The University of Texas at Austin
Hildebrand Department of Petroleum and Geosystems Engineering
Cockrell School of Engineering

Energy A.I. Hackathon

Hosted by PGE's Resident A.I. Experts
**Dr. John Foster** and **Dr. Michael Pyrcz**
@johntfoster          @GeostatsGuy

# Energy A.I. Hackathon Mixer

Michael Pyrcz and John Foster

Energy A.I. 2021 Hackathon Hosts

Hildebrand Department of Petroleum and Geosystems Engineering

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# Petroleum / Mining / Spatial Engineering and Science Leadership in the Fourth Paradigm

*'We are the original data-driven science, we have been big data long before tech learned about big data!'*

| 1930-1940s | 1950-1960s | 1980-1990s | >1990s |
|---|---|---|---|

| Probability and Stationarity<br><br>Kolmogorov | Volume Variance in Mining<br><br>Krige | Geostatistics Mathematical Morphology<br><br>Matheron | Applications in Oil and Gas, Environmental<br>Journel, Verly, Deutsch | Spatial Statistics, Big Data Analytics and Machine Learning |

*'Complicated, heterogeneous, sparsely sampled, vast systems with complicated physics and high value decisions.'*

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**What is a hackathon?**

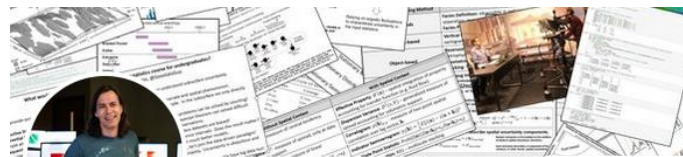*'an event in which a large number of people meet to engage in collaborative computer programming.'*

Dictionary.com

*'The goal of a hackathon is to create functioning software or hardware by the end of the event'*

Wikipedia

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Professor Michael Pyrcz (aka GeostatsGuy)
Hackathon Host



**Michael Pyrcz**
@GeostatsGuy

Assoc. #Prof @UTAustin @CockrellSchool @txgeosciences @daytum_io |
#geostatistics #DataAnalytics #DataScience #MachineLearning #author #dad
#github #YouTube



**John Foster**
@johntfoster

Professor John T. Foster
Hackathon Host

Mingyuan Yang, PhD Candidate PGE
Hackathon Architect



**Honggeun Jo**
@HonggeunJ

Honggeun Jo, PhD Candidate PGE
Hackathon Architect, Volunteer

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# Appreciation



Hildebrand Seed Fund
Sponsorship

Professor Jon Olson
PGE Chair
Strong support and engagement

Gabby Banales
Organizing, Student Engagement

Sara Hernando
Organizing, Student Engagement

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## Mentors

Lukas Mosser



Fabian Laugier



Zoltan Sylvester



Shane Prochnow



Obiajulu Isebor



Chiranth Hedge



Nkem Egboga



Michael Harty

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# Judges

## Ben Amaba
CTO Cloud & Cognition

IBM

## Kumar Lakshmipathi
Principal Architect

amazon

## Graham Ganssle
Head of Data Science

expero

## Jesse Pisel
Professor of Practice,
Energy Analytics

The University of Texas at Austin
College of Natural Sciences

## David Holmes
CTO Energy

DELL Technologies

## Sarita Salunke
Team Leader

bp

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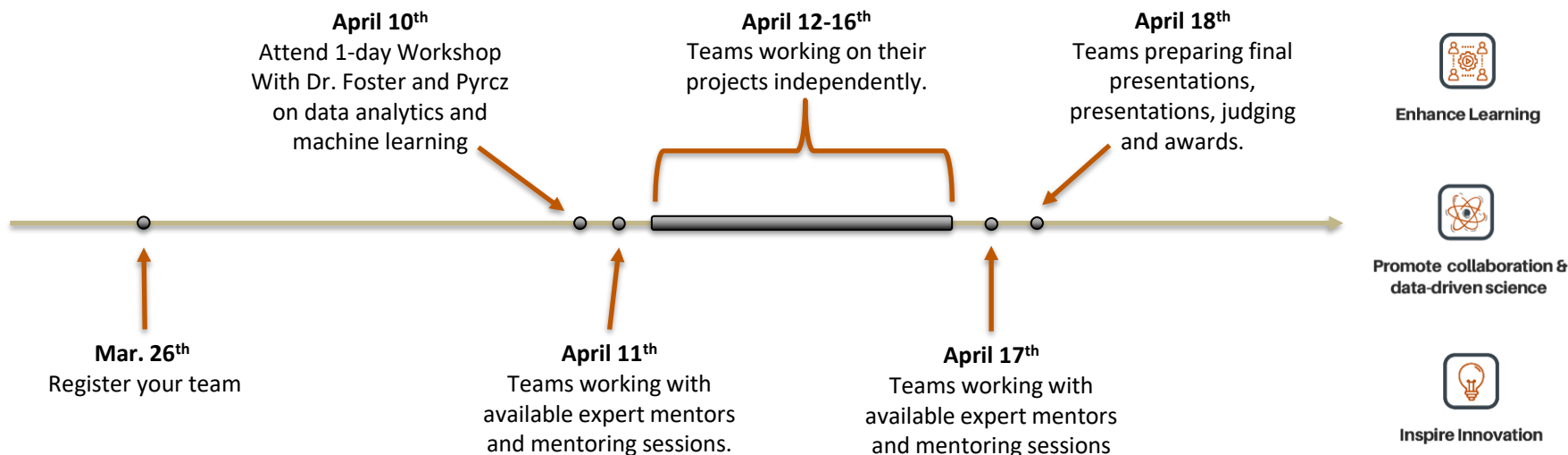@johntfoster          @GeostatsGuy

