

Eric Frederick

programs motion-tracking software

Director of technology, Xcitex

BA, physics and mathematics, Clark University, 2003
PhD, physics, University of Massachusetts Lowell, 2011

What was your research focus?

Hyperpolarized gases for MRI. I used hyperpolarized xenon to get a ventilation map of the lungs. And from the fraction that enters the bloodstream, you can estimate the surface-to-volume ratio of the lungs.

What were you looking for in a job?

Physicists know that we can do a lot, but we don't know how to market ourselves. Originally, I hoped to get a job in medical physics. But my program didn't have the necessary accreditation or residency program. In 2012, I went to Bruker to remain in research and provide support to the research community. The company specializes in test equipment for materials advancement and drug discovery. I worked mostly with preclinical animal MRI, CT, x-ray scanners, and optical methods and later worked with the sales team.

How did you find your job at Bruker and then at Xcitex?

Someone I knew at Bruker told me about the opening. I was there from 2012 to 2017. For my job at Xcitex, I was poached.

Describe your work.

At Xcitex, we have a software suite that can track motion and synchronize data from accelerometers and other sensors with videos. There's a lot of ballistics tracking and testing of showerheads and of how paint gets sprayed out of cans to get a better coating. The software can track points, edges, and contours and perform more complex tasks like particle tracking and particle-image velocimetry.

I mostly update legacy code. I also do training and interact with customers.

What do you like about your work?

I work with computers and get a broad exposure—we work with biomedical companies, defense companies, and more. What I like most is consulting with customers.



(Photo courtesy of Eric Frederick.)

How do you use your physics?

We take real-world observables—speed, position, et cetera—and give them to clients so they can create models. We need to be aware of optics to advise customers on proper lighting—a good-looking video is not always the same as one that will work well for tracking.

What new skills did you need to pick up?

Physics and other skills I picked up along the way prepared me for industry jobs. For me, it's more about trying to be a good person in industry. People want to take shortcuts and do quick fixes. Having a backbone and doing what is right—and not what's easy—is important and sometimes challenging.

