



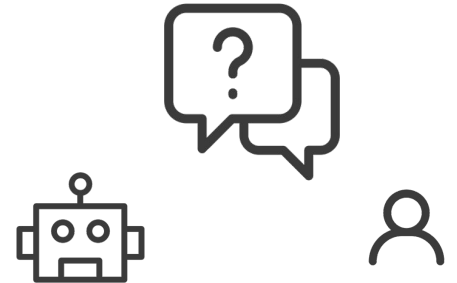
Metaphors in Conversational User Interface

EN. 601.792.01

Ziang Xiao

Department of Computer Science

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- Office Hour: Tue. 4-5pm Malone 309
- Course Website:
<https://adv-conv-ui.cs.jhu.edu/sp24/index.html>
- Piazza: <https://piazza.com/class/lrp2hge6oz845x/>
- Canvas: <https://jhu.instructure.com/courses/63649>
- Course Format: **In person, Research-focused, Discussion-based**

Announcement



Scientific Reviewer



Archaeologist



Academic Researcher



Industry Practitioner



Private Investigator



Social Impact Assessor

Discussion Roles

Metaphors

“Understanding and experiencing one kind of thing in terms of another”



happy is often up while sad is down

We're out of trouble now.



Your claims are indefensible.

That flat tire cost me an hour.



Orientational Metaphor - Up is good



happy is often up while sad is down

Container Metaphor

We're out of trouble now.



Argument is war



Your claims are indefensible.

Time is money

That flat tire cost me an hour.



**Metaphors are
Social Constructs**

Symbolic representations of
reality that affected by how
people interact.

Why Metaphors

Metaphors can help us to build the mental model abstract and novel things.

Metaphors in Design

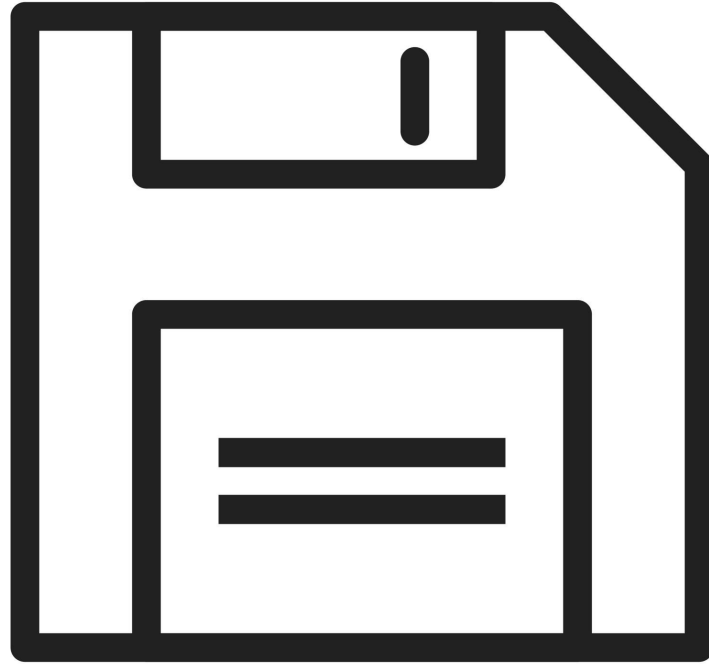
Set the theme: Metaphors help establish a theme for how a design will work. This helps align the designer's vision with the user's expectations.

