

Homework Assignment 15: Applied Probabilistic Models

Project Proposals

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Proposal 1

This proposal is about fitting probability models to frequency data from my thesis work about the delivery of concrete [1]. This data is generated from preliminary results pertaining to different solution methods, applying χ^2 Goodness-of-fit test. In addition, create a model that helps predict the probability of an instance to reach an optimal value given other characteristics, performing generalized linear models.

Proposal 2

The second proposal is the forecast for manufacturing operation through time series and Auto-Regressive Integrated Moving Average (ARIMA) model. This will help to forecast sales/demand for a period of time.

Proposal 3

The third proposal is an analysis of capacity and tolerance indices and Six Sigma metrics to measure if a manufacturing process has been fulfilling its specifications. Analyzing these capacity indices will allow one to know if the process is centered with respect to the specifications and therefore give recommendations to improve it. Also, with the design of tolerance limits can be defined the specifications of upper and lower values of to the nominal one that components of the product should have.

References

- [1] Oscar Alejandro Hernández López. Study of Mixed Integer Programming Models for the Concrete Delivery Problem, 2020.