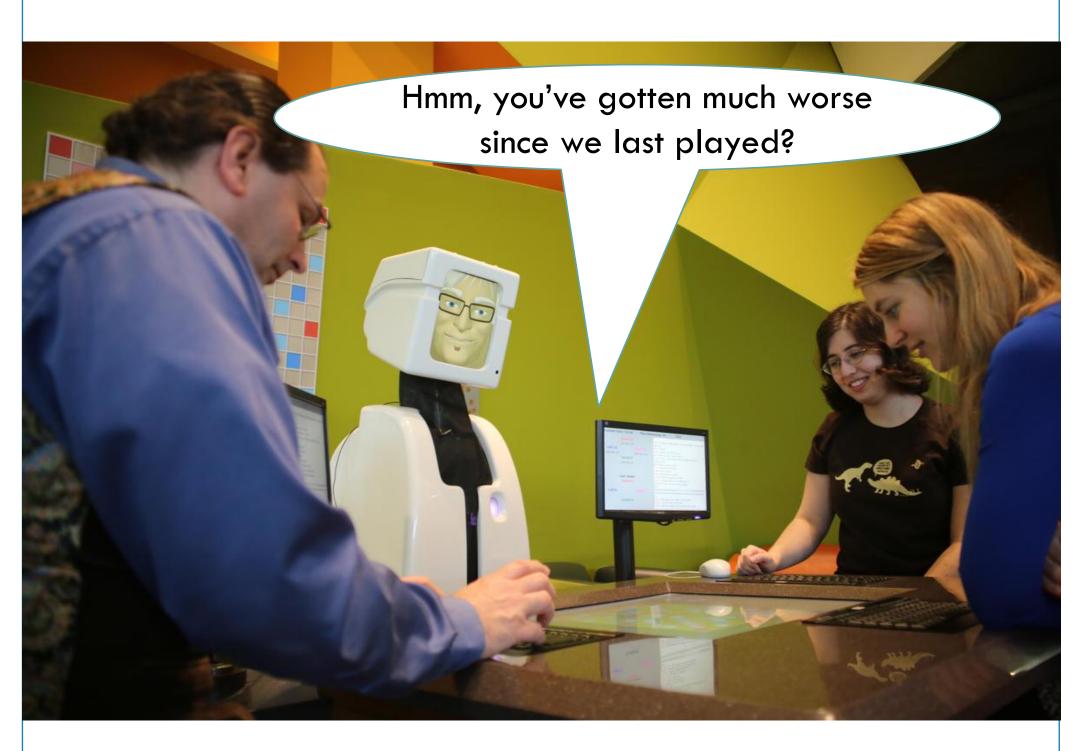


# Personalization and Sentiment Analysis of a Social Scrabble-Playing Robot

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## Background



 Identify registered players, respond to user-specific patterns to uniquely connect with players and retain interest

# Problem/Gap

- Can only recognize one player (center player) in a game
- Not everyone is comfortable with Victor's (high) level of sarcasm

# **Motivation and Goal**

- Personalizing interactions improve engagement and help establish intimate, long-term relationships between Victor and players
- To appeal to general public, varying Victor's level of sarcasm on a personal basis can help make interactions more comfortable and desirable

#### Process

I) Set up automated system that adds registered users to database

## 2) Recognize multiple players in a game

- Track multiple faces and relative locations in frame to assign to corresponding seats
- Expand variables and statistics to multiple players

#### 3) Sentiment Analysis of Interaction Log (Text)

- Collected 10 video recordings of virtual games between players and Victor through Zoom
- Transcription of collected logs and manual labelling of ground truth
- Experimented with different models and tuned Random Forest Classifier
  - Trained with online data and collected data
  - Tested with collected data

#### Results

#### **Standard Sentiment Analysis**

Low accuracy (33.6%): sarcastic responses categorized as negative when they imply the opposite (comfortable bickering)

Sarcasm Sentiment Analysis of Interaction Log (Text) Unsatisfactory accuracy (57.5%) with collected data and online data

Working to improve accuracy by considering context and expectation

- Expect a negative response if Victor initiates negatively
- Categorize expected responses as positive and unexpected responses as negative instead

## **Work-in-Progress**

- Combine facial features (from OpenFace) with textual features in the model
- Evaluate sentiment over time-steps instead
  - Random forest classifiers for each time segment

robot: Have other people ever told you you're slow?

center: and that's why you're the

loser

**B** robot: That's all you've got?

center: :c

robot: You used to finish turns much faster than this. Disappointed.

center: shut up

Logs from three different players. All 3 were classified as negative by random forest classifier, when A and C were bickering with Victor and only B was a truly negative reaction

#### **Future Direction**

- Try neural network models with time series data
- Integrate work to the live Victor system and see it in action!
- Evaluate effects by surveying people's experience with and without personalization

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