MILLE: ModellIng Language LEarning
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Background

Ecological theory of language acquisition: the infant is naïve (no inherited linguistic knowledge)

Aim

Mathematical modelling of language learning from birth

- acoustic features classification
- time integration into meaningful sequences
- integration of acoustic/visual information
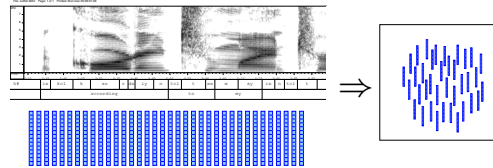- incremental and unsupervised learning
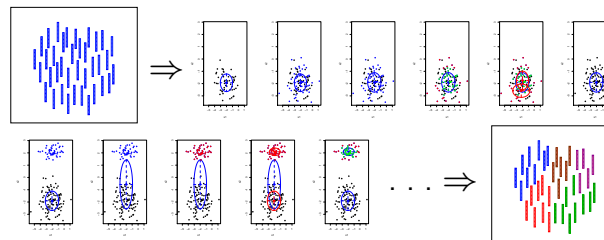
The Speech Chain Revised
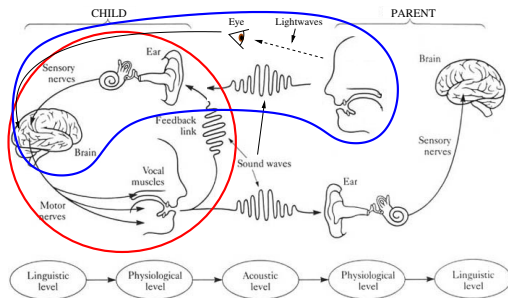
Data

- Child directed speech (mostly mothers talking to their children)
- acoustic and video recordings of the interaction
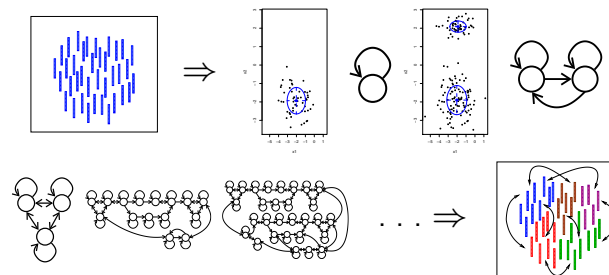- control recordings (adult directed speech)
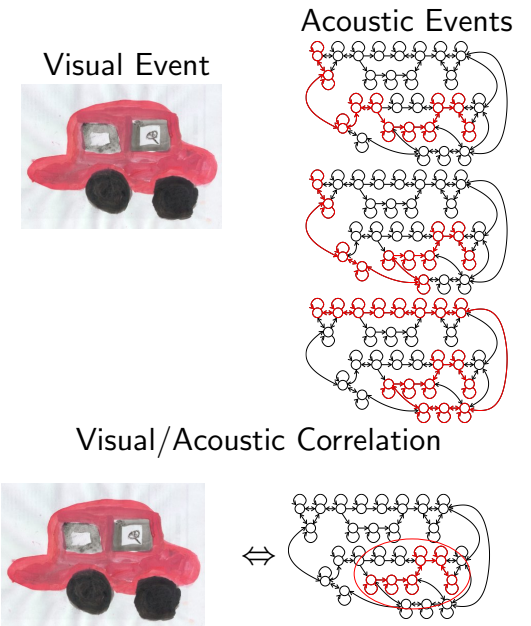
Equally Spaced Speech Frames (i.i.d. from a GMM)

Modelling Acoustic Features with Incremental Model Based Clustering

Modelling Time Evolution with Markov Chains

The Visual Channel

Visual Event

Acoustic Events

Visual/Acoustic Correlation

Open Questions

- model the feedback loop (babbling)
- acoustic mismatch of parent/child voice
- frame/segment/landmark based processing?