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AoM PDW – Bots in Organizations

Carolina A. de Lima Salge

Anna Priante

Aaron Schecter

Terry College of Business
UNIVERSITY OF GEORGIA

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Agenda

Reflect on the evolution of social media, with a focus on bots and algorithms

Explore humanization and emotion in AI chatbots and how they affect operations

Examine authority through design – should bots mirror their human bosses?

We also seek to maintain an interdisciplinary community of scholars who research the topic

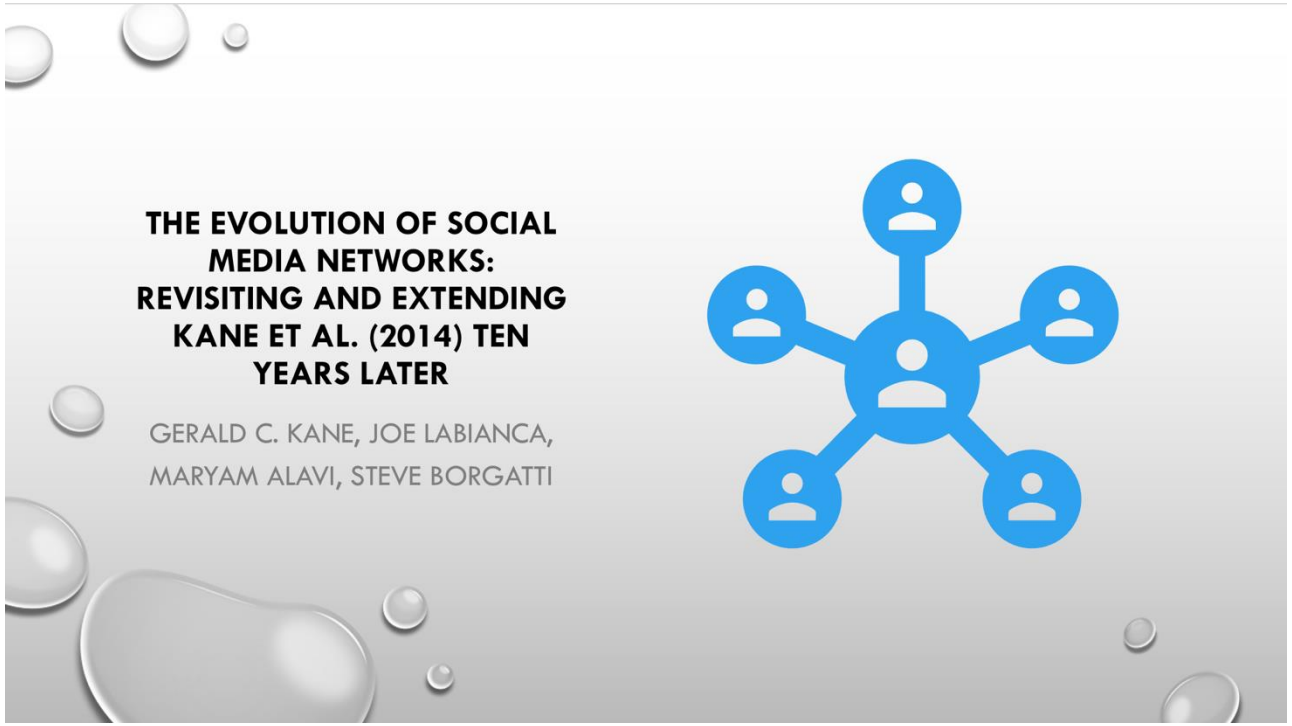
Presentations (~60 min)

Panel (~45 min)

