Simulations show electromagneticics at work

Explosive inaction is a challenging task—easy for students who graduate to civil engineering to make electromagnetic waves coexist and propagate. Undergraduate Nathan Grey, PhD, assistant professor in the Department of Electrical and Computer Engineering, is developing materials that can do just that. Grey and his team are investigating the principles of this effect, called a metamaterial, that can manipulate electromagnetic waves in unique ways. Grey is using photography to capture the behavior of these materials and testing them in a lab setting.

Securing critical energy infrastructure

Fuel a nuclear reactor, and it’s a nuclear threat. But a laser beam can also help keep energy sources safe. Undergraduate Katerina Westlake received a scholarship from the Department of Energy to study a new way to secure energy infrastructure. Westlake is using a technique called photonic crystal fiber to develop an algorithm that uses light to detect changes in a critical system. The goal is to create a more secure system for energy infrastructure.

Improving multi-source data fusion

Berk Nis, PhD, associate professor of mechanical engineering and materials science, is developing a new method for analyzing data from multiple sources. The method uses machine learning to analyze data from different sources and improve the accuracy of predictions. This technique has applications in fields such as finance, health care, and transportation.