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

Fermilab Computing

STEM Career Expo

20 April 2016

Fermi National Accelerator Laboratory

Fermilab is America's premier particle physics laboratory. Collaborating with scientists from around the world, we perform pioneering research, operate world-leading particle accelerators and experiments, and develop technologies for science in support of U.S. industry.

Fermilab Computing

Fermilab Computing works to develop and support innovative and cutting edge computing solutions and services for Fermilab.

From computer security experts to technical writers, Fermilab Computing depends on the efforts and skills of a variety of professionals, a few of whom are highlighted in the following slides.

Why did you choose this career?

"I'm curious about everything; I like to find answers and I like to build and make things work."

"My internship at Fermilab revealed to me this environment where it is possible to work on challenging problems beyond the standard computing systems and at the same time focus on building concrete solutions, both in terms of reliability and performance."

–Marco Mambelli, Applications developer and system engineer
Scientific Computing Division

Why did you choose this career?

"As a kid I enjoyed building my own toys more than playing with them.

When I realized that with a computer I could build my own 'stuff,' I became addicted to it. So when I came to choose my bachelor's degree programs, I didn't hesitate long before enrolling in computer science and engineering."

–Gerard Bernabeu Altayo, (*Job Title*)

Why did you choose this career?

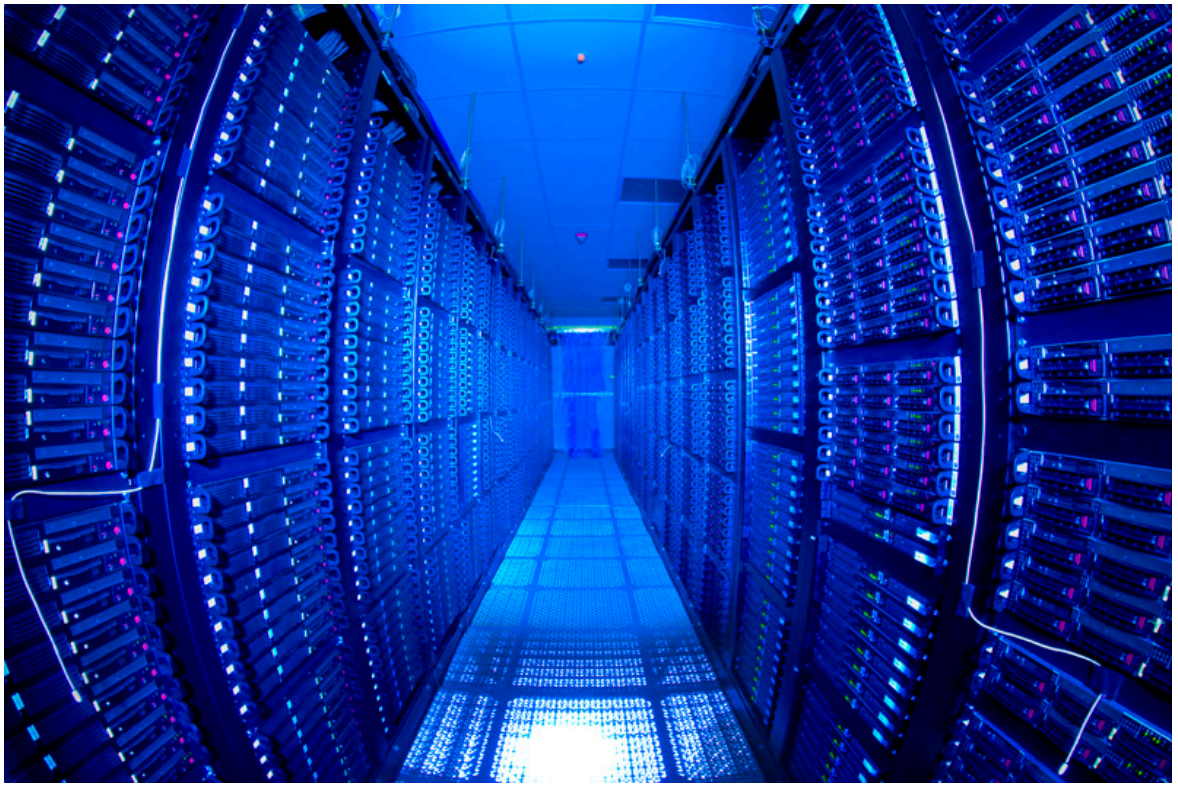
"I love helping people get their work done in a sensible manner."

I thought I was going to be an accountant. However, as I worked through college, I found a love for computers and business. My degree is B.S. of Operations Management and Information Systems at NIU. All the business and IT courses helped prepare me to become the head of Service Management, which helps manage IT like a business."

