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Google Cloud

SGCI

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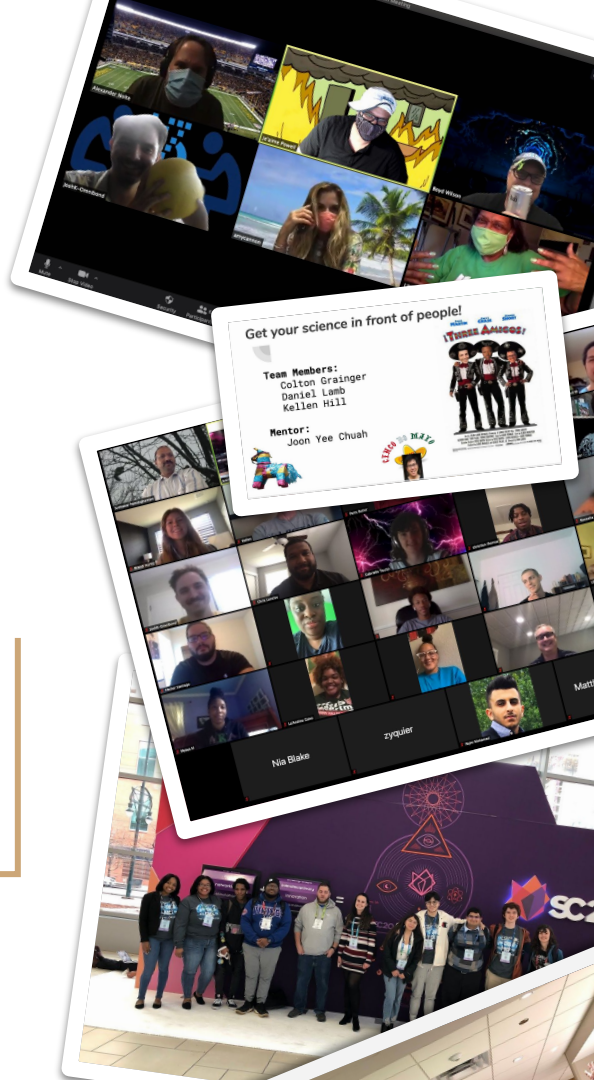
TACC
TEXAS ADVANCED COMPUTING CENTER

XSEDE

# HPC in the City
# Python Development Environment Training

SC20
Everywhere we are | more than hpc.



# Agenda

- Introductions
- Hackathon Objective
- Deliverables and Resources
- General Information
- Python Development Environments
  - Jupyter Notebooks
    - Anaconda
    - Google Cloud Notebook
  - Collaborative Coding
    - Google Colab
    - Repl.it


Google Cloud Platform



*Presenter:* Je'aime Powell

# Organizers

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**Amy Cannon** - *Omnibond*
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**Je'aime Powell** - *TACC*
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**Linda Hayden** - *ECSU*
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# The Objective of HPC in the City

The hackathon aims to harness the resources, skills, and knowledge found in the HPC community in an effort to provide applied exposure towards the conference host city's local 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 an understanding of an Atlanta based issue through application of data analysis/presentation or management.

**What you should expect to gain:**

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

# Team Deliverables and Resources

**Deliverables:**

- **Source code Including Comments**
- **PDF of presentation**
  - Team members with pictures
  - Use of HPC technology in the project
  - Regional (Atlanta) implications of the project
- **Github Link**
  - README.md project description

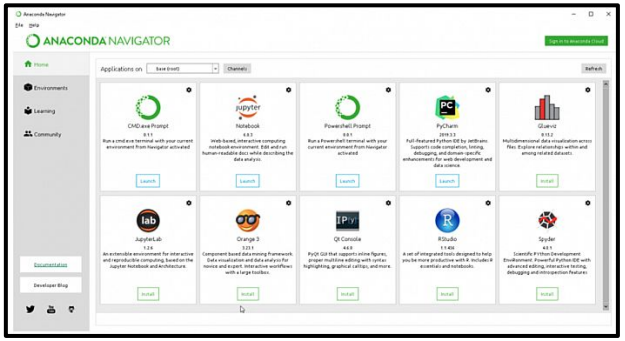
**Resources:**

- Mentors/Specialists
- Slack (Ad-Hoc Communication)
- Google Cloud (Provided Credits)
- Cloudy Cluster
- Most Commonly Used:
  - Python
  - Jupyter Notebooks
  - Node.Js (JavaScript)
  - HTML
- Datasets