Presentations

Giuseppe (Joe) Labianca

The University of Massachusetts Amherst



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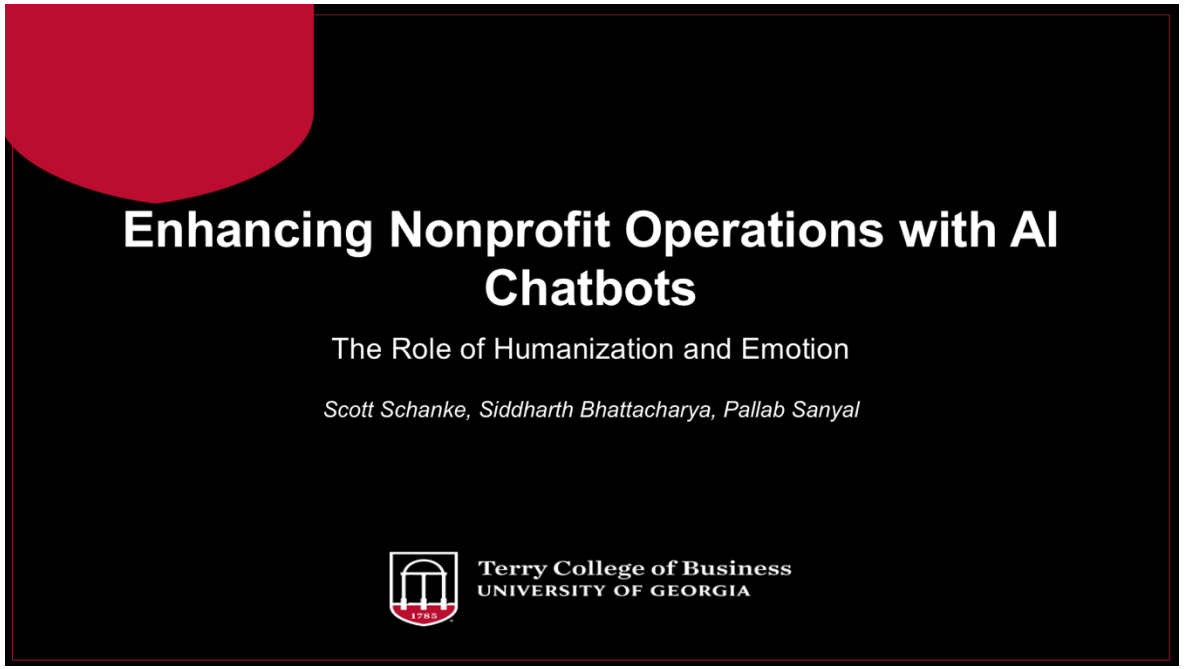
Presentations

Scott Schanke

University of Georgia



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Presentations

Lior Zalmanson

Tel Aviv University

Authority by Design – Should bots mirror real-life bosses?

Lior Zalmanson (Tel Aviv University)

Coller School of Management Tel Aviv University

AIMLAB AI IN MANAGEMENT, LABOR AND BUSINESS

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Terry College of Business UNIVERSITY OF GEORGIA

Panel

Scott Schanke
UGA

Lior Zalmanson
Tel Aviv University

Carolina Salge
UGA

Aaron Schecter
UGA

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THE EVOLUTION OF SOCIAL MEDIA NETWORKS: REVISITING AND EXTENDING KANE ET AL. (2014) TEN YEARS LATER

GERALD C. KANE, JOE LABIANCA, MARYAM ALAVI, STEVE BORGATTI

REVISITING KANE ET AL (2014)

MIS Quarterly

THEORY AND REVIEW

WHAT'S DIFFERENT ABOUT SOCIAL MEDIA NETWORKS? A FRAMEWORK AND RESEARCH AGENDA[1]

Gerald C. Kane
Boston College, 140 Commonwealth Avenue, Chestnut Hill, MA 02467 U.S.A. {gerald.kane@bc.edu}