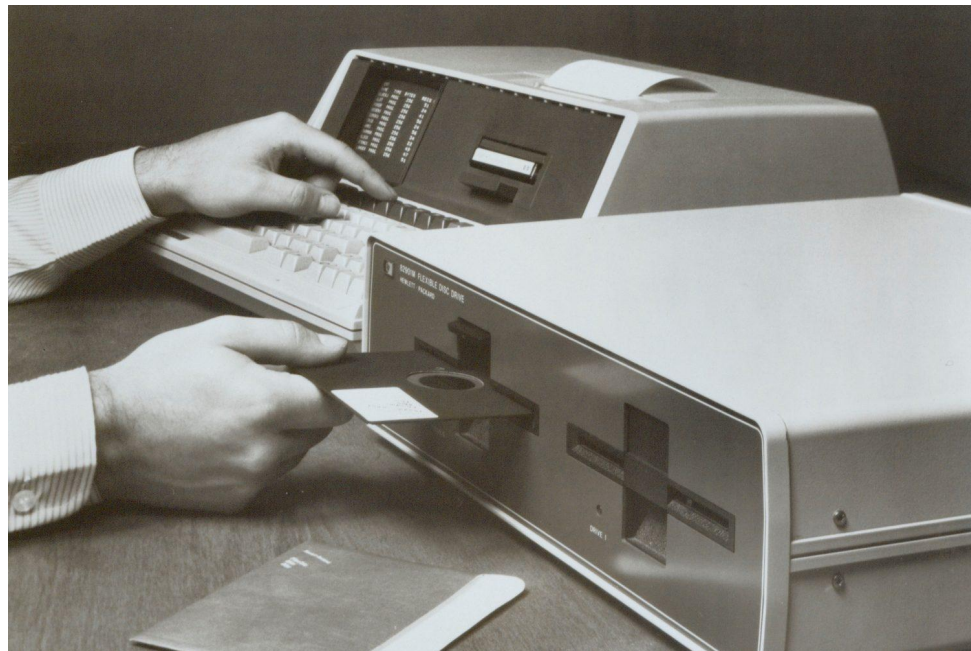
Help organize thinking: Metaphors can help organize design thinking and solve ill-defined design problems.

Generate ideas: Metaphors can be used to generate ideas or understand new topic areas.

Guide users: UX designers can use visual metaphors to guide users over roadblocks.

Communicate symbolic ideas: Visual metaphors can communicate multiple symbolic ideas simultaneously.





Metaphors

in Conversational User Interface

Computers are social actors (CASA) Paradigm

Humans mindlessly apply the same social heuristics used for human interactions to computers because they call to mind similar social attributes as humans.

Computers are Social Actors

Clifford Nass, Jonathan Steuer, and Ellen R. Tauber

Department of Communication
Stanford University
Stanford, CA 94305-2050, USA
+1.415.723.5499

nass@leland.stanford.edu, jonathan@casa.stanford.edu, ellen@cs.stanford.edu

ABSTRACT

This paper presents a new experimental paradigm for the study of human-computer interaction. Five experiments provide evidence that individuals' interactions with computers are fundamentally social. The studies show that social responses to computers are not the result of conscious beliefs that computers are human or human-like. Moreover, such behaviors do not result from users' ignorance or from psychological or social dysfunctions, nor from a belief that subjects are interacting with programmers. Rather, social responses to computers are commonplace and easy to generate. The results reported here present numerous and unprecedented hypotheses, unexpected implications for design, new approaches to usability testing, and direct methods for verification.

KEYWORDS: Anthropomorphism, Agents, Voice, Speech, Social Psychology, Gender, Design

INTRODUCTION

What can we learn about human-computer interaction if we show that the human-computer relationship is fundamentally social? What can we predict and test if we assume that individuals are biased toward a social orientation; that when people sit down at a computer, they interact socially?

The present research provides a wide range of experimental evidence that a limited set of characteristics associated with humans provides sufficient cues to encourage users to exhibit behaviors and make attributions toward computers that are nonsensical when applied to computers but appropriate when directed at other humans. Thus, we demonstrate that users can be induced to elicit a wide range of social behaviors, even though users know that the machines do not actually possess feelings, "selves," genders, or human motivations.

The approach is as follows:

1. Pick a social science finding (theory and method) which concerns behavior or attitude toward humans. The studies presented here draw from social psychology and sociology.

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2. Change "human" to "computer" in the statement of the theory.
3. Replace one or more humans with computers in the method of the study.
4. Provide the computer with characteristics associated with humans: (a) language output [1]; (b) responses based on multiple prior inputs [2]; (c) the filling of roles traditionally filled by humans [3]; and (d) the production of human-sounding voices [4,5,6].
5. Determine if the social rule still applies.

