REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHB-27-08

Usability and Field-Testing Process Development for Mobile and Wearable Biosensors

PROJECT DESCRIPTION: The Software Development Cell (SDC) is an organic Air and Space Biosciences Division (RHB) asset within the Product Development Branch (RHBA). Its mission is to leverage mobile software platforms and specialized, agile teams to accelerate technology development and transition. Focused on customer-driven solutions, the SDC designs, builds, and deploys specialized iOS and Android applications while leveraging broad collaboration opportunities with government, industry, and international partners. The SDC provides direct, critical support to RHB, as well as to other Department of War (DoW) stakeholders.

This project will focus on developing baseline processes for usability testing and gathering structured user feedback from operational field testing of the SDC's software applications and wearable sensor integrations. As an ORISE participant, you will help bridge the gap between rapid software development and user-centered design by creating general, repeatable baseline guidelines and a process framework. This framework will ensure that qualitative and quantitative feedback from warfighters is systematically collected and translated into actionable technical requirements to iteratively improve SDC products.

LEARNING OBJECTIVES: Under the guidance of a mentor, you will gain hands-on experience to complement your education and support your academic and professional goals. Along the way, you will engage in activities and research in several areas, including but not limited to:

1. Integrate into a multidisciplinary software development team combining engineering, mobile application design, and biological sciences.
2. Develop hands-on experience designing and documenting repeatable standard operating guidelines for user feedback collection across diverse platforms.
3. Gain experience translating qualitative operator feedback from field testing into structured, prioritized technical backlogs for software developers.
4. Collaborate on usability testing methodologies and the evaluation of complex wearable biosensor integrations.
5. Participate in the synthesis of research findings to optimize product development cycles for warfighter-facing technologies.

ACADEMIC LEVEL: Bachelor's, Master's

DISCIPLINE NEEDED: Industrial Engineering, Human Computer Interaction, Engineering (General)

RESEARCH LOCATION: Wright-Patterson Air Force Base, Dayton, Ohio

RESEARCH MENTOR: Peter Le, Ph.D.

Industrial and Systems Engineering, The Ohio State University, 2016

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Dr. Peter Le is a Senior Research Biomedical Engineer and technical leader at the Air Force Research Laboratory, 711th Human Performance Wing, where he serves as Product Area Lead for Biotechnology Performance and provides technical leadership for the Software Development Cell. His work sits at the intersection of science, engineering, and technology development, where he brings together multidisciplinary teams to address complex medical and human performance challenges while translating emerging technologies into operational capabilities. Rather than focusing on a single technology or discipline, Dr. Le leads across domains to identify high-impact opportunities, shape technical strategies, and guide solutions from research and prototyping toward real-world application. He holds a Ph.D. in Industrial and Systems Engineering with a focus on Human Systems Integration, an M.S. in Mechanical Engineering from Colorado School of Mines, and a B.S. in Mechanical Engineering from the University of Colorado Denver.

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