

Mathematics and its Applications (IMA) Project Proposal

- Project Title: CAE Model Validation Methods and Process for Multiple Dynamic Responses Engineering
- Project Mentor: Ren-Jye Yang (CV attached)
- Brief Project Description:

Computer modeling and simulations play an important role in reducing vehicle prototype tests and shortening product development time. Its ultimate goal is achieving zero prototypes and replacing the physical prototype testing with computer simulations. To achieve this goal, the quality, reliability and predictive capabilities of the computer models for various vehicle dynamic systems with multiple responses must be quantitatively and systematically assessed with objectivity.

Model validation is the process of comparing model outputs with experimental observations in order to assess the validity or predictive capabilities of computer models. Developing quantitative methods and processes for model validation under uncertainty has attracted considerable research interest in recent years.

The main objective of this project is to develop robust, quantitative, methods and processes for model validation under uncertainty. It also includes developing robust validation metrics for objective comparison of computer prediction and testing measurements of dynamic responses.