Center for AI Innovation

NATIONAL CENTER FOR SUPERCOMPUTING APPLICATIONS

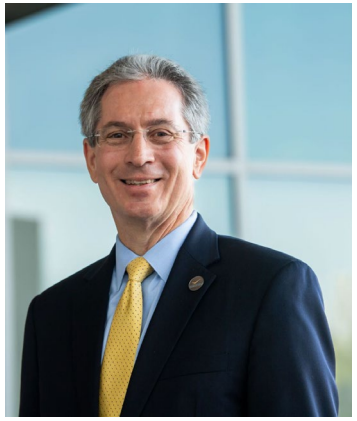
Ashby Prize in Computational Science Hackathon

ILLINOIS

NCSA | National Center for Supercomputing Applications

Hackathon Introduction

- Objectives
  - Let talented and motivated UofI students showcase their skills in a friendly competition while working on challenging problems involving HPC and AI on state-of-the-art compute platforms
- Awards courtesy of Dr. Steve Ashby
  - Awarded to a multidisciplinary team of students for the innovative use of high-performance computing to address a problem of societal significance



Dr. **Steven Ashby** is Director of the Department of Energy's Pacific Northwest National Laboratory, where he sets PNNL's strategic direction and oversees its $1.5 billion R&D budget. Under his leadership, PNNL's nearly 6,100 talented staff members draw on signature capabilities in chemistry, Earth sciences, biology, and data science to advance scientific discovery, enable energy sustainability, and enhance national security.

Dr. Ashby is a Fellow of the Society for Industrial and Applied Mathematics and the American Association for the Advancement of Science; member of the Washington State Academy of Sciences; Commissioner for the U.S. Council on Competitiveness; and serves on advisory committees for local and state organizations, including the Washington Roundtable.

He earned his M.S. and Ph.D. in Computer Science from the University of Illinois at Urbana-Champaign.

Schedule

- FRIDAY, APRIL 12
  - Deadline to sign up for the hackathon
- MONDAY, APRIL 15
  - 8:00am — Teams are announced (on-line)
  - 4:00pm — Overview of the Hackathon rules, challenge problems, Delta computing environment, and LLMs (1104 NCSA)

Schedule: Saturday & Sunday

- 8:30am – 4:00pm
  - Teams work on the problem (NCSA rooms 1104, 2000, 2004, 2100, 3000, 3004, 3100, …)
  - light breakfast will be provided
- Noon
  - Lunch will be provided
- 1:00pm -
  - Teams continue to work on the challenge problems
  - snacks will be provided
- 4:00pm – 5pm
  - Teams briefing (1104 NCSA)

Schedule

- TUESDAY, APRIL 23
  - 4:00pm — Teams present results (TBD NCSA)
- THURDDAY, APRIL 25
  - Winning teams are announced (time and place TBD)

Project

- Using LLMs as a front-end to computational workflows
  - The main problem to be addressed in this hackathon is how to build a **front-end workflow management system** based on LLMs and related tools to setup and execute computational workflows. One example of such a system is described in arXiv:2312.07711 and on GitHub.
  - See this GutHub (make sure to explore all branches) for more example problems.
  - Students will be provided with access to Delta supercomputer and LLM access/credits.

Support Team

- Technical team contacts:
  - Rohan Marwaha (rohan13@illinois.edu)
  - Minu Mathew (minum@illinois.edu)
  - Asmita Dabholkar (avd6@illinois.edu)
  - Kastan Day (kvday2@illinois.edu)
  - Matthew Berry (mjberry@illinois.edu)

- Administrative team contacts:
  - Shannon Bradley (sbrad77@illinois.edu)
  - Pam Joop (pjoop@illinois.edu)
  - Volodymyr Kindratenko (kindrtnk@illinois.edu)

Teams

Team 1		
Tan	Debnath	tand3@illinois.edu
Anusha	Chandraju	avc5@illinois.edu
Shengzhu	Yin	yin20@illinois.edu
Jiahua	Dong	jiahuad2@illinois.edu

Team 2		
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Team 3		
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Tsz Yau Iris	**Chow**	**tyc4@illinois.edu**

Team 4		
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Team 5		
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Team 6		
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Team 7		
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Team 8		
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Celina	Anwar	canwa2@illinois.edu
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Team 9		
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Victor	Zhao	chenyan4@illinois.edu
Minghao	Shi	mshi18@illinois.edu
TBD		

Team 10		
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Aditya	Ranjan	aranjan5@illinois.edu
Jay	Lee	jyl11@illinois.edu

