AIAD #10946

ORGANIZATION/PROJECT SPONSOR

Organization: U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate
Organization POC: Ms. Paige Mergler
Organization POC email: mergler@arl.army.mil
Organization POC Phone: (410) 278-6303, DSN 298-6303
Organization POC FAX: (410)-278-9167, DSN 298-9167
Location of Sponsoring Directorate or Division: Aberdeen Proving Ground, MD

PROJECT

Title: Computer Aided Design (CAD) Vehicle-Parts Database Development

Description: The Survivability/Lethality Analysis Directorate (SLAD) of the U.S. Army Research Laboratory (ARL) supports the live-fire testing and evaluation of both developmental- and currently-fielded vehicles. In the continuing effort to improve personnel and vehicle survivability to meet warfighter needs, ARL/SLAD modeling and simulation (M&S) analyses utilize computer aided design (CAD) vehicle representations to provide detailed and accurate analyses. This CAD modeling effort is a very strict and time-consuming task which can dictate the level of fidelity achievable in producing M&S analysis results.

ARL/SLAD is organizing a parts database to facilitate more consistent and faster CAD development for use in M&S analysis. Various tri-service vehicles utilize the same or similar parts and technologies within their vehicle subsystems. To reduce the time needed to develop these CAD-vehicle geometries, modelers will leverage individual parts and subsystems while constructing new target models. Until this time, subject-matter expert's "corporate knowledge" has been the only method by which these common vehicle components can be leveraged. This parts database will facilitate ARL/SLAD's CAD target modelers' ability to reference common components in vehicle geometries that will ensure a consistency that is necessary in high-fidelity M&S while simultaneously providing a large time savings to the current development process. This unique experience for a cadet will provide an opportunity to impact ARL/SLAD's geometry creation efforts for years to come. Additionally, the cadet will gain insight to the ballistic vulnerability/lethality (V/L) modeling process and understand the obstacles of developing CAD target geometries to support live-fire, armor optimization, and personnel vulnerability studies that may someday benefit him/her in an Integrated Product Team (IPT) setting and/or in a Program Manager role.

ARL/Army Benefit: ARL/SLAD will be able to develop personal relationships and interface with future U.S. Army leaders and gain perspective into the challenges new officers face upon entering into the Army acquisition cycle, as well as provide a cadet a basic understanding of SLAD's ballistic V/L modeling processes for use in vehicle

development, testing, and evaluation. Additionally, ARL/SLAD will provide a cadet an understanding of the common CAD development practices used throughout both government engineering efforts and private industry engineering development efforts. This assignment will provide a cadet exposure to U.S. Army vehicle subsystems and the impact that CAD development has within the LFT&E process. Through this project, ARL/SLAD will be able to apply more resources to the efforts of building the parts database which will ultimately speed up the completion of a future initiative, namely, development of a Geometry Service for the next generation ballistic vulnerability/lethality model.

Background Required: Some CAD preferable (Pro/E, Solidworks, Unigraphics, etc.), but not necessary.

Security clearance required: Secret, preferred, UNCLASS is minimally acceptable

Capacity: 2

Duration: (4 weeks)

Block Preference: N/A