Fermilab | U.S. DEPARTMENT OF ENERGY | Office of Science

Conéctate con Fermilab
Panel Session: Computer Science

Panel Chair: Tanaz Mohayai

Speakers: Marco Mambelli, Bruno Coimbra, Namratha Urs

October 13, 2022

Tanaz Mohayai

2011 — **Bachelor's degree in Physics, concentration in Astrophysics**

Graduated from California State University, Northridge, researched the sun

2012 — **Post-baccalaureate Research Assistant**

Dark matter research at Princeton University

2018 — **PhD in Particle Accelerator Physics**

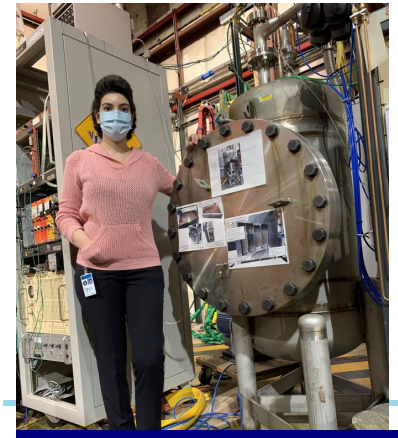
Graduated from Illinois Institute of Technology, was primarily based at Fermilab for my research

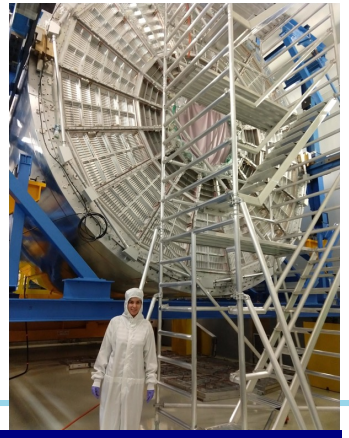
2018 — **Postdoc at Fermilab**

Currently in the Neutrino Division, researching neutrinos, in particular neutrino detectors and interactions

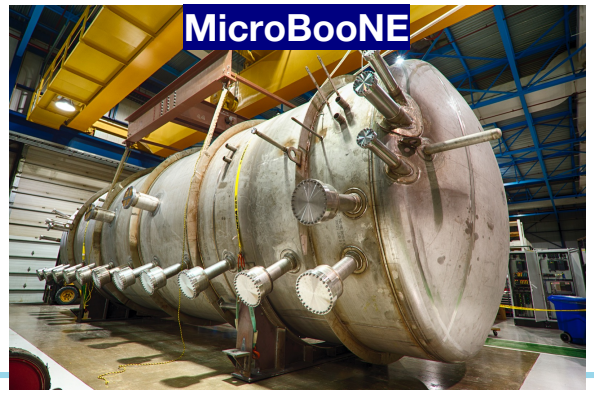
PhD research on producing an intense beam of neutrinos

what I work on now





Deep Underground Neutrino Experiment



Marco Mambelli

1999 — **Bachelor in Computer Engineering**
Graduated from the University of Pisa and the Scuola Superiore Sant'Anna in Pisa, Italy

1999 — **Summer intern at Fermilab**
Graduated from Universidade Federal Fluminense in Brazil

2003 — **PhD in Computer Engineering**
From the University of Modena and Reggio Emilia in Italy

2003 — **University of Chicago**
Moved to the United states as post-doc and then researcher at the University of Chicago

2013 — **Fermilab**
Started working at Fermilab on Distributed Computing in the Scientific Computing Division

I'm from Rovereto, a town in the North of Italy!

Growing up I was going to the public library to use a PC

I like biking, Argentine Tango dancing.

I like to build and to problem solve

Bruno Coimbra

2008 — **Technical in Data Processing**
Went to a technical high school and got my technical degree

2014 — **Bachelor's Degree in Computer Science**
Graduated from Universidade Federal Fluminense in Brazil

2015 — **CMS at CERN**
Moved to Switzerland to work at the CMS experiment at CERN

2017 — **Fermilab**
Moved to the United states to work at Fermilab

2020 — **Master's Degree in Data Science**
Got my Master's degree from DePaul University here in chicago

I'm from Rio de Janeiro, Brazil!

I like biking, snowboarding, and playing video games.

I'm working on personal projects to automate my house.

Namratha Urs

I'm from Mysore, India!

