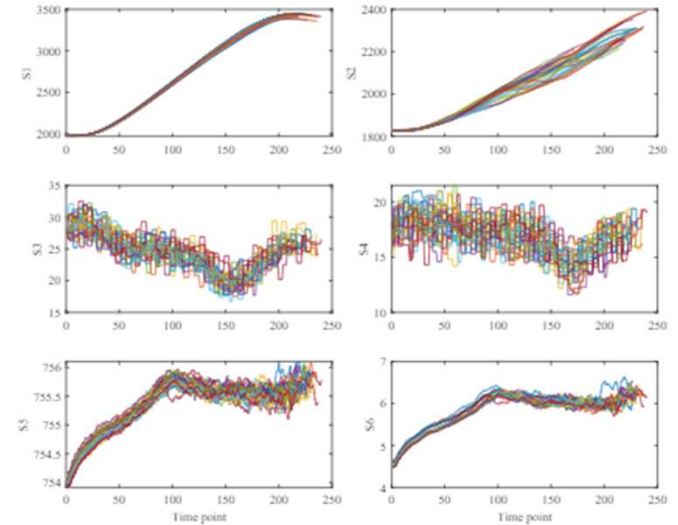# In-profile monitoring for multi-variate process data
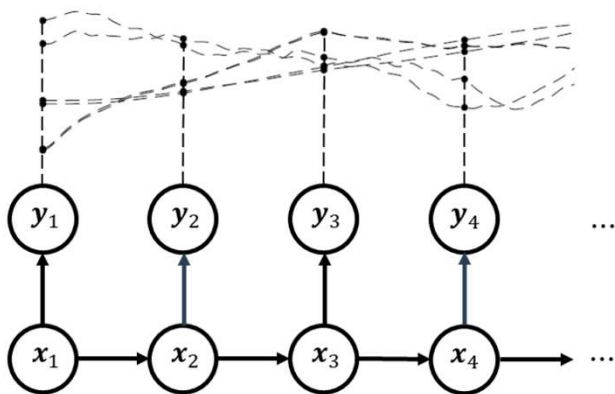
Background: Nowadays advanced sensing technology enables real-time data collection of key variables during manufacturing. However, all current studies treat each profile as a whole, such as a high-dimensional vector or a function, and construct monitoring schemes accordingly. This leads to long detection delays and can not handle the unsynchronized samples. To deal with this problem, we first propose the idea of "in-profile monitoring".

Data feature: sequentially coming, high-dimensional, clusterwise correlation between different channels

Method: In-profile modeling based on state space model for dynamic system

Modeling

6-channel profile

6-dimensional observation vector

state variable

Monitoring