# General Information (the 3 T's)

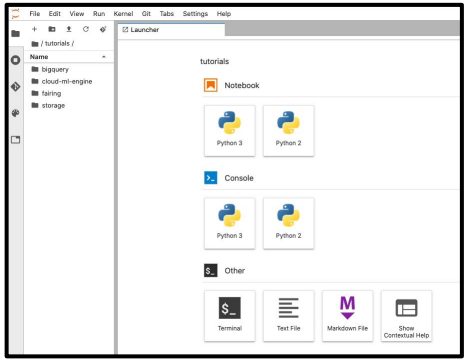
- **Teams**
  - 4-5 Students
  - 1 Primary Mentor
  - 1 Specialist/Staff
- **Time (*Draft*)**
  - November 5th - 9th
    - 11/5@~6pm ET Event Start
      - Team formation
    - 11/[6-9] @ 11 ET & 6pm ET- Checkins
    - 11/9@6pm ET-Final Presentations
- **Topic Examples**
  - Data Analysis of COVID 19
  - Economic disparities and their effects on college participation
  - Genomics, Molecular Dynamics, or Weather Modeling in the Cloud.
  - Social Justice
  - Presidential Election
  - Public Data Management
  - Graduation Rates
  - Broadband Access
  - Insurance vs. Public Health Resilience

# Jupyter Notebook Platforms




**Anaconda** - https://www.anaconda.com

- Local Install (Win/OSX/Linux)



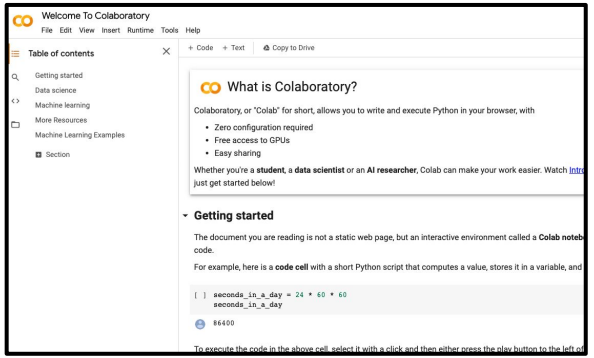

**Google Cloud AI Notebooks** - https://cloud.google.com

- Requires Google Credits (cost associated per instance)
- Setup of instances required (can increase compute power)
- JupyterLab pre-configured

# Collaborative Coding Platforms

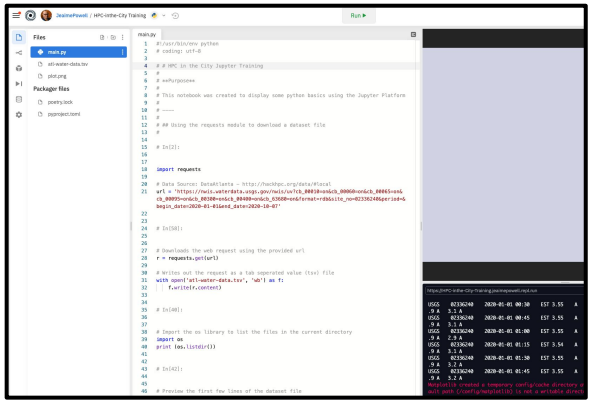
**Google Colab** - https://colab.research.google.com

- Available with Google Accounts
- Connectors to Google Drive




**Repl.it** - https://repl.it/

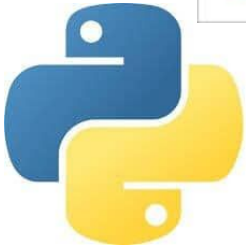
- Large number of supported languages
- No default support of ipynb files



# Many Other Python Development Environments

- VS Code
- Atom
- Spyder
- PyCharm
- Thonny
- PyDev
- Python Idle
- Wing
- (... and the list goes on, and on)









# Sample Code Description

1. Use the “requests” module to import a dataset file
2. Save the dataset to a file
3. Read the dataset file into a DataFrame using the “pandas” module
4. Pull descriptive analysis of the dataset in the DataFrame
5. Plot a graph from the DataFrame using “matplotlib”

*Sample Code Located at:*
https://github.com/jeaimehp/HPC-in-the-City-Python-IDE-Demo

# Development Environments

**Demo Time!!**

# Questions and Concerns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**HPC in the City Event Site:** http://hackhpc.org/hpc/