

Peter Holtmann

Department: Electrical and Computer Engineering

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Research Advisor: Dr. Jie Huang

Advisor Department: Electrical and Computer Engineering

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Realtime Sensor for detecting Gallium Infiltration Attack

The proposed research is to create a real-time sensor for detecting aluminum degradation due to gallium infiltration attacks, specifically in military vehicles and structures. Gallium acts as a poison to aluminum, leading to catastrophic failures of structural integrity. The proliferation of educational material on this subject raises security concerns for the United States Military, where nearly all structures utilize aluminum due to its high-strength, light-weight profile. Utilizing Fiber-Bragg Grating (FBG) sensors and machine learning techniques, this research aims to develop a real-time sensor to detect these attacks.

Peter Holtmann is a graduating senior in Electrical Engineering. Peter is part of the Lightwave Technology Lab, a lab dedicated to the research and development of optical and microwave sensors applied to energy, intelligent infrastructures, clean-environment, and biomedical applications. Besides this, Peter is involved with the Intelligent Systems Center, where he has worked as the webmaster, and New Student Programs, where he is a PRO Leader. His research interests include applying machine learning and artificial intelligence to engineering applications, sensing techniques, and optics.