\*\*Please reach out to  
Jinny Lin ([jinnyl@nvidia.com](mailto:jinnyl@nvidia.com)) and Jay Chen ([jaych@nvidia.com](mailto:jaych@nvidia.com))  
to discuss marketing options and opportunities.**



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