I love traveling, learning about food and enjoy listening to music

2008 — **Joined the Bachelor of Engineering, Computer Science program**

2012 — **Started as a Solutions Engineer, Oracle India**

2015 — **Moved to the United States for higher studies**
Joined University of North Texas Master of Science in Computer Science program

2017 — **Switched to the PhD in Computer Science program**
Specializing in natural language processing and applied machine learning for dialogue systems

2020 — **Landed my first internship at Fermilab**
Fermilab Computational Science Internship program within the Scientific Computing Division

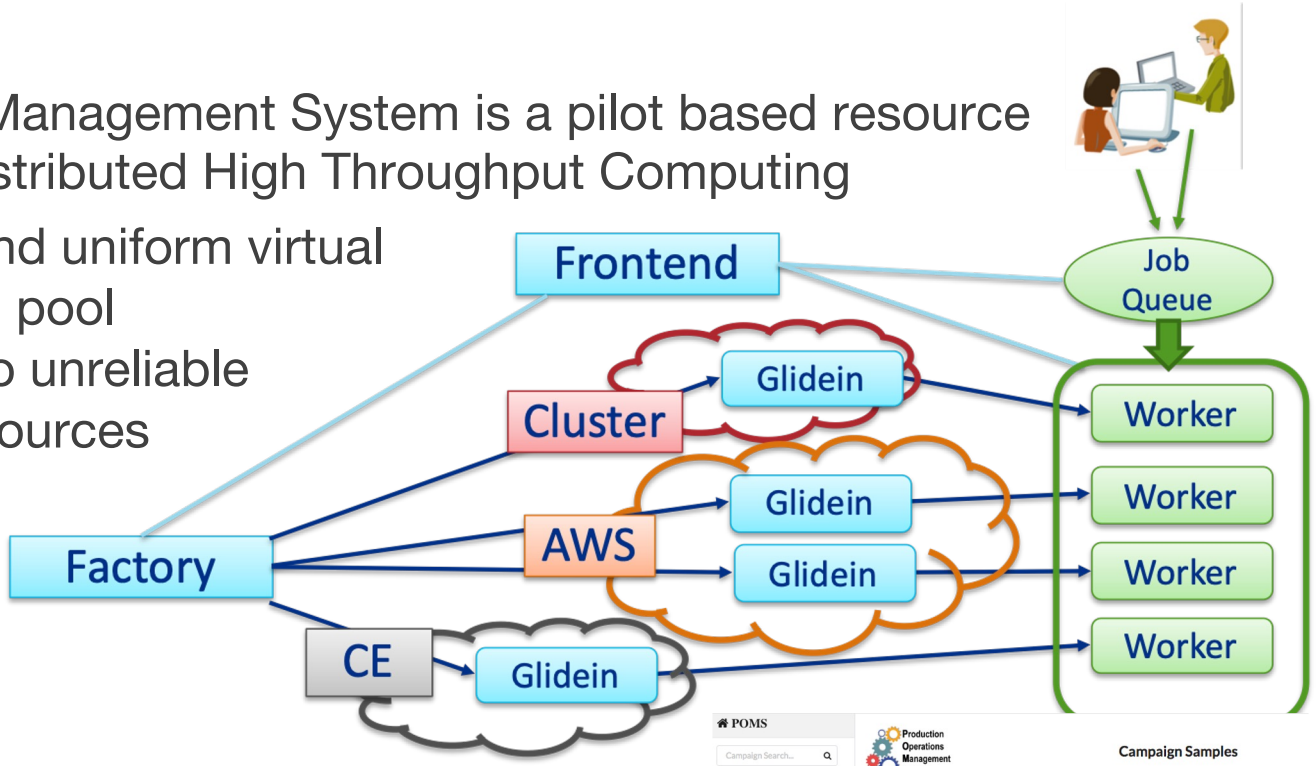
2021 — **Returning internship at Fermilab**

