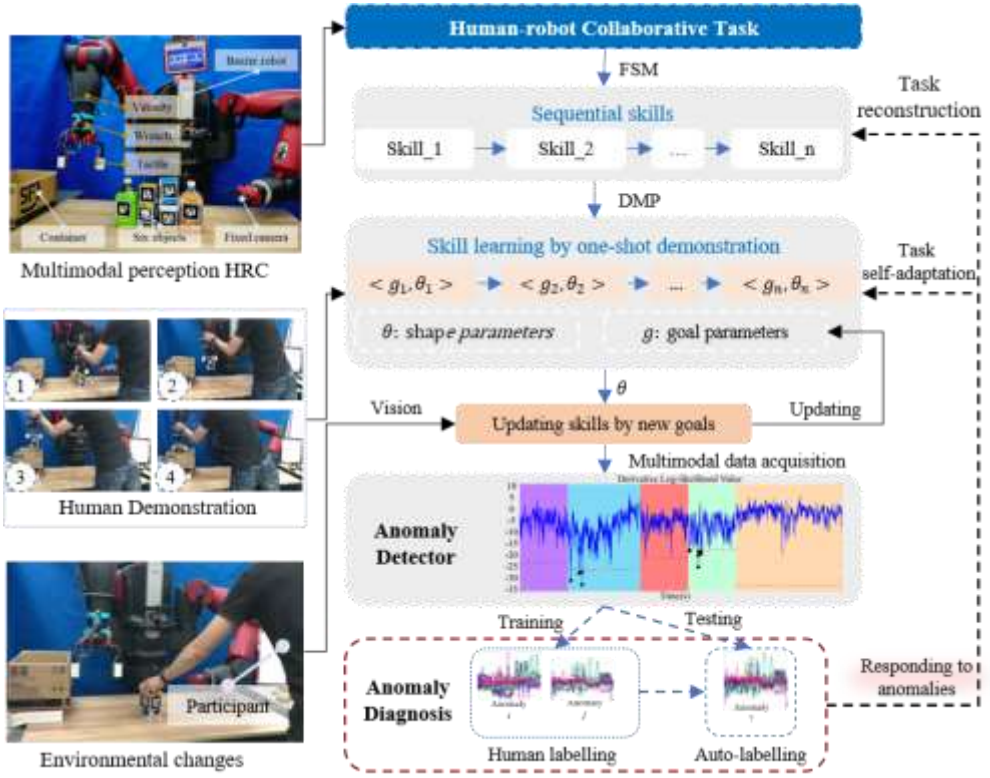
Robot Multimodal Anomaly Diagnosis by Learning Time-lagged Complex Dynamics

Lin Yang[2], Wu Yan[1], Zhihao Xu[1], and Hongmin Wu[*,1]

[1]Institute of Intelligent Manufacturing, Guangdong Academy of Sciences, China

[2]Guangdong Provincial Key Laboratory of Electronic Information Products Reliability Technology, China

- A novel method of multimodal anomaly diagnosis by learning the time-lagged dynamics of anomalies detected during an Human-robot collaborative task.
- A time-lagged variational auto-encoder model (tlVAE) is first proposed to compress complex multivariate dynamics into simpler manifolds.
- The manifolds are used to fitting a dynamic time warping-based K-nearest neighbors model for anomaly diagnosis in a multi-classes classification scheme.



Anomaly diagnosis in human-robot collaborative task