

## Lecture 26: Dialogue



# Chatbots vs Dialogue Systems

**Chatbots:** Chitchat, often used for entertainment, originally as testbed for clinical therapy

**Dialogue Systems:** Typically to perform specific tasks (e.g. customer service, reservations, etc., smart devices, cars, etc.)

# A computer therapist?

**Computer:** TELL ME MORE ABOUT YOUR FAMILY

**Human:** My mother takes care of me.

**Computer:** WHO ELSE IN YOUR FAMILY TAKES CARE OF YOU

**Human:** My father.

**Computer:** YOUR FATHER

**Human:** You are like my father in some ways.

**Computer:** WHAT RESEMBLANCE DO YOU SEE

**Human:** You are not very aggressive but I think you don't want me to notice that.

**Computer:** WHAT MAKES YOU THINK I AM NOT VERY AGGRESSIVE

**Human:** You don't argue with me.

**Computer:** WHY DO YOU THINK I DON'T ARGUE WITH YOU

**Human:** You are afraid of me. *Weizenbaum (1966), ELIZA.*



# ELIZA as a FST cascade

**Human:** *You don't argue with me.*

**Computer:** *WHY DO YOU THINK I DON'T ARGUE WITH YOU*

1. Replace **you** with **I** and **me** with **you**:

*I don't argue with you.*

2. Replace **<...>** with **Why do you think <...>**:

*Why do you think I don't argue with you.*

# Current Chatbots

## **Retrieval-based approaches:**

Mine large corpora of human-human dialogues

Given a user utterance, find an utterance in the corpus that is most similar to this utterance.

Return either this utterance itself, or the response to it

## **Neural approaches (seq2seq models)**

Trained on large corpora of human-human dialogues

May require beam search or other training objectives, and reinforcement learning or adversarial training to optimize for maintaining a longer conversation