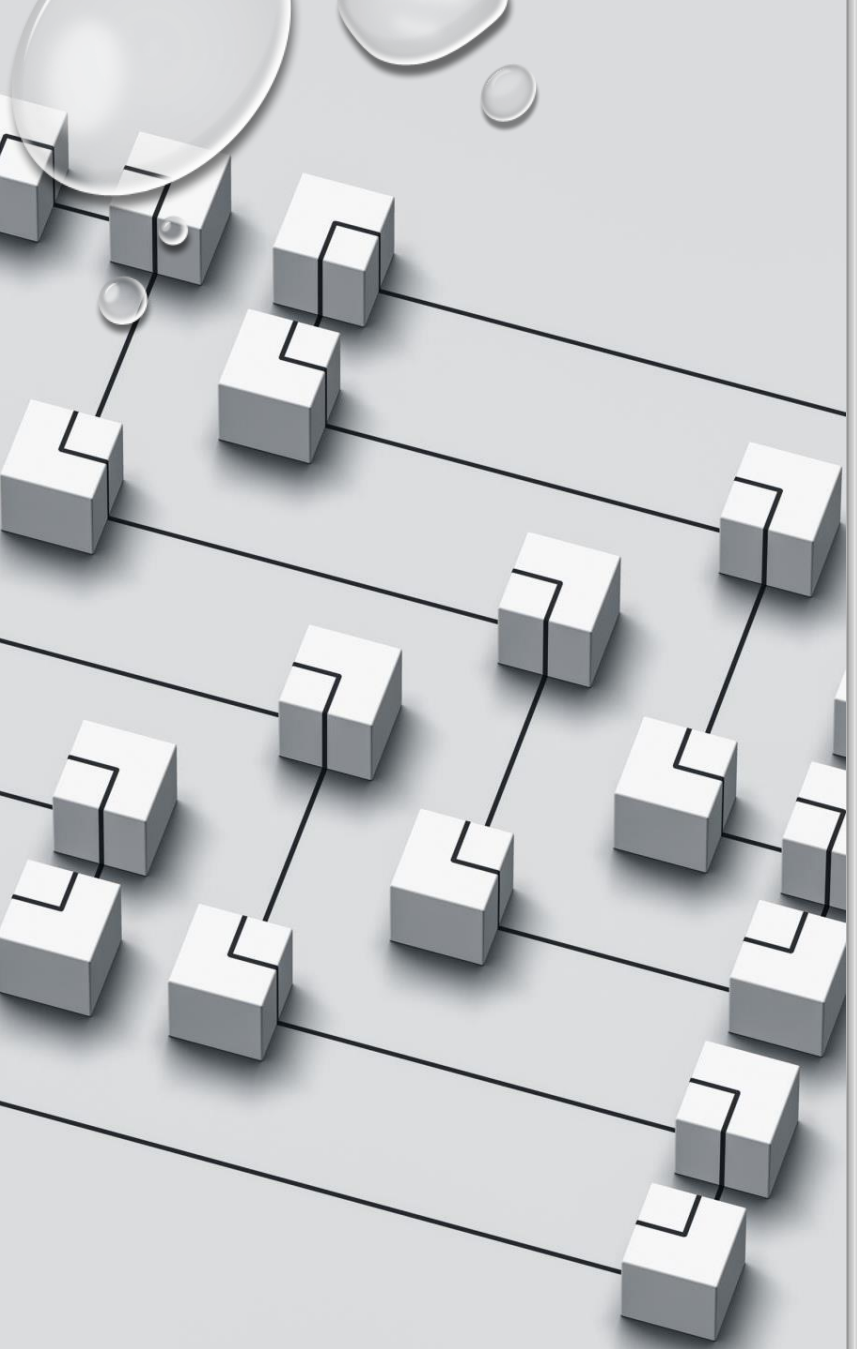
Maryam Alavi
Emory University, 1300 Clifton Road NE, Atlanta, GA 30322 U.S.A. {maryam.alavi@emory.edu}

Giuseppe (Joe) Labianca and Stephen P. Borgatti
LINKS Center, Gatton College of Business and Economics, University of Kentucky,
Lexington, KY 40506 U.S.A. {joelabianca@gmail.com} {sborgatti@uky.edu}

Received MISQ's Davis-Dickson Award for its 10-year impact
Invited to update the framework in an editorial

