University of Cyprus
Department of Mathematics and Statistics

INVITATION

The Department of Mathematics and Statistics
of the University of Cyprus
invites you to an open lecture, with

Mr. Konstantinos Bourazas
Postdoctoral Researcher (KIOS)

subject

"A Bayesian Online Change Point Model for Short Runs"

Abstract

In Statistical Process Control/Monitoring (SPC/M) our interest is in detecting when a process deteriorates from its "in control" state, typically established after a long phase I exercise. Detecting shifts in multivariate short horizon data of a process with unknown parameters, (i.e. without a phase I calibration) is quite challenging.

In this work, we propose a self-starting Bayesian change point scheme, which is based on the cumulative posterior probability that a change point has been occurred. We will focus our attention on multivariate Normal data, aiming to detect persistent mean vector shifts. The proposed methodology, named Multivariate Self-Starting Shiryaev's (M3S), extents the well-known Shiryaev's procedure to multivariate data, allowing both parameters and shifts to be unknown. Precisely, we relax the strict assumptions of the standard Shiryaev's approach, enriching the methodology in four ways: move to multivariate data, incorporate directional invariance and anisotropic scaling in the modeling, allow for prior flexibility and finally derive posterior inference for all parameters.

A real data set will illustrate the M3S scheme, while a simulation study will evaluate its performance against standard alternatives

The lecture will take place on Wednesday, 30 November 2022, at 11:00 a.m., in room 110-XOD02 at the University Campus.

The lecture is open to the public.