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TTU Graduate Attends Los Alamos Dynamic Summer School

By Jerry Renshaw

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Last summer, Tennessee Tech University alumna Hannah Ross participated in a selective summer school program offered annually at Los Alamos National Laboratory. The program, formally known as Los Alamos Dynamic Summer School, is for a group of 21 of upper level undergraduate students and first-year graduate students.

Los Alamos Dynamic Summer School puts students into multidisciplinary teams for research in engineering dynamics; the students apply analytical and experimental approaches to dynamics problems and develop written and oral presentations on their work.

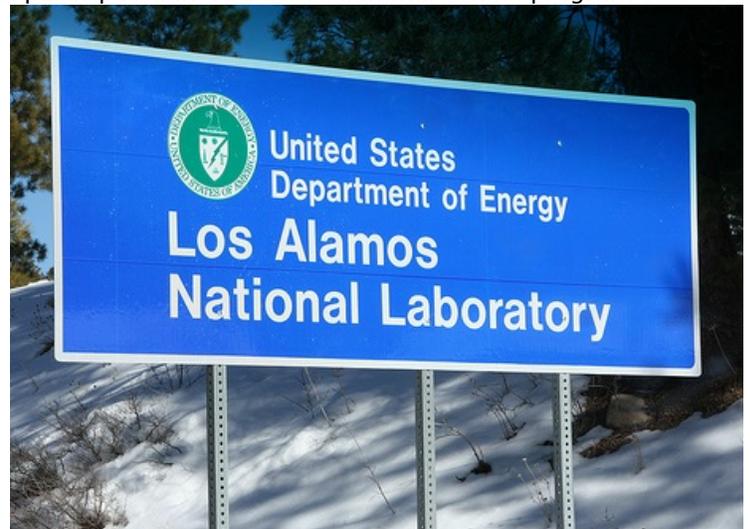
"I found out about the program from [TTU mechanical engineering professor] Dr. Steve Anton," said Ross, a 2014 mechanical engineering graduate. "He had previously participated in the same program as well as completed a post-doctoral research position at Los Alamos. He thought I made a good candidate for the program and recommended I apply."

Ross' work at Los Alamos centered on nuclear critical safety modeling and virtual/augmented reality that could help design safer methods for nuclear material handling. Her group designed and built a prototype that can monitor the location of a nuclear material container. Using 3-D sensors and an Oculus Rift virtual reality machine, the system gives visual warnings to an operator if a container is moved into a location that could prove hazardous.

The program's focus on cyber-physical systems enhances the interaction between a system's physical and computational aspects, on the idea that a human and machine partnered together can be much more effective than a human or computer alone. That idea was the inspiration for a system that can notify an operator of a safety violation without causing him/her to be overloaded with information. Arriving at that point involves figuring out the best ways to present information to a user and how to filter out and relay the most useful parts of a massive amount of data.

Ross was an accomplished student at TTU, with a 4.0 GPA and memberships in engineering honor societies Pi Tau Sigma and Tau Beta Pi. In addition to her experience at Los Alamos, she also worked on the Geophysical Institute Atmospheric Sciences Group project in Alaska in 2012, a National Science Foundation-funded study that covers climate variability, climate change and other topics that have a bearing on societal issues. Ross' main areas of interest include sustainable energy; she is going on to graduate school at University of Washington, where she will do master's-level research in tidal energy.

"Hannah was an excellent student who possessed the unique spark required for research. Her drive was evident from my interactions with her in discussing research and graduate school, and her outgoing personality was a perfect fit for the summer school," said Anton. "As a former participant and mentor of the Los Alamos Dynamic Summer School, I can say that the program really helps propel a young student's career. The ability to do hands-on research in a government laboratory setting that results in a conference publication is a unique and valuable experience."



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