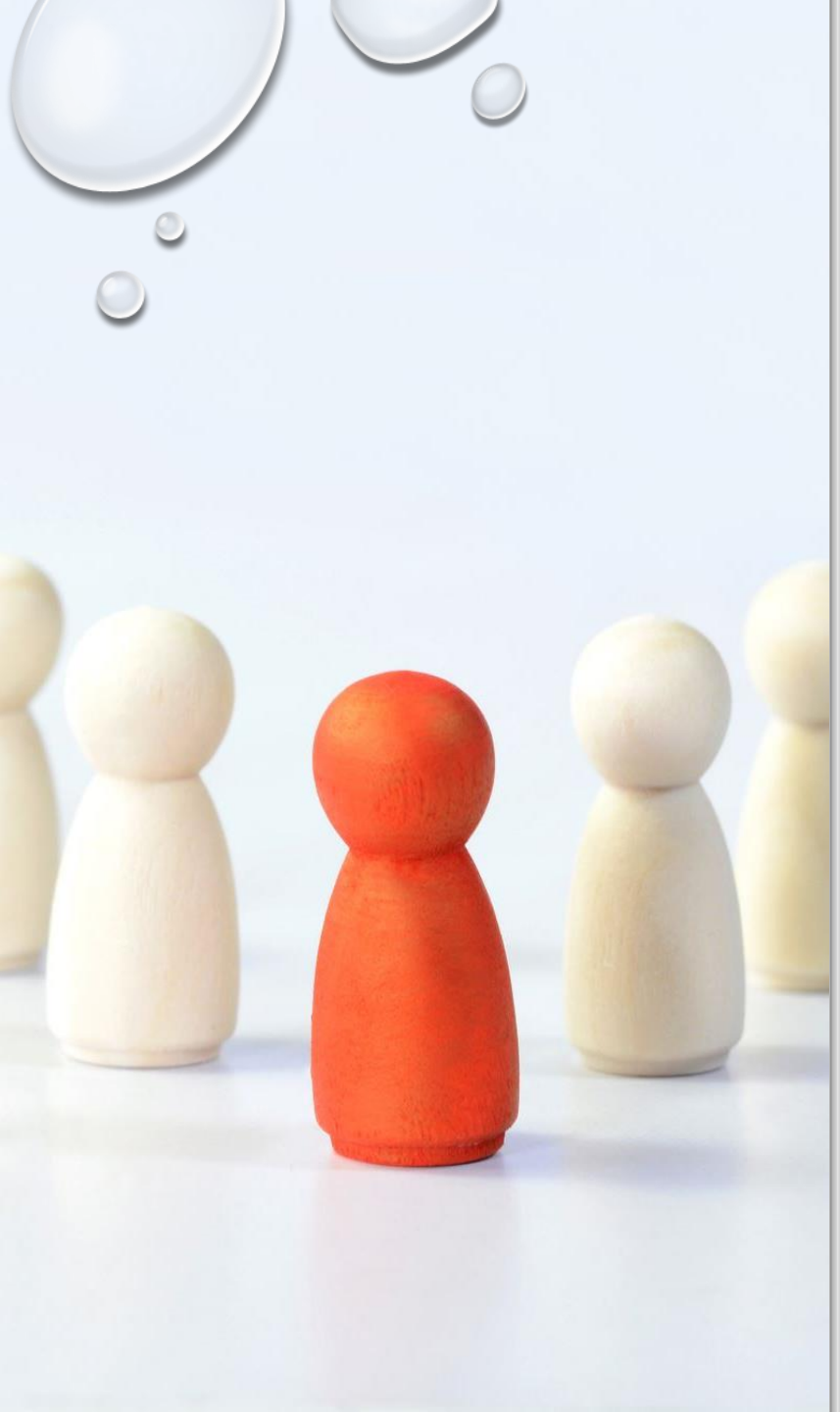
REWIND TO 2014

- SOCIAL NETWORK SITES WERE EVOLVING INTO SOCIAL MEDIA NETWORKS
- SOCIAL MEDIA WAS EVOLVING RAPIDLY FROM NICHE NOVELTIES INTO UBIQUITOUS FORCES THAT RESHAPED ORGANIZATIONAL LIFE AND INDIVIDUAL INTERACTIONS
  - PROLIFERATION AND WIDESPREAD ADOPTION
  - ORGANIZATIONAL APPLICATION (E.G., MARKETING & KNOWLEDGE MANAGEMENT) WAS STILL EMERGING
  - PLATFORMS WERE EXTENDING FUNCTIONALITY BEYOND THEIR BOUNDARIES
    - FACEBOOK'S *OPEN GRAPH* (2010) ALLOWED WEBSITES TO INTEGRATE FUNCTIONS LIKE THE "LIKE" BUTTON AND USER AUTHENTICATION



