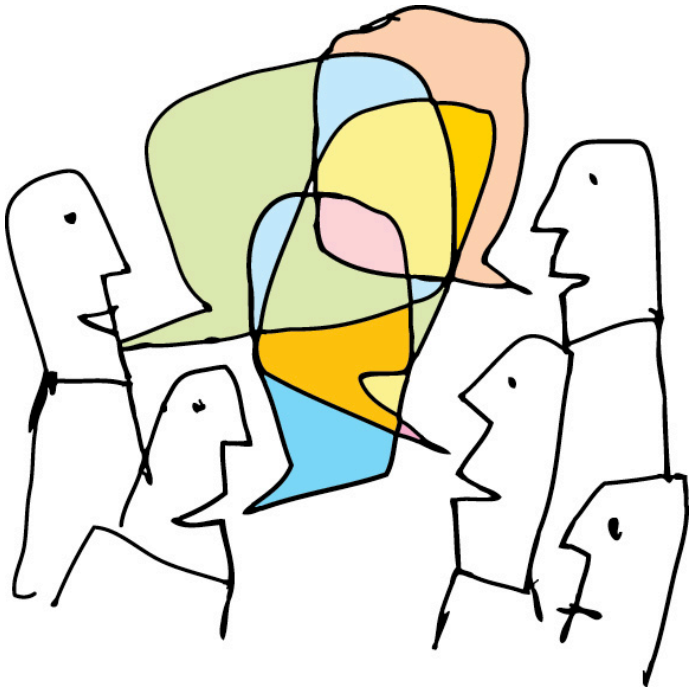
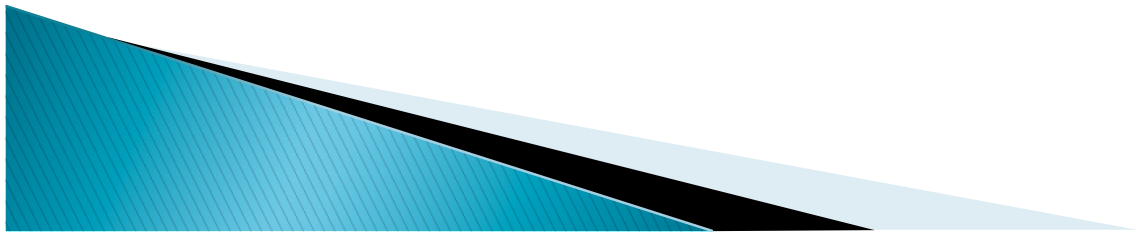


Differential expressive-receptive patterns in textual communication in the autism spectrum

Karthik Dinakar
MAS 771

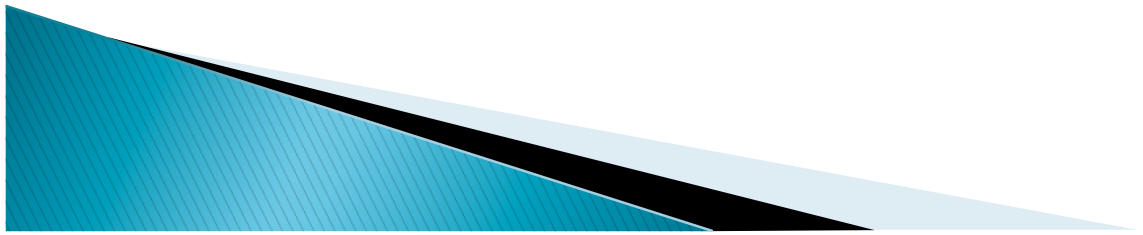
Structure

- Brief introduction of problem space
- Prior & related work
- Algorithmic approach
- Demonstration
- Evaluation
- Limitations
- Future Work & lessons learned



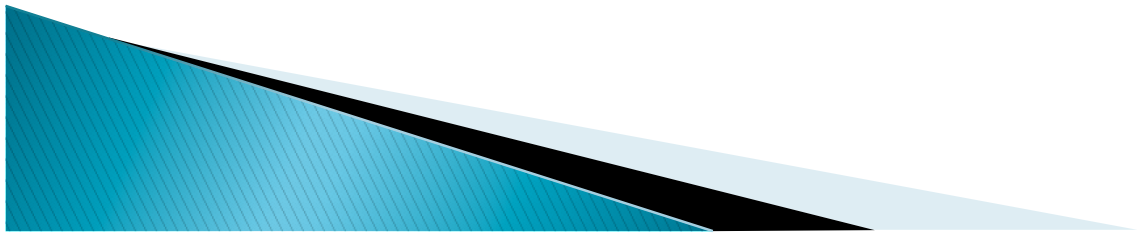
Problem space

- Pragmatic language impairment [Bishop DVM (2000)]
- Social isolation on social networking websites [Bahissis 2010]
- Lack of expression-reception affordances in textual communication