Team 11		
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Akshata	Tiwari	atiwari5@illinois.edu

Team 12		
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Sidharth	Anand	sanand12@illinois.edu
Krishna	**Dubey**	**kd28@illinois.edu**
Eklavya	Tyagi	etyagi2@illinois.edu

Logistics & Getting Help

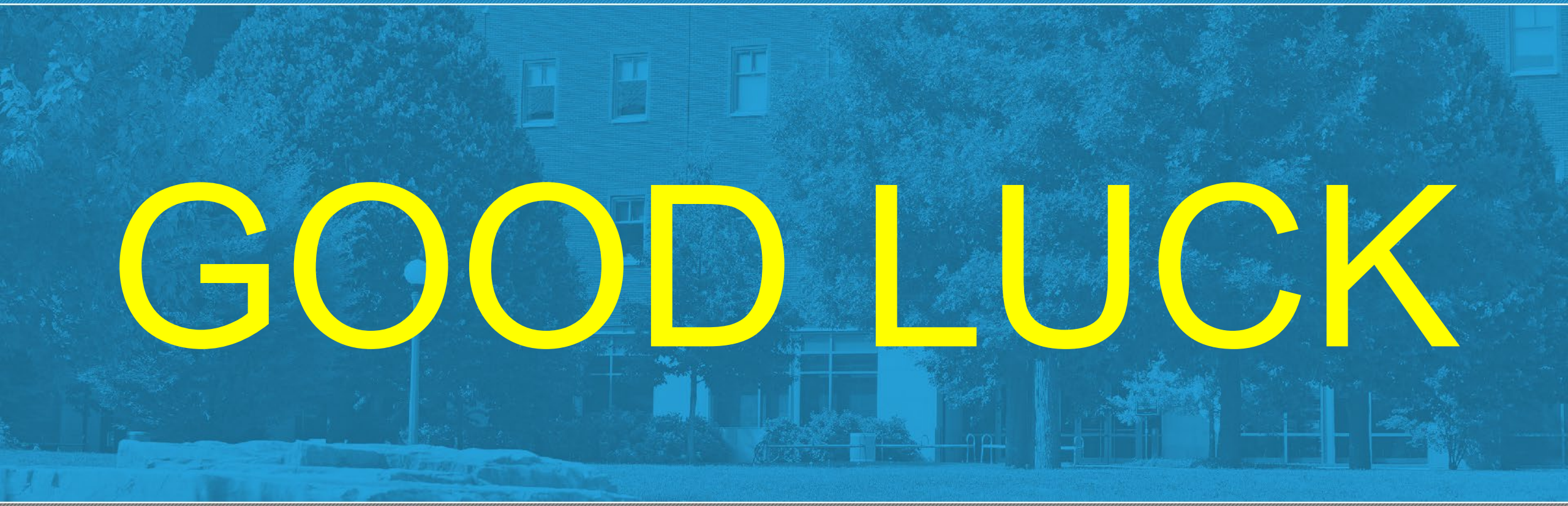
- Sign up for CAII-Hackathon slack channel
  - https://join.slack.com/t/caii-hackathon-sp24/shared_invite/zt-2h69bkftc-gdvOu3BoTjYOuP7ILdkwcA
- Someone from the technical and admin teams will be always around in **1104 NCSA**
- If you provide us with your UIN, we will give you access to the NCSA building for this Saturday-Sunday, ~7:30am-6:30pm (send your UIN to Shannon Bradley (sbrad77@illinois.edu))

Working on the challenge problems

- Location
  - In the designated NCSA conference rooms on Saturday-Sunday, or
  - Outside of NCSA building
    - Please let us know if your team plans to work in the NCSA building so we can assign you a conference room
- Time
  - From now until next Monday
- Resources
  - Delta, uiuc.chat, …

Submitting Results

- Required materials to be submitted by the end of the event
  - Code in GitHub
    - Setup your own private repository
    - Add all mentors from the *technical support team* to your repository
  - Final presentation
    - On Tuesday, April 23 at 4pm in TBD @ NCSA
    - PowerPoint slides describing your approach and your results, detailed enough to understand
      - What exactly you have done, and
      - What exactly you have accomplished
- Teams will be evaluated on the following:
  - Innovative approach with respect to utilizing LLMs to generate and execute a workflow, as well as the use of machine learning and other computational techniques.
  - Effective use of NCSA computing resources, including performance on its flagship AI platform, Delta.
  - Quality of a written project summary and oral presentation.
  - Relevance of the developed solution.


GOOD LUCK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