ORIGINAL FRAMEWORK COMPONENTS

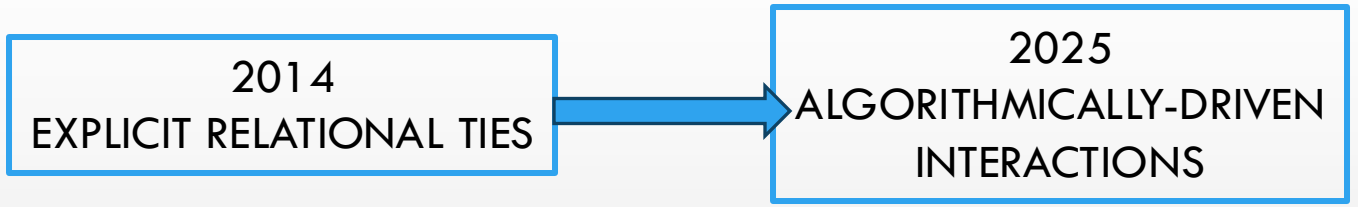
- **DIGITAL PROFILES**
  - EXPLICIT OR IMPLICIT ARTICULATIONS OF INDIVIDUALS ON SOCIAL MEDIA NETWORKS, CONSTRUCTED BY USER-SUPPLIED CONTENT, CONTENT PROVIDED BY OTHER USERS, AND SYSTEM-GENERATED RECORDS OF USER ACTIVITY
- **RELATIONAL TIES**
  - THE PLATFORM PROVIDES MECHANISMS FOR USERS TO ARTICULATE A LIST OF OTHER USERS WITH WHOM THEY CONNECT (E.G., FRIENDS, FOLLOWERS)
- **SEARCH/PRIVACY MECHANISMS**
  - USERS CAN EXPLICITLY SEARCH FOR OTHER USERS, GROUPS, OR CONTENT; RECOMMENDATION SYSTEMS (ALGORITHMIC SEARCH) ARE INTRODUCED (E.G., IN 2016 ON TWITTER)
  - USERS CAN CONTROL WHO CAN ACCESS THE CONTENT THEY CONTRIBUTE
- **NETWORK TRANSPARENCY**
  - ALLOWS USERS TO EASILY SEE AND NAVIGATE THE CONNECTIONS OF THEIR FRIENDS AND FRIENDS OF FRIENDS, MAKING THE SOCIAL NETWORK STRUCTURE MORE TRANSPARENT BY CLICKING THROUGH LINKS TO DIFFERENT PROFILES.



KANE ET AL (2025):
UPDATING OUR SOCIAL MEDIA MODEL

- INCREASED ROLE OF ALGORITHMS AND BOTS
- NETWORKED FORMS OF ORGANIZATION
  - INCREASINGLY, NETWORK INTERACTIONS ARE HAPPENING OVER ELECTRONIC CHANNELS (E.G., EMAIL, CALENDAR, SLACK, GENERATIVE AI)
  - THESE ARE CHANGING THE WAY THE ORGANIZATION WORKS