In this paper, we report successful application of our approach in five studies. The first study answers the question, "Will users apply politeness norms to computers?" The second study answers the question, "Will users apply the notions of 'self' and 'other' to computers?" The third study answers the question, "On what basis do users distinguish computers as 'self' or 'other'—the voice or the box?" The fourth study answers the question, "Will users apply gender stereotypes to computers?" Finally, the fifth study answers the question, "If people do respond socially to computers, is it because they feel that they are interacting with the computer or with some other agent, such as the programmer?" and, "Who or what do users think of when the a computer says 'I'?"

In sum, the basic question in the present studies, and a question that has not previously been answered, is, "Which social rules will people apply to computers?" A subsidiary question is how powerful are the rules; that is, can one easily generate these responses or do they only occur rarely?

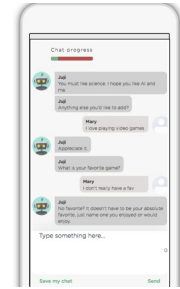
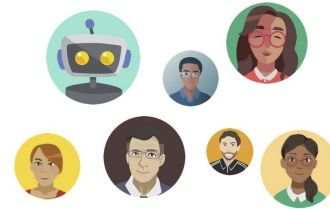
A crucial point about this research is that all of these studies involve experienced computer users. Thus, none of the subjects' responses resulted merely from the novelty of using a computer, or from some misunderstanding or fallacious belief about the capabilities of computers. [8]

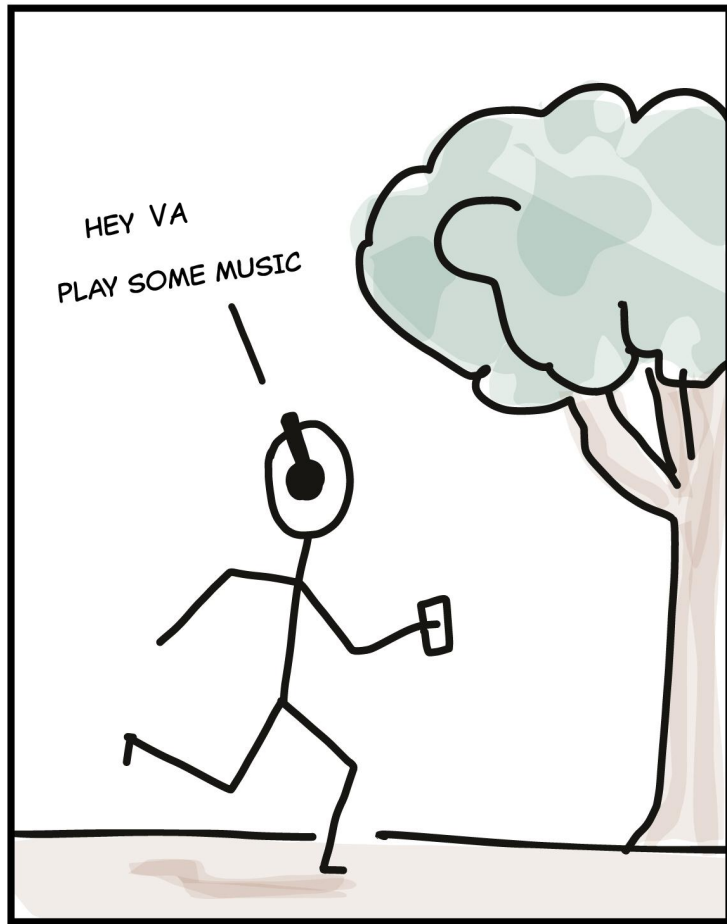
In the remainder of this paper, we outline the general method for the five experiments we performed. We then describe the specific methods and results for each experiment. Finally, we highlight theoretical and design implications for both the individual studies and for the experimental paradigm as a whole.

