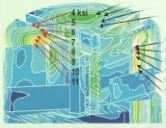
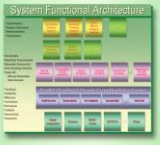


Modeling and Simulation Group

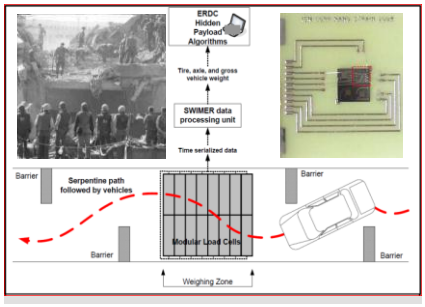


WIM & AUVI →Vehicle Characterization System (VCS)

Weigh-In-Motion (WIM) & Automated Undercarriage Vehicle Inspection (AUVI) Systems – Components of a C-VBIED System of Systems

Problem Statement

The Vehicle-Borne Improvised Explosive Device (VBIED) is still being used with deadly effect, despite all we think we know about VBIED use. Security checkpoints now require vehicles: (1) to slow or stop, to pass through serpentine roadway approaches, and (2) to be subject to visual evaluation before entering secure facilities. While all of these measures can reduce the risk for attack, there remains the likelihood for hidden payloads. These payloads: (1) may not be easily detectable using only visual observation and, lacking other reasons to require a detailed vehicle inspection, and (2) may be passed through security check points with hardly a second look. This is particularly true for passenger vehicles, such as sedans, or small pickup trucks.



Vehicle Characterization System (VCS) is a physical security equipment system (PSES) and a component of a counter-VBIED (C-VBIED) system of systems (SoS).

Technical Approach

Vehicles traverse a C-VBIED vehicle screening zone as they approach an entry control point (ECP) or tactical control point (TCP). During a vehicle's traversal, it encounters the VCS sensors and several other PSES components that control the vehicle's flow through the screening zone, measure driver biometrics, identify explosives, detect anomalies, and deny uncooperative vehicles access to the protected area. The following are the requirements that are applicable to the VCS and the VCS sensor components.

Benefit

- The primary beneficial functions of the VCS are to: 1) detect potential VBIED signatures and 2) provide physical characteristics of the vehicle that improve the C-IED Command, Control, and Display Equipment's (CCDE) ability to detect VBIED signatures. The VCS is designed to provide this data to the C-IED CCDE through Security Equipment Integration Working Group (SEIWG) messages.
- The specific physical characteristics of the vehicle, provided by ORNL WIM System, being used by the C-IED CCDE to enhance the detection of VBIEDs include: 1) physical dimensions of the vehicle, 2) gross vehicle weight, 3) axle weight, 4) wheel weight, and 5) vehicle longitudinal and latitudinal center of balance (COB).

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