RISE OF ALGORITHMIC CURATION



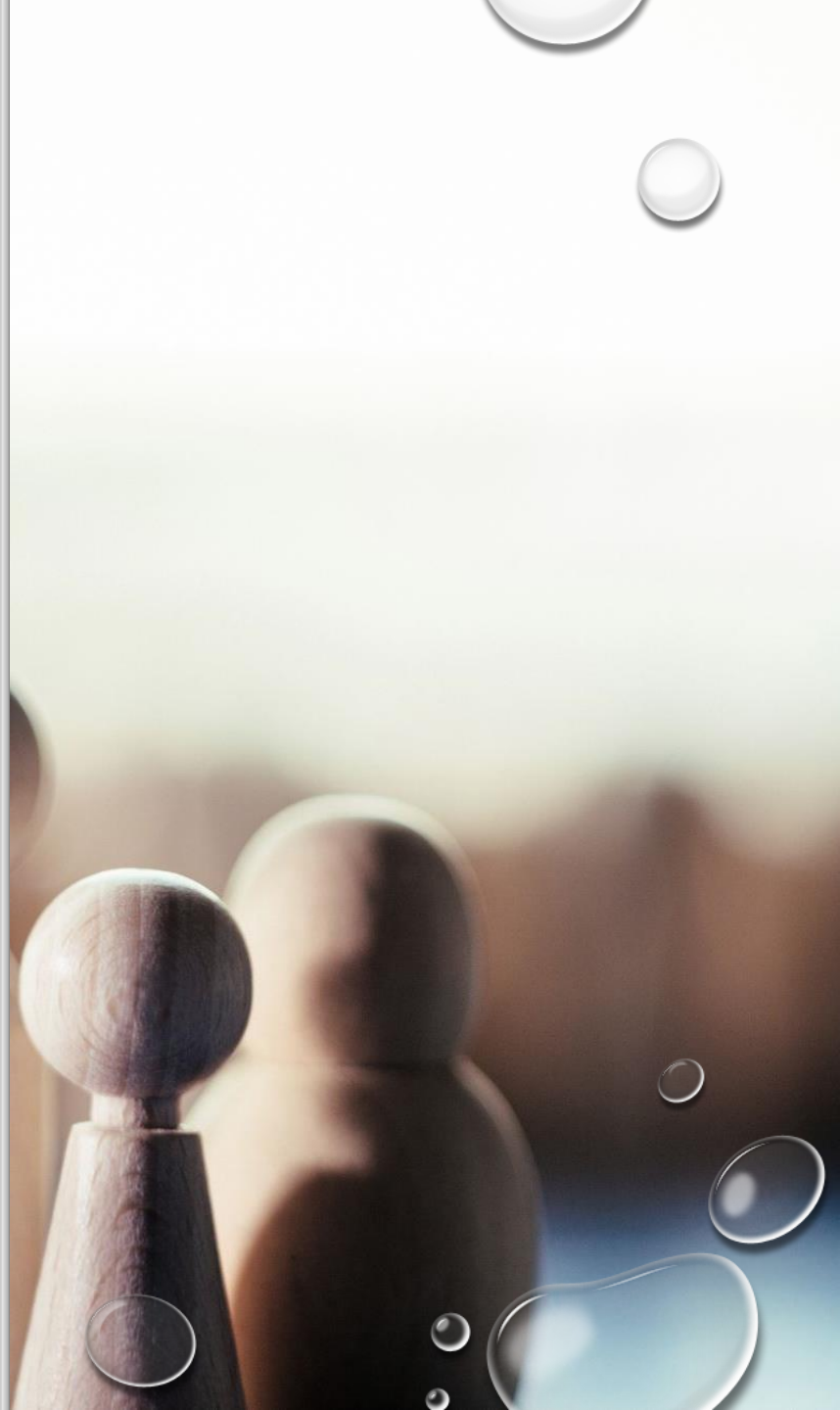
- IMPACT:
  - PERSONALIZED CONTENT STREAMS (TIKTOK, INSTAGRAM REELS)
  - SHIFT TOWARDS *ORCHESTRATING RELATIONAL EVENTS* RATHER THAN *MAINTAINING ENDURING TIES*

ALGORITHMIC NETWORKS AND SOCIETAL IMPACT

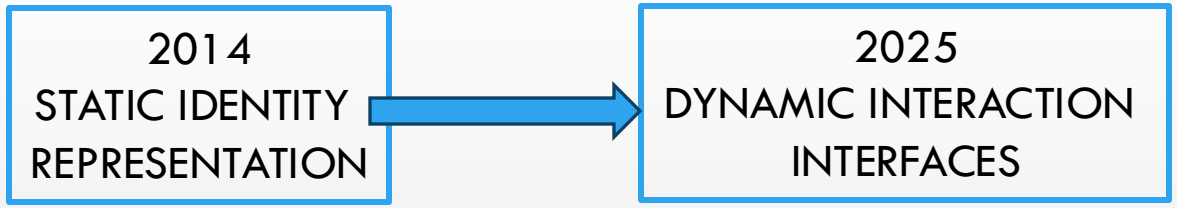
- ALGORITHMIC NETWORKS:
  - NODAL VISIBILITY, INTERACTION, AND INFLUENCE DETERMINED BY ALGORITHMS, BASED ON FACTORS LIKE THEIR INTERESTS, PAST BEHAVIOR AND CONNECTIONS WITH OTHERS, AND INCREASINGLY *PAY-TO-PLAY*
  - THE NETWORK PROVIDES THE STRUCTURE, BUT THE ALGORITHMS ARE NOW DEFINING THE PROCESSES AND INTERACTIONS OCCURRING WITHIN THAT STRUCTURE

