Tim Pesch - Profile Section

Tim is a mathematician with experience in reliability probability estimation. He completed his studies in mathematics with a focus on frequentist statistics at RWTH Aachen University in Germany. His Master thesis featured the combination of two well established models in reliability theory, the Stress-Strength model and the Competing Risk model, in the presence of censored data. His research yielded maximum likelihood-estimators for model parameters as well as the reliability probability under an exponential assumption, amongst other inferential results.

Tim is passionate about the application of statistical models to real world problems and overcoming the challenges with such applications.

Tim is undertaking his PhD with Assoc. Prof. Adriano Polpo and Dr. Edward Cripps at the University of Western Australia.

He will be focusing on research in Theme 2: Support the Engineer.

Tim Pesch completed and industry placement for BHP looking at a Reliability analysis of BHP overland conveyor idlers to inform a fixed time replacement strategy. Tim completed some of the main analysis featuring a risk ranking of factors via multiple logistic regression investigating conveyor failure.

PHD Research – Sequential Order Statistics for Non-Identical Component Lifetimes

Various mechanical and electrical systems are composed of multiple components. Whether the system fails once one of the components fails (series system), all components fail (parallel system), or a specific number of components fail (n-out-of-k system), the main aim in reliability analysis is to better understand the lifetime behaviour of the individual components as well as the whole system.

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In applications, it is the goal of cost reduction that drives this ambition as the estimation of average lifetimes and the prediction of future failures governs how maintenance schedules, warranty bonds or bulk replacement strategies are deployed.

Tim's research project aims to build a highly sophisticated model for coherent systems consisting of components with different lifetime behaviours which share a common workload.

Expected outcomes include:

1. Detailed guidelines on how to accurately gather valuable asset-specific information.
2. A model that industrial partners can deploy to predict failures of their equipment components.
3. Advancement in maintenance cost and spare part volume budgeting and forecasting.
4. Enhanced understanding of the entire system as well as the individual components.
5. Increased in-service prediction accuracy for future failures.

Personal Website