



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

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

Proposed approach for multiobjective design of equivalent ALT plans

See Liao and Li (2008) in *International Journal of Reliability, Quality and Safety Engineering*.

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