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Machine learning tools for visualising big data.

Monday, 4 December 2017 11:00 (30 minutes)

Unsupervised machine learning can be used to infer the hidden relationships inside of big data where there exists unknown structure and frameworks. Component based analysis seeks to reveal the correlation and variation within a dataset, processing and understanding these results can be challenging. 3D and 2D visualisation is used as a tool for expressing these n-th dimensional results in a simple and easily understood fashion. Unorganised streaming data separated into its principle components reveals anomalies and outliers which can be quickly detected to prevent data corruption.

HPC content

Commonly used techniques rely on high complexity algorithms in the order of $O(p^2n+p^3)$ with large storage requirements but once trained is highly responsive in transforming new data for visualisation. In this presentation we shall present a tool developed at UCT which can visualise a random data stream in 2 or 3 dimensions using principal component analysis (PCA), kernel PCA or independent component analysis (ICA).

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