

The dynamic mode decomposition (DMD) is a data-driven matrix decomposition for spatio-temporal data grids. Originally introduced in the fluid mechanics community, DMD has been applied to several new domains, including neuroscience, epidemiology and robotics. Specifically, DMD is a regression technique which integrates two of the leading data analysis methods in use today: Fourier transforms and principal components. Leveraging on matrix sketching, we present a compressed dynamic mode decomposition algorithm, which enables the decomposition of massive spatio-temporal data grids or streams. The method is illustrated on high-resolution video data for robustly performing foreground/background separation. Moreover, we present a GPU accelerated implementation, which significantly decreases the compute time.