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

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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]
  \[ A = U \ast \Sigma \ast V^T \]

- Cosine similarity between two concepts

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

Input: text

1. Normalization
2. Lexical analysis
3. In-domain knowledge
4. EmotionSpace
5. Blending
6. ConceptNet

Output: Analysis result
Interaction design

System annotation

User annotation

text

affectize
Leveraging personalized spaces

Blended n

Blended n + 1
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\(\geq 20\) 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!