An Open Source Covariate based Software Reliability Assessment Tool A Guide for Contributors

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***Abstract*—This paper presents the application architecture of xxx, a free and open source application to promote the**

I. Introduction

Do not worry about this for now

II. Software Architecture

This section presents...

User interface implemented in PyQt5, a plug-in for Python (Python bindings for Qt v5).

Need to have PyQt5 libraries installed

[example data sets, user guide links?]

Accepts input: failure times, number of failures at that time, 1 or more columns of covariate data

3(?) hazard functions implemented: Geometric, Negative Binomial (Order 2), and Discrete Weibull (Order 2)

Goodness of fit measures (AIC, BIC, etc..)

Functions of tool: fitting models to data, comparing goodness of fit, prediction

A. xxx

Shows list of loaded models to choose

View imported data as graph or table

Select covariates to perform measurements on once data is loaded. Reads covariate names from data file. If no header, generic names (Metric1, Metric2, etc..) given to covariates.

Figure

III. Model Specifications

Generic model class contained in model.py in the core directory. Most definitions and methods are in model.py. Specific models are stored in the models directory, where one each model has its own file. This file can have any title, although for ease of use it is best to title the file the name of the model. The specific model must contain: an import of the generic Model class (from core.model import Model), the class must inherit from Model, a string containing the name of the model assigned to variable name, the initialization method (always exactly the same), and a calcHazard function. The calcHazard function takes one argument (b), and returns a list of values of the function evaluated for each discrete time of the imported failure data.

Code

IV. Model Integration and Testing

xxx

V. Conclusion and Future Research

This paper presents an open source...

Acknowledgment

This material is based upon work supported by the National Science Foundation under Grant Number (#1749635). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.