**The Hildebrand Department of Petroleum and Geosystems Engineering invites its students** to join in on an Energy A.I. Hackathon. Students will form teams and work together to solve an energy challenge with data analytics and machine learning in Python. Open to all UT Austin students to participate.



# Apply Data-driven Solutions with Data Analytics and Machine Learning

## Schedule:



**April 10th**
Attend 1-day Workshop With Dr. Foster and Pyrcz on data analytics and machine learning

**April 12-16th**
Teams working on their projects independently.

**April 18th**
Teams preparing final presentations, presentations, judging and awards.

**Enhance Learning**

**Mar. 26th**
Register your team

**April 11th**
Teams working with available expert mentors and mentoring sessions.

**April 17th**
Teams working with available expert mentors and mentoring sessions

**Promote collaboration & data-driven science**

**Inspire Innovation**

## Teams:

Register teams of 3-4, which can include students from other departments and schools (UT EID required), but one student must be a UT PGE student. ~~No more than 1 graduate student per team.~~

## Awards:

Winners of the A.I. Hackathon will be awarded bragging rights and $5,000 for first place, $2,500for second place, $1,000 for third place and $500 for fourth place teams.

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**The Hackathon Challenge / Hints:**

## Domain Expertise
Integrated Subsurface
Energy Problem

## Data Volume
Sparsely Sampled,
Heterogeneous

## Workflow Complexity
Will require a multistep
workflow.
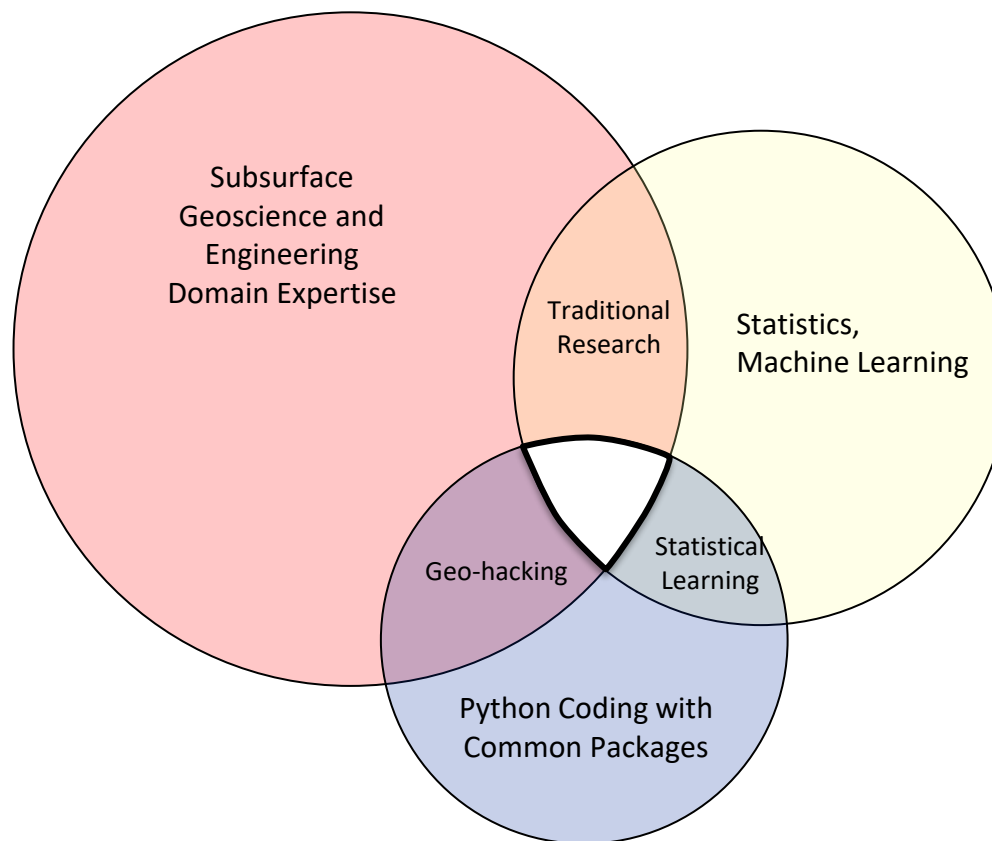
## Data Veracity
Uncertainty, error and
biases.

## Data Variety
Variety of types and scales.

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**The Hackathon Challenge / Hints:**

## Integrated Teams

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We are looking forward to a great event.