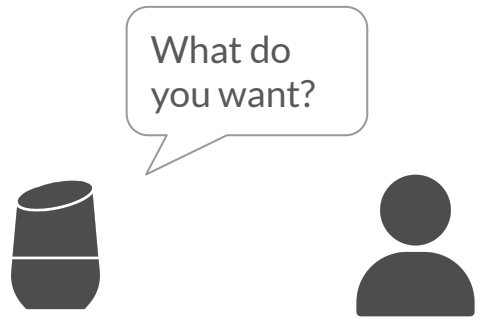
How do you describe your voice assistants/ChatGPT?

How does it related to your interaction with it?

Case Study: The role of metaphors Voice Assistant Design



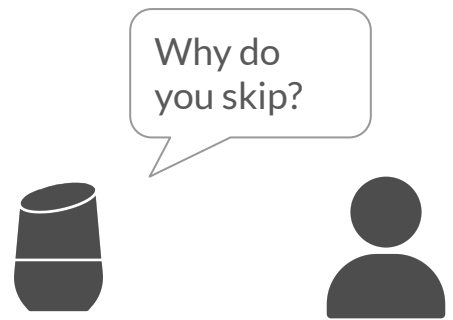




What do you want?



How do you like the song?



Why do you skip?

Explicit user feedback in situ...

- Capture user preferences in a more direct and granular way
- Informs the model performance through user perspectives
- Avoids memory biases during recall
- Contains rich contextual information

Challenges

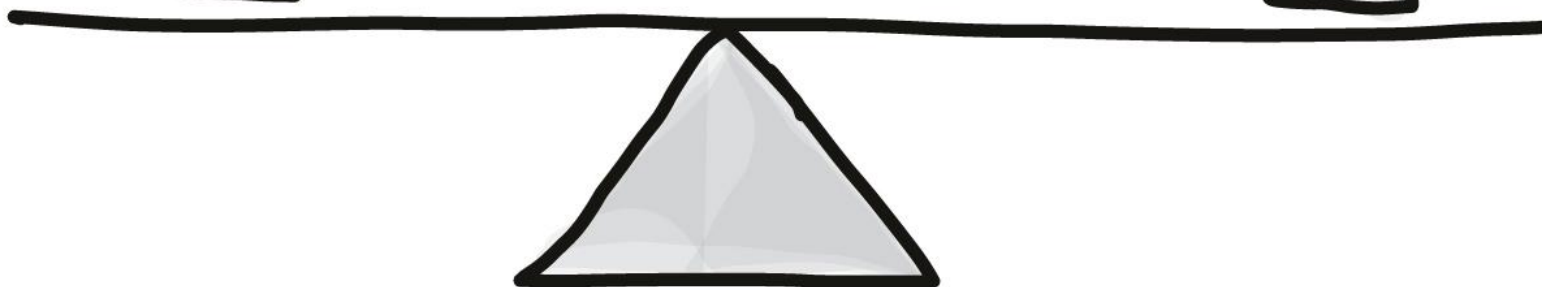
- Explicit user feedback is scarce, especially for voice interactions.
- Frequent feedback request may induce user experience frictions.
- No existing design guideline for voice assistants to ask for explicit user feedback.



FEEDBACK
VALUE



EXPERIENCE
FRICTION

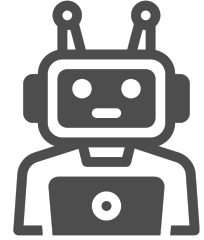


How should we design voice interactions to collect user feedback while maintaining user engagement?

Metaphors: Who is the voice assistant?

A voice assistant

- **helps** the user with daily tasks [*Assistant*]
- is **always learning** how to better help the user with daily tasks [*Learner*]
- **collaboratively works** with the user on daily tasks [*Collaborator*]



People are **more willing** to respond to a **learner** VA or a **collaborator** VA's prompt and perceive it as **less disruptive**.

Using AI as metaphors?



See you on Wednesday!

Before you go,

1. Find a team
2. Sign up for presentations
3. Discussion group assignment
4. Readings for future weeks are coming