VARIETY OF EDUCATION AND WORKFORCE PROGRAMS

- Undergraduate/Graduate Classes
- Industry-funded Internships
- Research Experiences for Undergraduates (REU)
  - NSF Funded
- Training – one day, multi-day, week-long Institutes
UNIVERSITY COURSES IN ADVANCED COMPUTATION

- UT Austin dept. of Statistics and Data Sciences
- Dual-listed undergraduate/graduate
- Courses covering many aspects of advanced computation
  - Introduction to Scientific Programming – programming concepts using C/C++ and Fortran
  - Scientific/Technical Computing – basic numerical methods, fundamentals of floating-point arithmetic, common tools for scientific software development (git, make), profiling and optimization, debugging
  - Parallel Computing for Scientists and Engineers – developing parallel applications using OpenMP and MPI
  - In Computational Engineering Dept: Scientific Computation and Software Engineering & Design

https://www.tacc.utexas.edu/education/academic-courses
STAR SCHOLARS

- Graduate or undergraduate interns, depending on project
- Students work under a TACC mentor, on projects of interest to Partners
- Students submit papers or posters at conferences
- Partner funded ($50K per student for 2 semesters)
- Past funding from BP, Shell, NASA
UNDERGRADUATE PROGRAMS

- NSF Research Experiences for Undergraduates (REU) grants
  - 10 undergraduates majoring in science and engineering disciplines
  - Participants explore grand challenges such as climate modeling, weather forecasting, drug delivery, brain mapping, energy exploration and understanding the human genome, among others.
TOPIC-FOCUSED TRAINING IN ADVANCED COMPUTING

- Offered in both spring and fall academic semesters
- 1 and 2-day courses in HPC, Data, and Visualization
  - Mix of lecture and hands-on exercises
- Open to TACC users, academic and industry partners
- In many cases courses are live-streamed and recorded on YouTube
- Upcoming and past training at: [https://learn.tacc.utexas.edu](https://learn.tacc.utexas.edu)

Courses have included:
- MPI/OpenMP
- Profiling and Optimization
- Debugging
- Programming the Intel Xeon Phi (KNC/KNL)
- Python
- R
- Using Hadoop/Spark
- Data Management Practices and Techniques
- Introduction to Scientific Visualization
  ...and more
TACC IMMERSIVE TRAINING INSTITUTES

Series of 1-week* training events – in person

- Applied Parallel Programming, April 30 – May 3
- Advanced Computing Foundations Workshop*, May 7-8
- Essentials of Advanced Computing*, June 5-7
- Scientific Visualization, June 10-13
- Designing and Administering Large-Scale Systems, June 25-28
- Workflows and Reproducibility in Scientific Computing, July 9-12
- Computational Science in the Cloud, July 23-26
- Machine Learning Foundations, August 12-15
- HPC Leadership Institute*, September 17-19

www.tacc.utexas.edu/education/institutes
CURRENT INDUSTRY PARTNERS

- Dell EMC
- Shell
- Chevron
- Ercot
- Hewlett Packard Enterprise
- Mellanox Technologies
- Cray
- Pavilion Data
- DDN Storage
- Aramco Services Company
- Diamond Offshore
- Intel
- Firefly
- NAG
- Raytheon
- Appentra
- WOLFRAM
- Sylabs.io
- Technip
- Boeing
- Ellexus
- NVIDIA
- ExxonMobil
- Synthetik
- ConocoPhillips
- BP
INDUSTRY COLLABORATION FOCUS: BP

- BP has been a STAR member since 2008.
- Funded a wide range of student programs at TACC, at all levels:
  - High school student coding competitions
  - SC Student Cluster team
  - Graduate and undergraduate student interns at TACC
- Keith sees the importance of ‘filling the pipeline’ so he can find HPC-savvy hires in the future
INDUSTRY COLLABORATION FOCUS: BP

- Internships are key: BP identified students that are either already interns (or future hires), or will be summer interns, and send them to TACC for internships during the school year.

- We work together to choose projects that are mutually beneficial, so the student(s) can take what they learn and go to BP and get to work immediately.
INDUSTRY COLLABORATION FOCUS: BP

- BP also uses TACC as a resource for general HPC knowledge. We tend to be on the ‘bleeding edge’ of technologies, installing new processors, file systems, and networks before industry, and usually at a much larger scale.

- TACC engineers provide support in overcoming issues/roadblocks, and feedback on possible future directions.

- Regularly attend our training courses and institutes.
Shameless Plug

https://www.txwomeninhpc.org/

https://womeninhpc.org
YES, FRONTERA HAS STARTED ARRIVING!
THANKS!

► Melyssa Fratkin, Industrial Programs Director
   mfratkin@tacc.utexas.edu

► Charlie Dey, Director of Training & Professional Development
   charlie@tacc.utexas.edu

► http://learn.tacc.utexas.edu