

# HPC in the City: Pandemics



**SC23**  
Denver, CO | i am hpc.



## Mentor Overview

*Pre-Event Training - October 27, 2023*



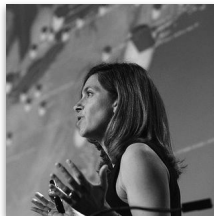
[HTTPS://HACKHPC.GITHUB.IO/HPCINTHECITY23](https://hackhpc.github.io/hpcinthecity23)



# ORGANIZERS



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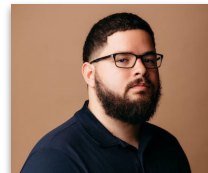
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# Introductions:Icebreaker



*Charlie Dey (TACC)*



*Je'aime Powell (TACC)*



# AGENDA

1. Hackathon Objectives
2. Who are the Participants?
3. Project Timeline
4. Deliverables and Resources
5. Mentoring Information
6. Mentor Hack



Join our Discord Server  
<https://discord.gg/G2a7JWnQkP>

# Hackathon Objectives and Student Outcomes

The hackathon aims to harness the resources, skills, and knowledge found in the HPC community in an effort to provide applied exposure towards students from 2-4 year post-secondary educational institutions. In short, the hackathon will provide HPC skills and training while targeting problems that directly affect the participants.

Develop knowledge and create solutions to identified pandemic decision science projects through application of data analysis/presentation or management utilizing HPC/CI resources.