ALGORITHMIC NETWORKS' SOCIETAL IMPACT

- SOCIETAL CONSEQUENCES:
  - INFORMATION BUBBLES
  - AMPLIFICATION OF MISINFORMATION
    - FACEBOOK WAS HEAVILY CRITICIZED FOR ITS ROLE IN MYANMAR
      - THE PLATFORM BECAME A PRIMARY AVENUE FOR THE DISSEMINATION OF HATE SPEECH AND MISINFORMATION AGAINST THE ROHINGYA MUSLIM MINORITY BY THE MILITARY AND HATE GROUPS
      - FUELED BY INADEQUATE CONTENT MODERATION AND ALGORITHMIC AMPLIFICATION.
    - CREATES FILTER BUBBLES AND SHIFTS INFORMATION DISCOVERY TO AUTOMATED CURATION, BIASED BY PAY-TO-PLAY
    - PRIORITIZES "ENGAGING" CONTENT AND FOSTERS A PERCEPTION OF ALGORITHMIC RESPONSIVENESS
    - SIDELINES DIVERSE PERSPECTIVES AND MEANINGFUL DISCOURSE



DIGITAL PROFILES AS API'S



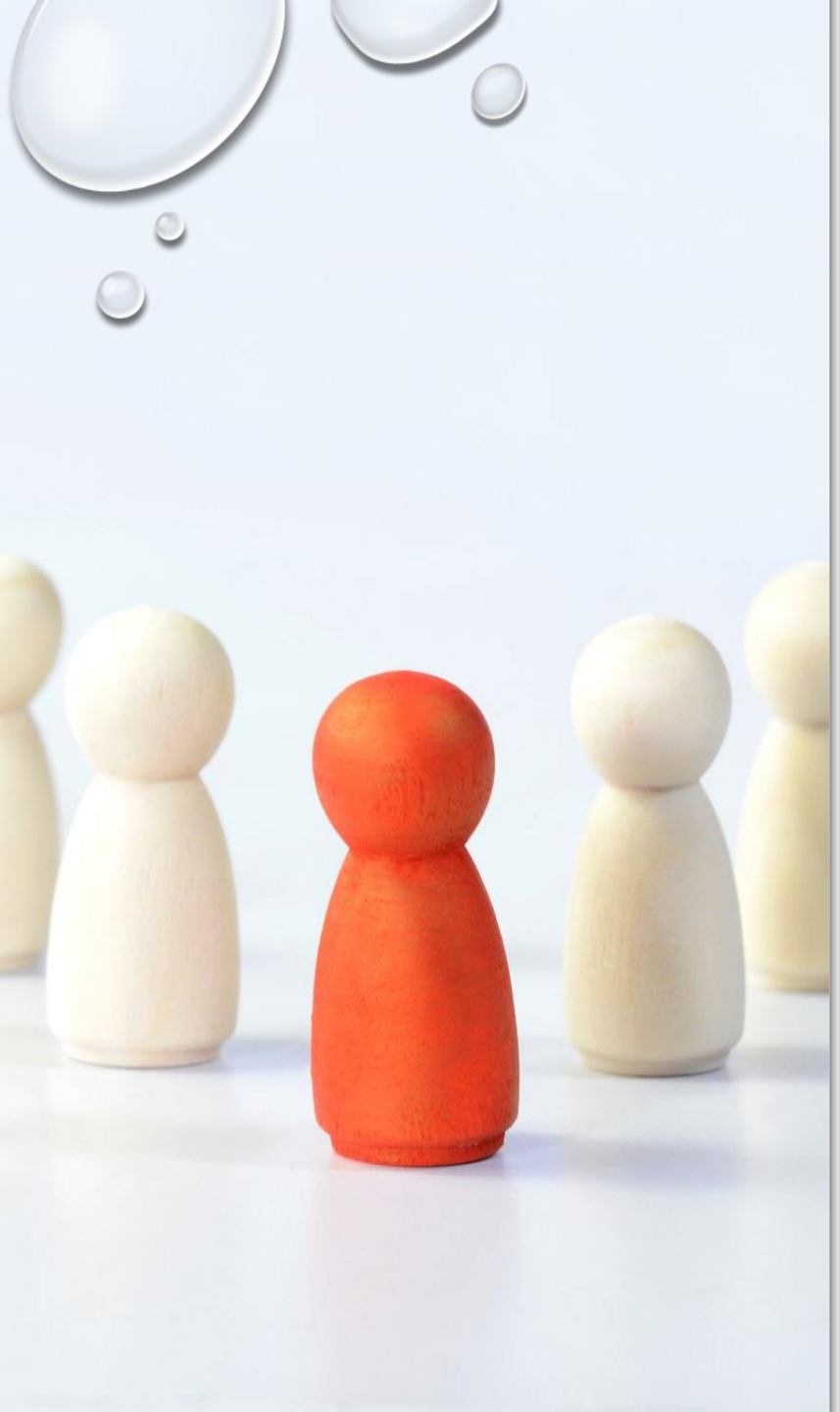
- EVOLUTION OF DIGITAL PROFILES
  - USERS CAN NOW SPECIFY CONDITIONS AND PERMISSIONS FOR INTERACTIONS
    - E.G., LINKEDIN USER PERMISSIONS FOR CONNECTIONS AND MESSAGING YOU'LL ACCEPT
- WE SEE MORE ACTIVE API GROWING IN IMPORTANCE
  - E.G., HAVING THE API HANDLE SCHEDULING ON CALENDLY ON YOUR BEHALF
  - PERSONALIZED BOTS ACTING ON YOUR BEHALF AS YOU INTERACT WITH THE WORLD