Prior & related work

- Opinion mining – unsupervised & supervised learning: HTMM, LDA, mostly SVM
- Conversational agents: intelligent math tutors, interaction models for social networking
- Open-mind commonsense [Lui, Lieberman 2003]



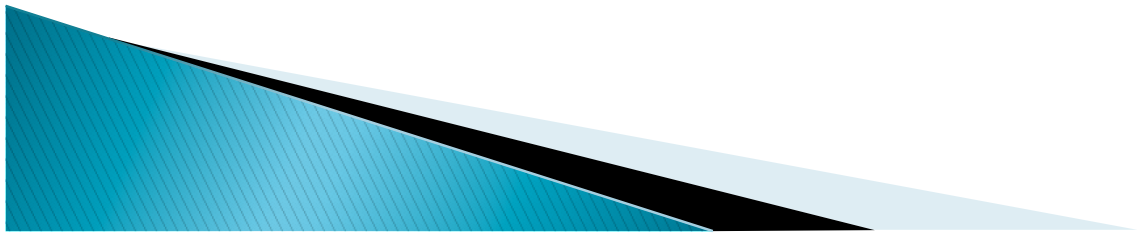
Algorithmic approach

- Tapping into AnalogySpace [Havasi,Speer 2008]

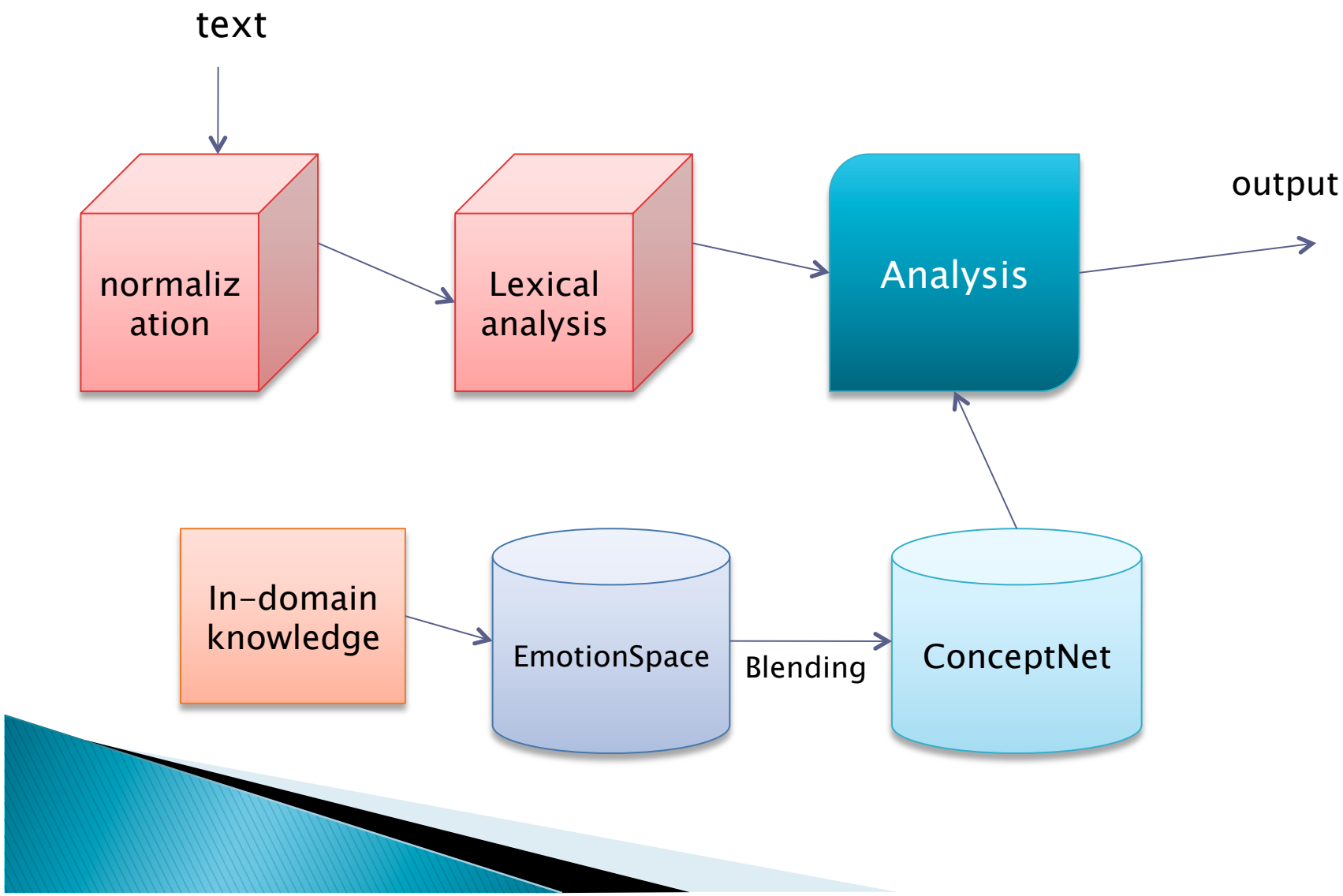
$$A = U * \Sigma * V^T$$

- Cosine similarity between two concepts

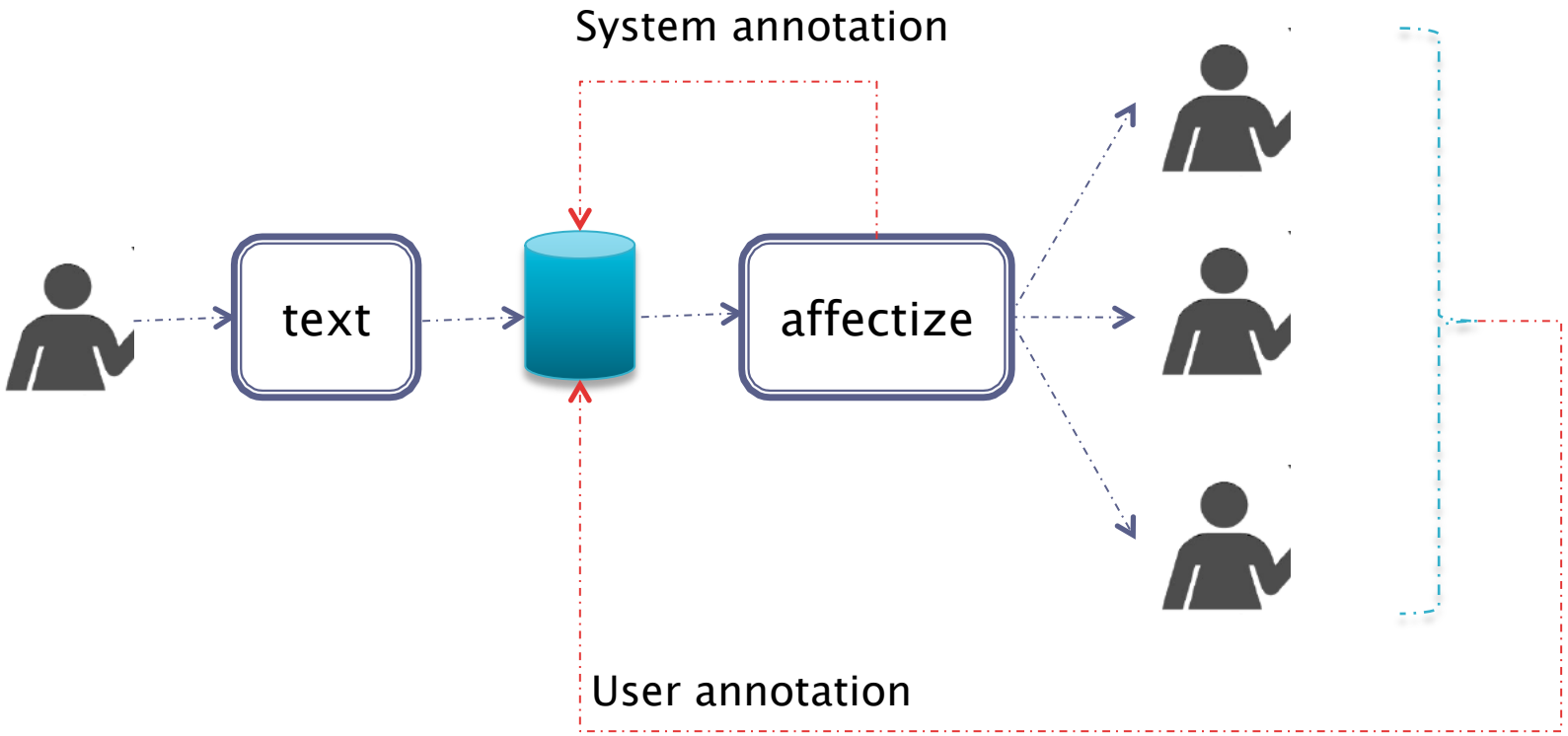
- Blending of in-domain knowledge (YouTube) with conceptNet



