

Melyssa Fratkin

Industrial Programs Director

HPC User Forum

April 3, 2019

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 floatingpoint 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
 - http://bit.ly/TACCtraining
- Upcoming and past training at: https://learn.tacc.utexas.edu

Courses have included:

- ✓ MPI/OpenMP
- ✓ Profiling and Optimization
- ✓ Debugging
- ✓ Programming the Intel Xeon Phi (KNC/KNL)
- ✓ Python
- ✓ F
- ✓ 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



































WOLFRAM

























INDUSTRY COLLABORATION FOCUS: BP





- 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



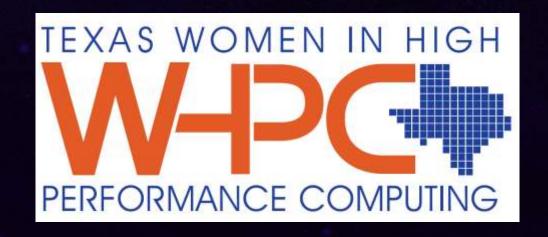
- ▶ Internships are key: BP identified students that are either already interns (or future hires), or will be summer interns, and send them to TACC for internships during the school year.
- ▶ We work together to choose projects that are mutually beneficial, so the student(s) can take what they learn 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!

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