

README file
The BLUP for continuation of a function
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In the paper “The BLUP for continuation of a function” we show how to construct the best linear unbiased estimator (BLUP) for the continuation of a curve in a spline-function model. We apply the proposed BLUP to real-world call center data. Specifically, we forecast the continuation of both the call arrival rate and the workload processes at the call center of a commercial bank.

This folder contains 3 subfolders:

1. Functions - the Matlab code for the BLUP algorithm.

Note that in order to use these functions one needs first to download the FDA library from <ftp://ego.psych.mcgill.ca/pub/ramsay/FDAfuns/Matlab/>

The following files exist in this directory:

- forecast_continuation.m : the forecast function itself.
- restrict_bsplines_fd.m : an auxiliary function.
- cross_validation_continuation.m : a function that can be used to find the parameters for the forecast
- bspline_fd2bspline.m, horzcat.m : corrections to minor errors in the original functions in the FDA library

2. Data- the data for the 3 examples in the paper.

- weekdays_data.mat : the call volumes for weekdays between March and October 2003. The data consists of the arrival volumes at five-minutes resolution between 7 AM and 9:05 PM (see Weinberg et al., 2007, for more details).
- workload_data.mat : the average workload data for the same period of time (see Reich, 2009, for more details). We thank Michael Reich for providing the data.
- weekends_data.mat: the call volumes for weekends between March and October 2003. The data consists of the arrival volumes at five-minutes and fifteen-minutes resolution between 7 AM and 9:05 PM. The data was extracted using SEEStat, which is a software written at the Technion SEELab (see <http://ie.technion.ac.il/Labs/Serveng>).

3. Demo- a simple example that shows how to use both forecast_continuation.m and cross_validation_continuation.m to forecast the continuation of day 101 given the information up to 10 AM and the information regarding days 1-100. Confidence bands for the call volumes weekdays' data are also given.

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