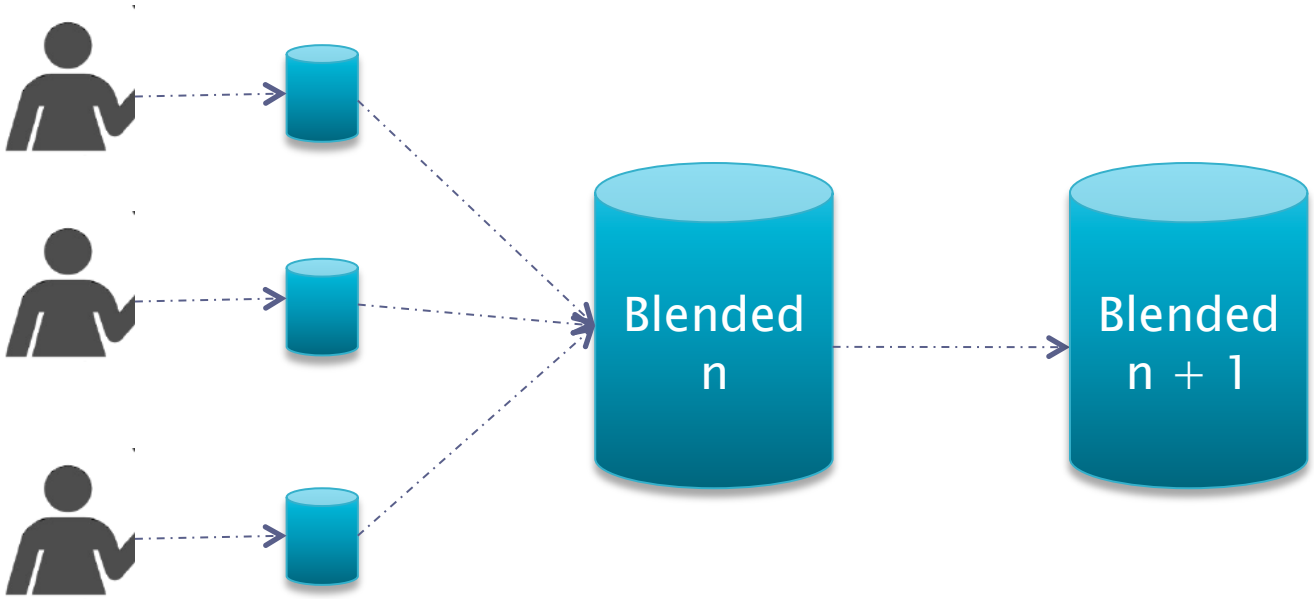
Analysis process



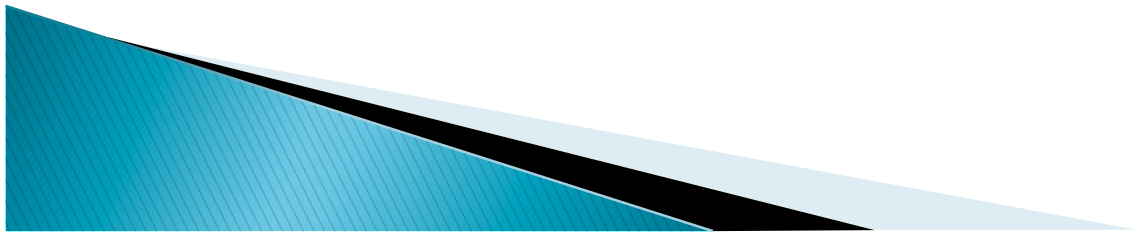
Interaction design



Leveraging personalized spaces



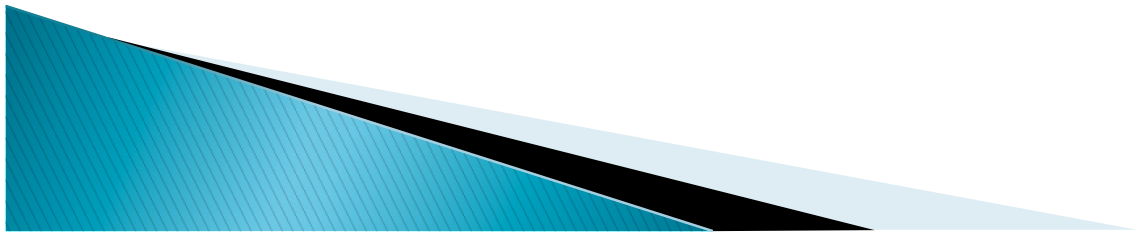
Demonstration



Proposed evaluation

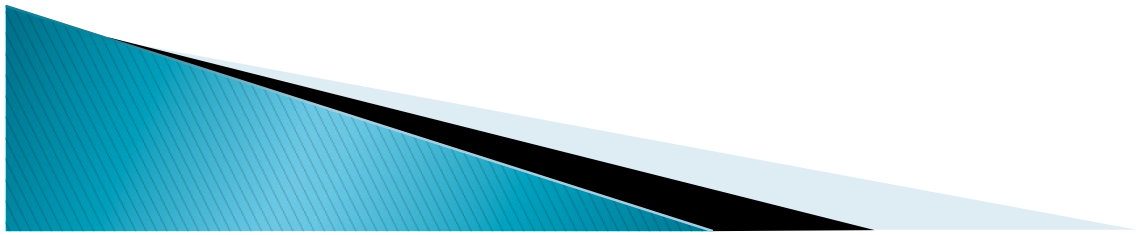
- Evaluation of the model – run pre-annotated instances against the model to gauge accuracy

- Evaluation of the interaction – storied communication in a social setting with and without the model (communication gaps borne out of confusion and misunderstanding of affect)



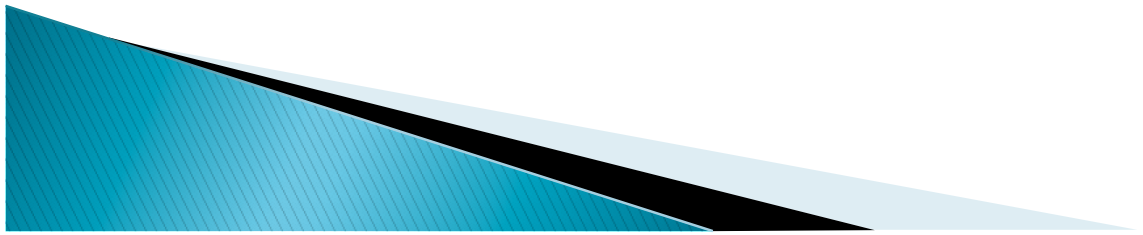
