UiO : University of Oslo

Learning from heterogeneous EHR time series via dynamic time warping and tensor decomposition

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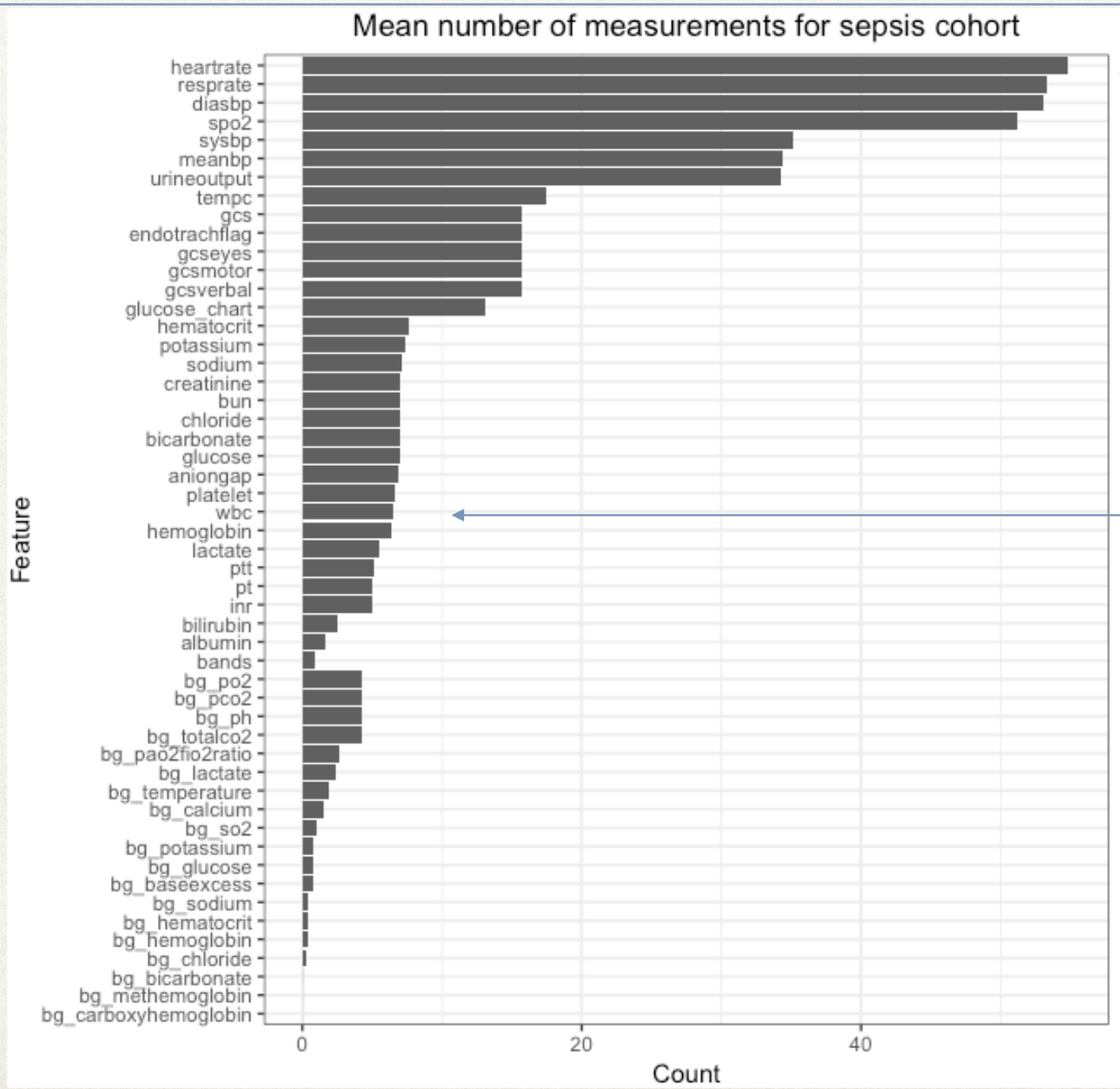
Electronic Health Records

