

## ECE Student Profile: Robby Gray

### Gray plans to apply his ECE experience to Caltech as a PhD student

APR 26, 2019

When Robby Gray ('19) isn't working with lasers, he might be found on campus arranging music for the X-Factors acapella group, supporting new students as a leader for Wildcat Welcome, or working with Global Engineering Brigades to build health infrastructure for communities in Central America and West Africa.

"What drew me most to Northwestern was the idea that you could engage in different things here," the Cleveland, Ohio, native said. "Growing up, I played soccer, played piano and clarinet, and knew that I need other outlets in my life at college, so I was excited about a curriculum and atmosphere on campus that would allow me to both engage in engineering and also in all of these activities that I am interested in."

Now, Gray is preparing to graduate from Northwestern Engineering with a bachelor's degree in electrical and computer engineering and applied math, which he will use at his next stop, the California Institute of Technology. There, he will pursue a PhD, working with the nonlinear photonics group led by Caltech's Alireza Marandi, assistant professor of electrical engineering and applied physics.



Robby Gray

"I would not be doing this if it were not for ECE at Northwestern. There's a really strong solid-state program here, so I learned a ton about materials, optoelectronics, and semiconducting devices," Gray said. "The combination of my academic and curricular background as well as the research experience I gained here really shaped my goals going into grad school."

While at Northwestern Engineering, Gray worked with the [Center for Quantum Devices \(CQD\)](http://cqd.eecs.northwestern.edu/) (<http://cqd.eecs.northwestern.edu/>), led by [Manijeh Razeghi](https://www.mccormick.northwestern.edu/research-faculty/directory/profiles/razeghi-manijeh.html) (<https://www.mccormick.northwestern.edu/research-faculty/directory/profiles/razeghi-manijeh.html>), Walter P. Murphy Professor of Electrical and Computer Engineering. Gray's research project involved using a photodetector and a laser to build a free space optical communication system, which resulted in a system that does not need a fiber but has line-of-sight communication through the air from a laser to a detector in the mid-infrared and can transfer video data at high quality through space.

"I think there's a lot of crossover between disciplines, so engaging in different activities can really help to supplement what you're learning in the classroom," Gray said. "For example, being a musician, when I learned about signal processing, I was able to understand immediately the applications in microphone technologies or amplifiers."

Gray could see himself after his graduate studies working in industry, but his experience as a teaching assistant for ELEC\_ENG 225: Fundamentals of Electronics, might take him in the direction of pursuing a career in academia.

“I really loved that experience, so I definitely think that teaching at some point might be a goal of mine,” Gray said.