Limitations & challenges

- Consequences of pace of reinforcement learning
- Effects of misclassification
- Ways of addressing gaming

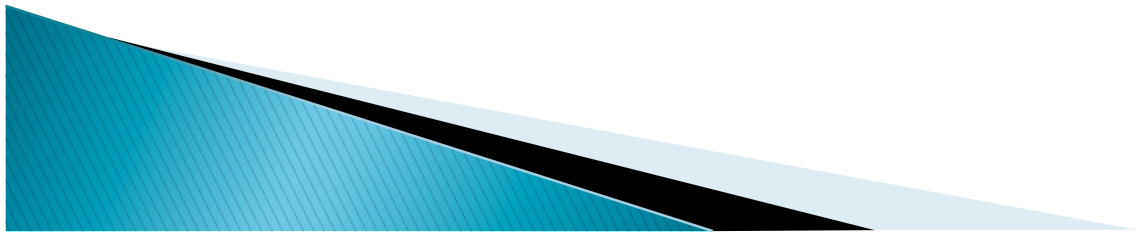


Future Work

- Human study with two n>= 20 participant groups – TD and HFA
- Storied communication in a social setting & evaluation of communication pragmatics with and without the model
- Firefox + Chrome Plugin + IPad app for children with autism
- CHI || IUI

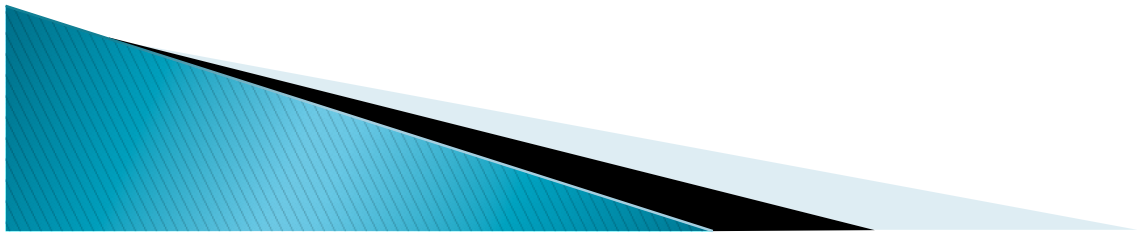


What I learned in this class



Definition of a normal person?
Someone you don't know very well

-John Gowdy



Thank you!