–Tammy Whited, Head of Service Management

Fermilab Computing Fun Facts

100 million gigabytes (100 petabytes) of data is stored in the Fermilab computing centers on magnetic tapes



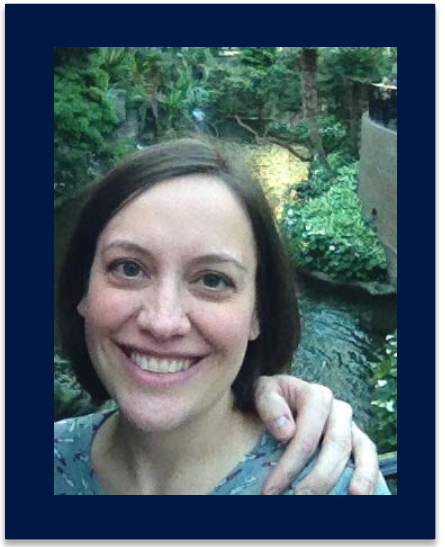
What advice would you give students to help them prepare for their careers?

"Build programming skills.

Find programs (at school or during the summer) where you can get to know high-throughput computing resources: clusters, clouds, grids, complex storage and distributed computing systems."

–Marco Mambelli, Applications developer and system engineer
Scientific Computing Division

What advice would you give students to help them prepare for their careers?



"Network, network, network! I wouldn't be working here if I hadn't taken the time to get to know my professors.

Realize that your first job (or in my case second and third) may not always be your dream job.

You can learn a lot from any job, if nothing else, it can help you know what you don't want to do for a living!"

– Krista Majewski, Computer Systems Analyst
Grid and Cloud Computing

What advice would you give students to help them prepare for their careers?

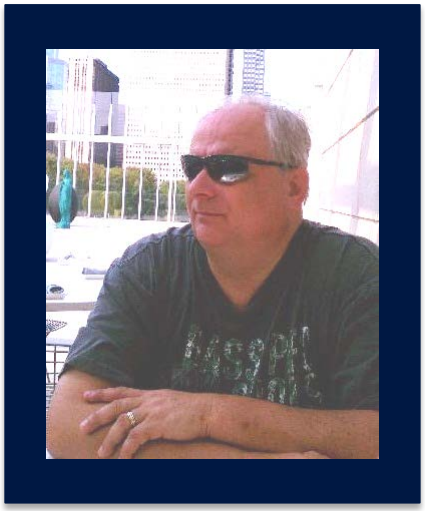
"Never give up. Never stop asking questions.

Even bad ideas can sometimes lead to brilliant discoveries."

– Andrew Norman, Physicist
Scientific Data Processing Solutions

What advice would you give to students interested in a career in computer security?

"The best advice I can give for any computer-related job is to strive for hands-on experience.



In addition to classes, you really need experience to become proficient and gain the knowledge you need to work in the computer security field."

– Greg Cisko
Cyber Security

What advice would you give to students interested in a career in IT Management?

"Learn as much as you can, and follow your passion. Get internships and really listen to advise that people provide you.

Align yourself with a mentor who can guide you in your career."

–Tammy Whited, Head of Service Management

Fun Facts

8,000 malicious URLs are blocked by the Fermilab cyber security team every month.

60,000 intrusion detection events are triggered at Fermilab every day.

More than 1 million spam messages are caught by Fermilab cyber security filters every month.

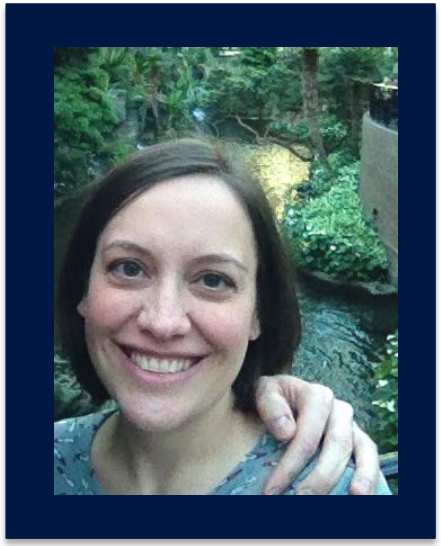
What is the most satisfying thing about your job?

"It is nice to see the results of my labor in action, allowing the scientists to work faster and do better research.

The computing problems I have to solve are challenging and the scale is exciting: We move petabytes of data and control millions of CPU hours."

–Marco Mambelli, Applications developer and system engineer
Scientific Computing Division

What is the most satisfying this about your job?



"Fermilab allows me to work on cutting-edge technologies and with some of the smartest people on the planet.

There is always something new to learn. The campus atmosphere here is great: I volunteer for the public arts series, take exercise classes at the gym, and my boss encourages taking time to attend the many lectures offered here."

– Krista Majewski, Computer Systems Analyst
Grid and Cloud Computing

What is the most satisfying thing about your job?

"Watching my experiment see 'new' things."

Every time we make a small change to enable the detectors to see new phenomena, there's always that "moment of truth" when we turn it on and see if it actually worked. I love going to the control room and watching these moments."

–Andrew Norman, Physicist,
Scientific Computing Division

What is the most satisfying thing about your job?

"Being able to see how ideas grow and evolve to solve challenging problems.

As an IT professional, I no longer build "my toys' on my own; there are many teams of talented people working on different bits and pieces, and at the end it all works like a well-oiled machine."

– Gerard Bernabeu Altayo, Linux DevOps
High Performance Parallel Computing Facilities

What is the most satisfying thing about your job?

