Optimal Design of Accelerated Life Testing Experiments

Multiple Objectives:
- Testing time
- Cost
- Accuracy of parameter estimates
- Accuracy of reliability estimate

Challenge: Too many solutions. It is hard to make a decision for engineering implementation.

Proposed approach for multiobjective design of equivalent ALT plans

Stage one
- Self Organizing Map (SOM)
  - To classify multiple solutions (ALT plans) into clusters based on different performance characteristics
  - To visualize solutions in a smaller dimensional space

Stage Two
- Data Envelopment Analysis (DEA)
  - To identify the efficient solutions (ALT plans) in each clustered Pareto set
  - To reduce the solution space for more informed decision making

Final solutions: Reduced size of solutions. It is easier to choose a candidate ALT plan to implement.