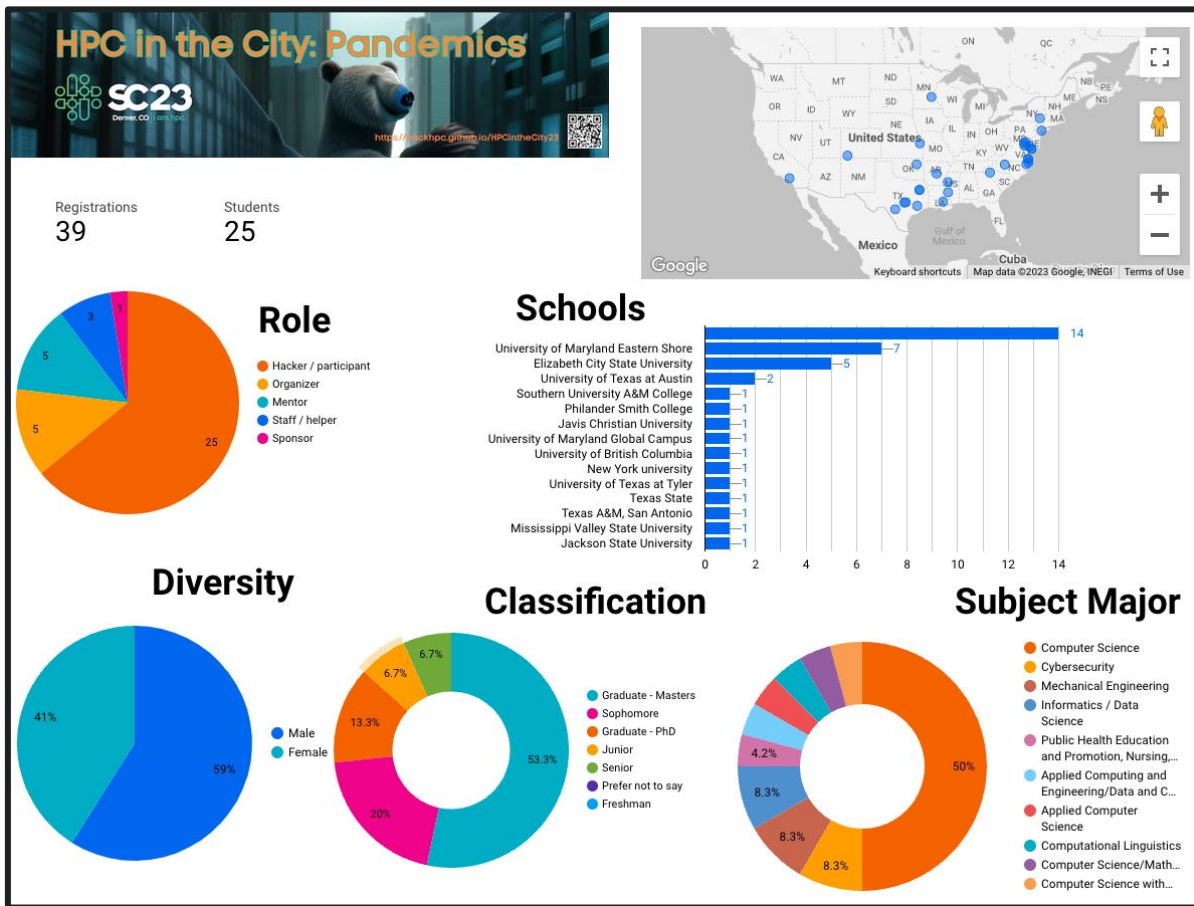
## Student Outcomes

- Increased familiarity with data science in the cloud
- Experience collaborative software engineering
- Develop professional communication skills





# Who are the Participants?



# Project Timeline

## Event Simplified Schedule

- **Friday, 11/3/23**
  - **Kick-Off**
    - Mentor Pitches & Team Formation
- **Saturday, 11/4/23**
  - Morning Checkin - Team Introductions
  - Afternoon Checkin - Team Goals and Project Plan
- **Sunday, 11/5/23**
  - Afternoon Checkin - One-Day Progress
- **Monday, 11/6/23**
  - Afternoon Checkin - Team Status
- **Tuesday, 11/7/23**
  - Morning Checkin - Mentor Trailers
  - **Final Presentations**

**~ 96 hrs Total Time**  
**- ~7 hrs Planning / Checkins**  
**- ~30 hrs Sleep/Rest**  
**~59 hrs Work Time**



# Project Deliverables and Resources

## Deliverables:

- Github Repository
  - README.md with project description
  - Source code Including Comments
  - Presentation
    - Team members with pictures
    - Use of technology in the project
    - Project impact to the community

## Resources:

- Project Eureka
- Mobility Dataset (TACC)
- Commonly Used:
  - Python
  - Jupyter Notebooks
  - Node.Js (JavaScript)
  - Repl.it (Collaborative Environment)
  - HTML\CSS
- Discord - <https://discord.gg/G2a7JWnQkP>





# Mentor Deliverable: Pitch Slide

Due Friday 11/3/23 Kick-Off:

A slide deck link will be provided

- 2 slides / 2 minutes
- Include:
  - Your name and Affiliation
  - Suggested Project/Idea Title
  - General Pitch
  - Possible suggested skills / resources

**Tip:** Keep it simple. Think elevator pitch!

HackHPC@ADMI Virtual Hackathon  
March 31st - April 4th

### NFT4Data: Citizen Science and IoT Weather Data

**PROBLEM SETUP:**

- A. Citizen science participation is necessary for climate data collection
- B. As more data is submitted, validating the quality and integrity (veracity) of the data is of utmost importance
- C. Data is increasingly being drawn from citizen science operated IoT devices
- D. The volume of such data is often large and the quality and integrity are also critical
- E. We need better solutions to verify the data coming from humans and machines so that it can be confidently used by others in the community

Could NFT4Data be a solution?

**Why not use them for data?**

THIS PROJECT WILL EXPLORE:

- NFTs are **unique digital identifiers**
- They **cannot be copied**, substituted or subdivided
- They are **recorded on the blockchain** and supposed to support authenticity and ownership of a digital asset (bits, data) ...

What technical requirements are necessary to bring this to fruition (including existing attempts to do this) ...