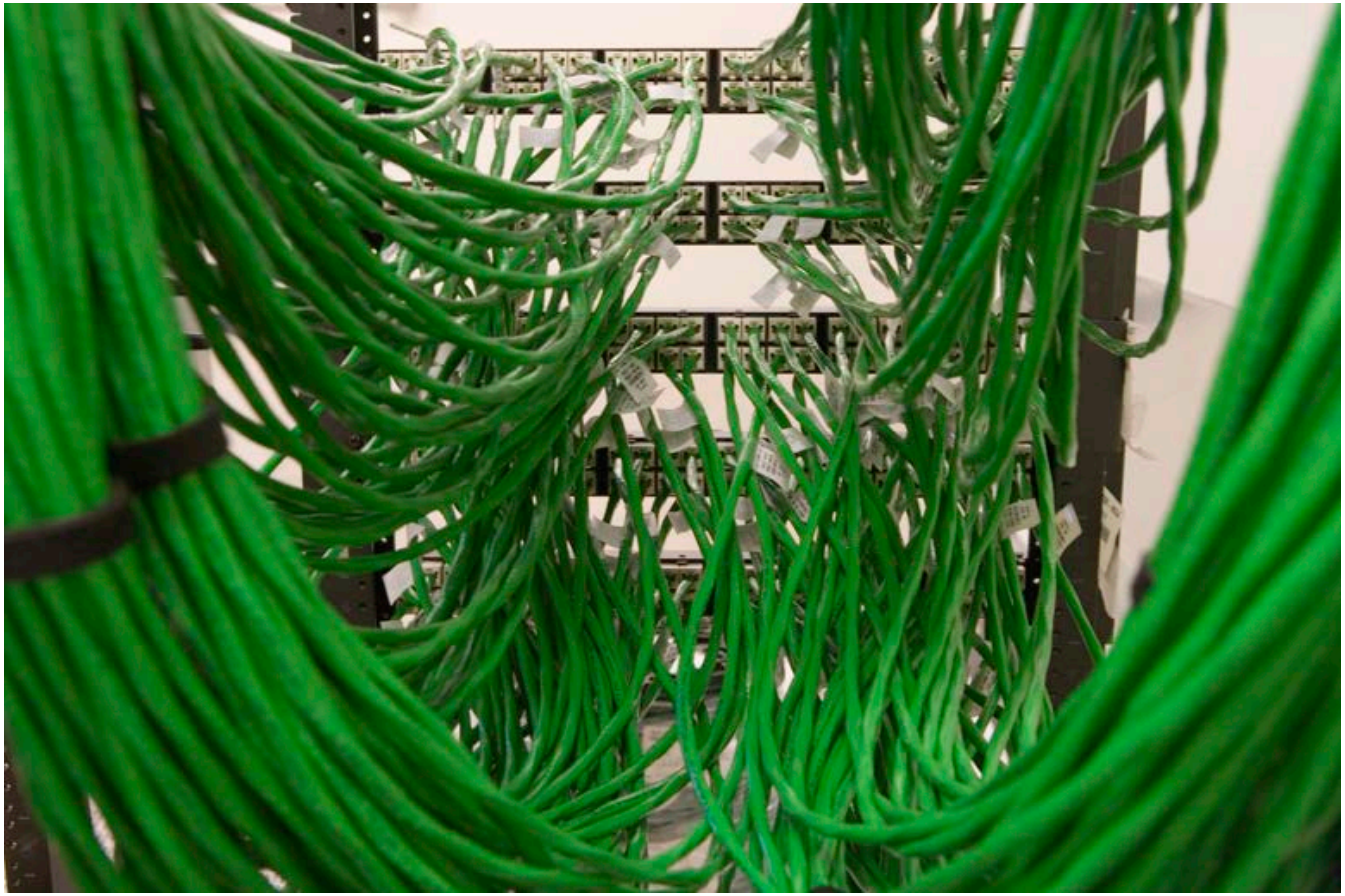
"I provide solutions to support the business of science.

I always focus on the fact that I am here to support our business model. It's not about IT."

–Tammy Whited, Head of Service Management

Fun Facts

The laboratory's network fiber totals 3,500 miles. The distance between New York and Los Angeles is 2,800 miles.



What personal characteristics does your job require?

"You have to be able to switch contexts quickly and efficiently to deal with different areas of work and adjust rapidly to changing priorities."

–Lisa Giacchetti, Linux DevOps
Scientific Computing Division

Fun Facts

The Core Computing Division supports 2,642 desktops and laptops and 151 applications.

What does your typical day involve?

- “Troubleshooting to find the causes of a bug or thinking about the best way to implement a new feature, coding (mostly in Python) or reviewing someone else’s code.
- Installing services in the cloud, even a whole new cluster and workflow manager when a new version needs to be tested.
- Interacting with colleagues: sometimes they have technical questions for me; sometimes they help me solve a problem; sometimes we discuss which changes would make a program easier or even more useful.”

–Marco Mambelli, Applications developer and system engineer
Scientific Computing Division

Connect with Fermilab!