

Invited Speech:

A Methodology and Infrastructure for Variability Reduction, Sensor Level Root-Cause Diagnosis, and Response Prediction Using Big Data



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About the Speaker

Kenneth R. Harris received his BS degree in chemical engineering from University of Washington, Seattle, in 1994, and his Ph.D. from University of California, Davis, in 1998, both with focus and dissertation on the topic of nonlinear process control. He is currently working at PDF Solutions, Inc, serving as Director of Marketing in the Volume Manufacturing Services group. He is based in the San Jose, California office.

Abstract

A methodology and infrastructure is presented that focuses on reduction of manufacturing variability, through modeling of inline and end of line yield quality metrics. Extremely large data sources are collected in real time, and stored in a multi-database architecture. This advanced architecture enables the infrastructure to keep up with state of the art manufacturing factories using real time data feeds. An integrated, highly interactive GUI is used, where all analysis and configuration functions are integrated within this GUI. Finally, several overviews of use cases are presented to illustrate the benefits of the infrastructure, in particular root cause diagnosis at the tool sensor level, as well as a prediction engine for dynamic sampling and control.