- Routinely generated data from health institutes
- Demographics, clinical notes, lab test results, vitals, …
- Challenging:
  - Static, temporal
  - Various measurement frequencies
  - Missingness, errors

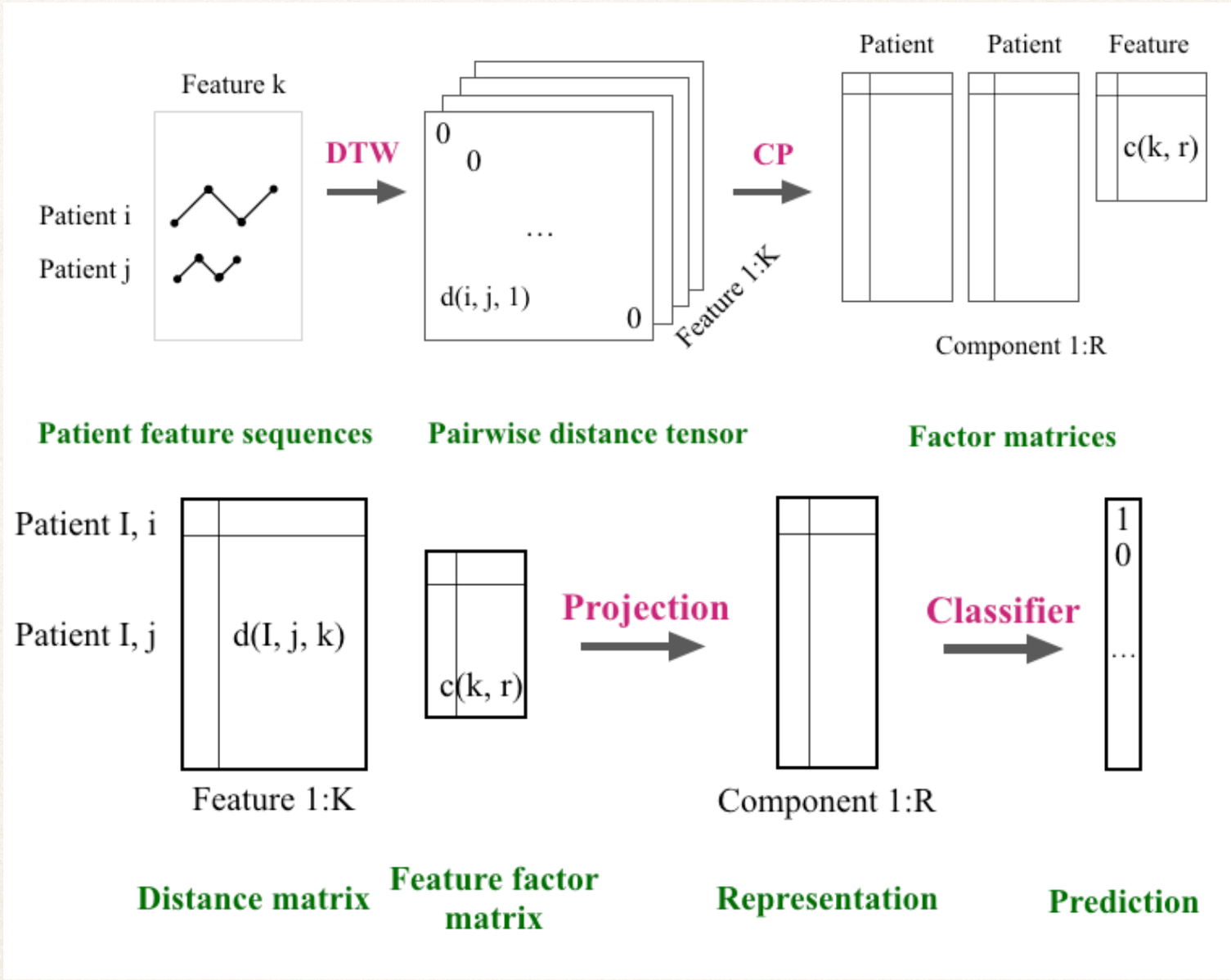
EHR physiologic measurements



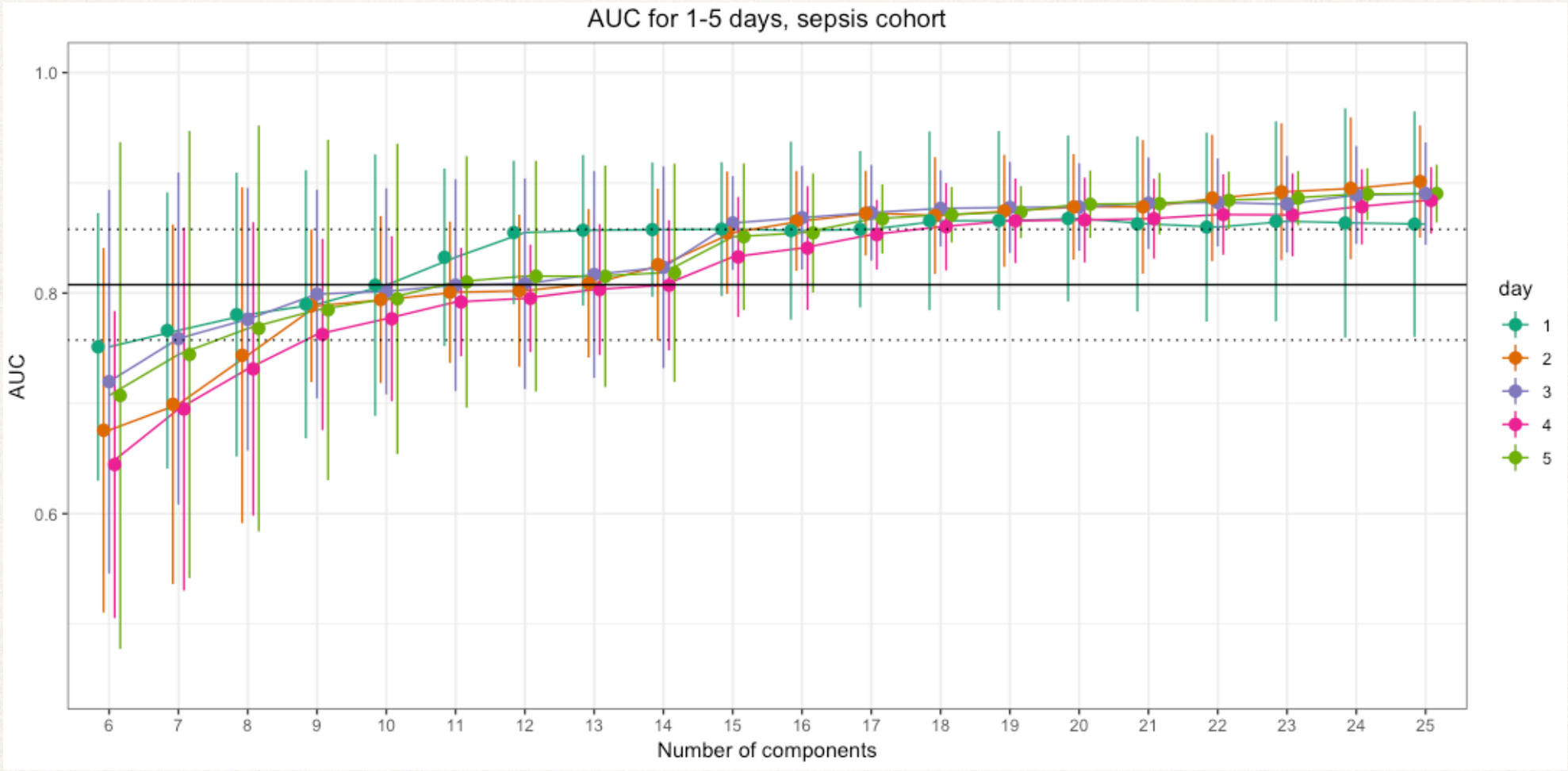
Heart rate (92%)

White blood cell count (13%)

Dynamic time warping + tensor decomposition



Performance: sepsis cohort, MIMIC III database



Summary

- EHR time series are irregular, complex, but can contain useful information for patient status
- Similarity-based representation
  - Interpretable
  - Good classification performance