What ethical and practical dimensions of data "ownership" in an "open data" world need to be considered

### 20 Minute Neighborhoods

Edgar Garza - Texas Advanced Computing Center

What if cities began to regulate their land use so that every corner of a city was measured by their ability to ensure that basic daily needs could be met via a 20-minute walk?

- Use city/metro data to identify basic daily needs are within 20 minutes (based on type of mobility)
- Basic needs include: food, medical, government, green space, transportation
- Ability to enter your location and receive information of your surroundings via a map or list (sortable by type of need)
- Mobile app: social media integration, webpage dashboard

**Suggested Skills / Resource Links**

- Python, Jupyter Notebook
- Data dashboard, mobile app

**Traffic Data Analytics Dashboard - Josh Kissel & Boyd Wilson**

**GOALS:** Develop dashboard vis tools and backend processing to Help GDOT answer Traffic related questions, for example:

- When and Where is traffic bad
- Where to place HERO vehicles to help the most quickly
- Where to plan future expansion
- Other IDEAS?

**DATA (Live and Historical):**

- Vehicle Volume
- Vehicle Classification
- Vehicle Speed
- Lane Occupancy
- Incidents by Type
  - o Stopped Vehicle, Congestion, Slow Speeds, Pedestrians, Low Visibility, Wrong Way

Example of source video analytics processing used to generate the data

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HackHPC.org/hpc



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SUMMER OF COMPUTING

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[HTTPS://HACKHPC.GITHUB.IO/HPCINTHECITY23](https://hackhpc.github.io/hpcinthecity23)

# Mentor Deliverable: Team Trailer

Due Monday 11/6/23 Afternoon Checkin

- No more than 1.5 minutes long
- Include Team Goal
- Team Members
- No licensed music (the videos are going on YouTube and can be struck)

**Tip:** Keep it simple. View this as a gift from the Mentors and Co-mentors to your respective groups.



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St. Louis Science Center

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intel  
cloudycluster by Omnibond  
globus online  
SGCII  
Google Cloud  
sighpc  
TACC  
TEXAS ADVANCED COMPUTING CENTER  
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HPC  
in the  
City: *St. Louis* HACKATHON

SC21  
St. Louis science  
HO & beyond.

Team Trailer:  
**Flood of Code**

[HTTPS://HACKHPC.GITHUB.IO/HPCINTHECITY23](https://hackhpc.github.io/hpcinthecity23)

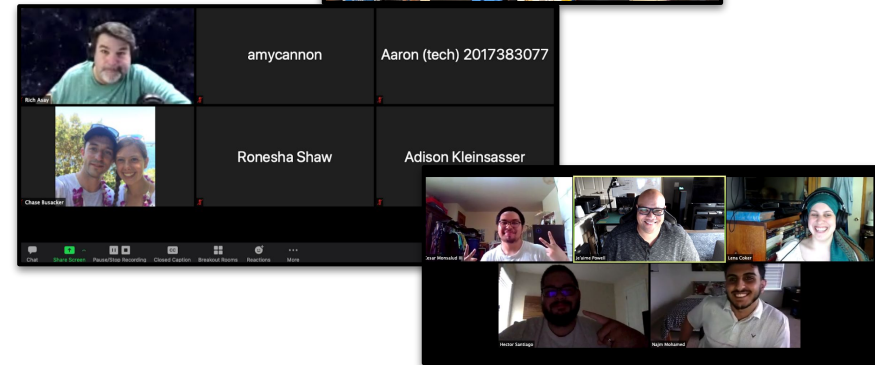
# What Can You Expect as a Mentor?

- Your mentoring will be iterative
- 50% - 70% of your team's efforts **will** be spent formatting the dataset before you can use it 😱
- Your students will experience challenges, and so will you as a mentor (Tears can and have happened, 😬)
- You can't solve everything in 30 hours! (No really you CAN NOT!!!)