2022 — **Software Developer at Fermilab**

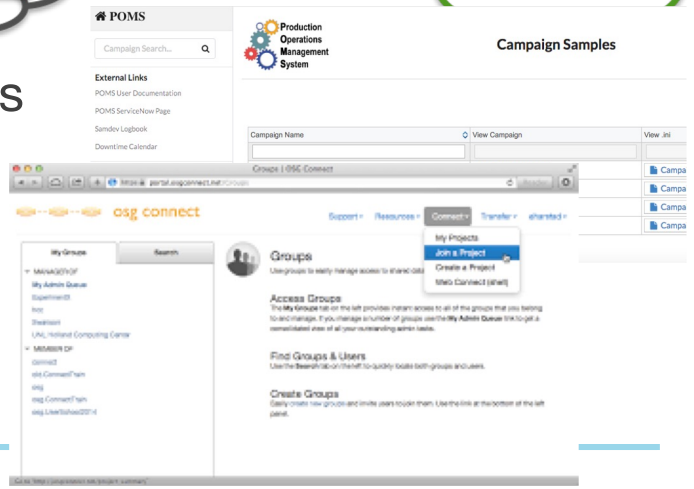
GlideinWMS

The Glidein Workload Management System is a pilot based resource provisioning tool for Distributed High Throughput Computing

- Provides reliable and uniform virtual clusters, the global pool
- Submits Glideins to unreliable heterogeneous resources



- Knows "how to talk" to all the different systems
- Multiple Frontends and Factories work together to provide High Availability
- Used by: CMS, DUNE, FIFE, OSG, (POMS, Jobsub, OSG-Connect)



HEPCloud

Unified interface to Grid, Cloud, and HPC resources

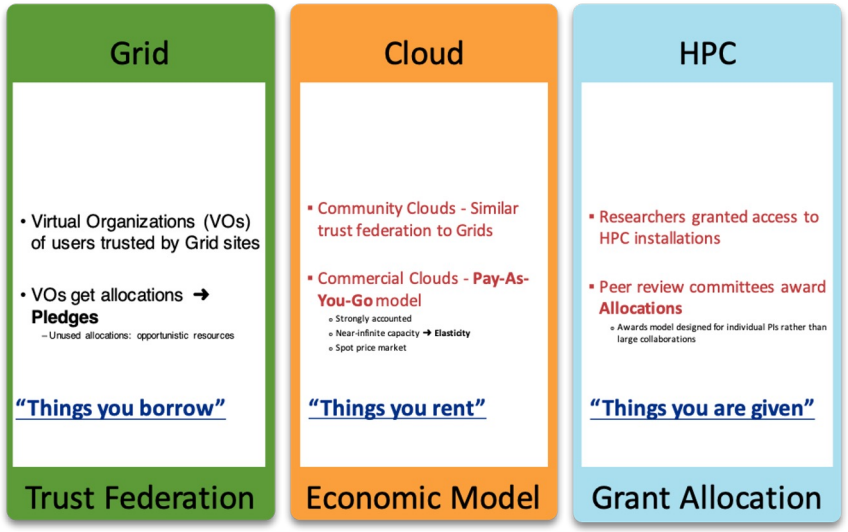
Currently used mainly to run CMS workflows on NERSC supercomputers

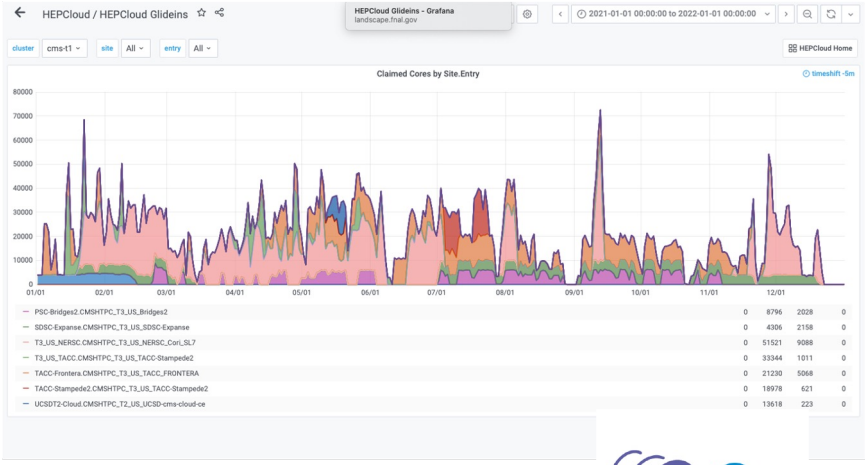
Optimized bidding for AWS spot pricing

Better handling of heterogeneous resources (GPUs, QPUs)

In 2021 doubled CMS Tier 1 capacity using NERSC and other facilities, 160M CoreHrs

Simulated 1 billion events in 48 hours





HEPCloud