

Virtual Event via WebEx

Tuesday, December 8 at 11am EST

Distinguished Lecturer,
Lance Fiondella

Covariate Software Reliability Models and
Applications



Bio: Lance is an associate professor in the Department of Electrical & Computer Engineering at the University of Massachusetts Dartmouth. He received his PhD (2012) in Computer Science & Engineering from the University of Connecticut. Dr. Fiondella has published over 130 peer-reviewed journal articles and conference papers, twelve of which have been recognized with awards, including seven with his students. His research has been funded by the United States Department of Homeland Security, U.S. Army Research Laboratory, Naval Air Systems Command, Naval Sea Systems Command, National Aeronautics and Space Administration, and National Science Foundation, including a CAREER award

Abstract: Traditional software reliability growth models enable quantitative assessment of the software testing process by characterizing defect detection in terms of testing time or effort. However, the majority of these parametric models do not identify specific testing activities underlying defect discovery and thus can only provide general guidance on how to incrementally allocate effort. This talk presents a non-homogeneous Poisson process software reliability growth model incorporating covariates based on the discrete Cox proportional hazards model, which explicitly links test activities to defect discovery. Efficient and stable expectation conditional maximization algorithms are derived to estimate the numerical parameters of a model that best characterize the failure data collected during testing. An optimal test activity allocation problem is formulated to maximize defects discovered, so that they can be corrected prior to release. An overview of the Covariate Software Failure and Reliability Assessment Tool (C-SFRAT) will also be provided.