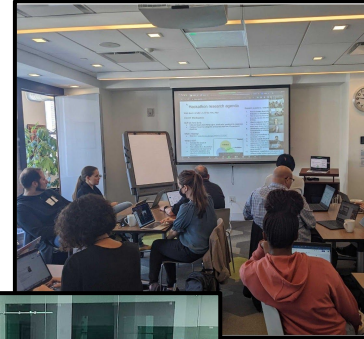
# What Challenges Do Mentors (Re)Solve?

- Imbalance in participation
- Project direction isn't viable
- Students are reluctant to drive the process
- Students just want the answers
- Morale decreases over time
- Students do not communicate



# Fundamental Principles of Mentoring

- Observe the students, not the work.
- Be present, but not omnipresent.
- Use critical questions, not criticisms.
- Be sure both you and the students take breaks and rest.





# Your Task Today

Choose a “*Common Mentor Challenge*”, and describe a strategy you will use to address it

- What is the problem?
- What technique are you going to develop or use to tackle the problem? (one sentence)
- Tell a story of ideally, how you think this will play out
- Collaborate and report out, with a presentation visual





# Example Technique

**Problem:** How do you get feedback from your students, when they might be reluctant to criticize the type of help you've given them?

**Answer:** Like, Wish, Wonder!

**Describe:** Students write a short one sentence reflection about their learning experience, where they describe something they liked, something they wished, something they wondered. They will take turns sharing. All students participate. In doing so, students are given an opportunity to prepare an answer rather than being “put on the spot”, and any deltas come are reframed as “further questions” rather than frustrations



# Mentor Mini-HACK

(7 minutes)

## Task:

From the “Common *Issues when Mentoring*” box pick one problem as a group and develop a technique to resolve it.

## Deliverable:

One (1) slide and present the developed technique in one (1) minute.

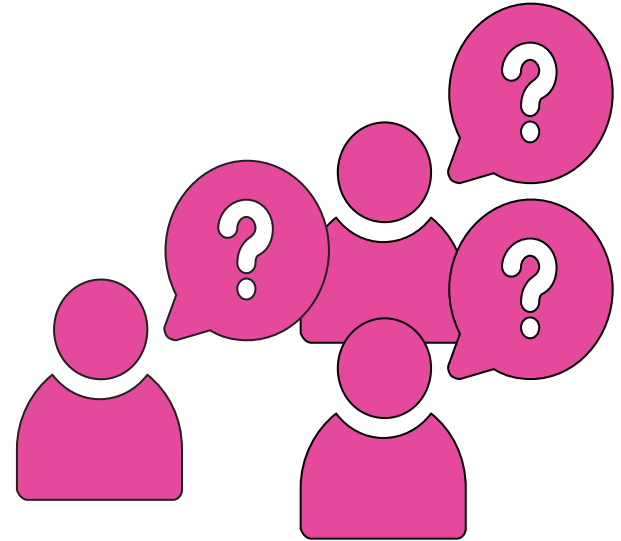
## Common Issues when Mentoring:

- Imbalance in participation
- Project direction isn't viable
- Students are reluctant to drive the process
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# Mentoring Techniques - Did you notice?

- Getting to know your participants
- Project purpose/goals
- Gamification
- Scoping the project
- Student guidance/counseling
- Student project roles and responsibilities
- Adjusting to student skill levels
- Critical questioning



# Like, Wish Wonder this Training!

Now to guide you through a post hack reflection using the “Like, Wish, Wonder” technique.

**Each person gives:**

1 - Like & 1 - Wish and/or Wonder

Audience if you agree, give the “snaps” or 



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## QUESTIONS ??

### Next Sessions:

- **TACC On-Boarding and Dataset Access**  
[Wednesday, 11/1/23 @ 5pm CDT]
- **Kick-Off**  
[Friday, 11/3/23 @ 5pm CDT]

### Schedule:

<https://hackhpc.github.io/hpcinthe-city23/schedule.html>

### Presenter Contact Information:

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 The University of Texas at Austin  
Center for Pandemic Decision Science

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