SURVEILLANCE CAPITALISM AND NETWORK DYNAMICS

- MONETIZATION OF PERSONAL DATA THROUGH PREDICTIVE ANALYTICS
- PLATFORM-DRIVEN BEHAVIORAL TARGETING
  - FIGURING OUT PARTICULAR INDIVIDUALS TO TARGET WITH CERTAIN MESSAGES, ACTIONS, AND INTERVENTIONS

SURVEILLANCE CAPITALISM AND NEFARIOUS ACTIVITY

- E.G., PLATFORMS' ALGORITHMS CAN INCREASINGLY INFER PEOPLE WITH BIPOLAR DISORDER AND IDENTIFY WHEN THEY ARE GOING INTO A MANIC PHASE
  - MORE SUSCEPTIBLE AT THAT PHASE FOR BUYING CERTAIN PRODUCTS, BEING ENGAGED MORE, BEING VULNERABLE TO CERTAIN TYPES OF TRIGGERING CONTENT
- E.G., ALGORITHMIC TARGETING MAKES IT EASY TO (INTENTIONALLY OR UNINTENTIONALLY) GO AFTER PEOPLE WITH GAMBLING OR ALCOHOL ADDICTIONS
  - STUDIES HAVE SHOWN THAT ONLINE CASINOS AND SPORTSBOOKS USE DATA ON USER BEHAVIOR, INTERESTS, DEMOGRAPHICS, AND EVEN GEOLOCATION TO TRACK PLAYERS AND TARGET THEM WITH HIGHLY PERSONALIZED AND ATTRACTIVE OFFERS THEY CAN'T TURN DOWN IN THEIR VULNERABLE STATE
- IMPLICATIONS FOR:
  - PRIVACY
  - ORGANIZATIONAL ACCOUNTABILITY – DO YOU KNOW WHAT YOUR ALGORITHMS ARE DOING?



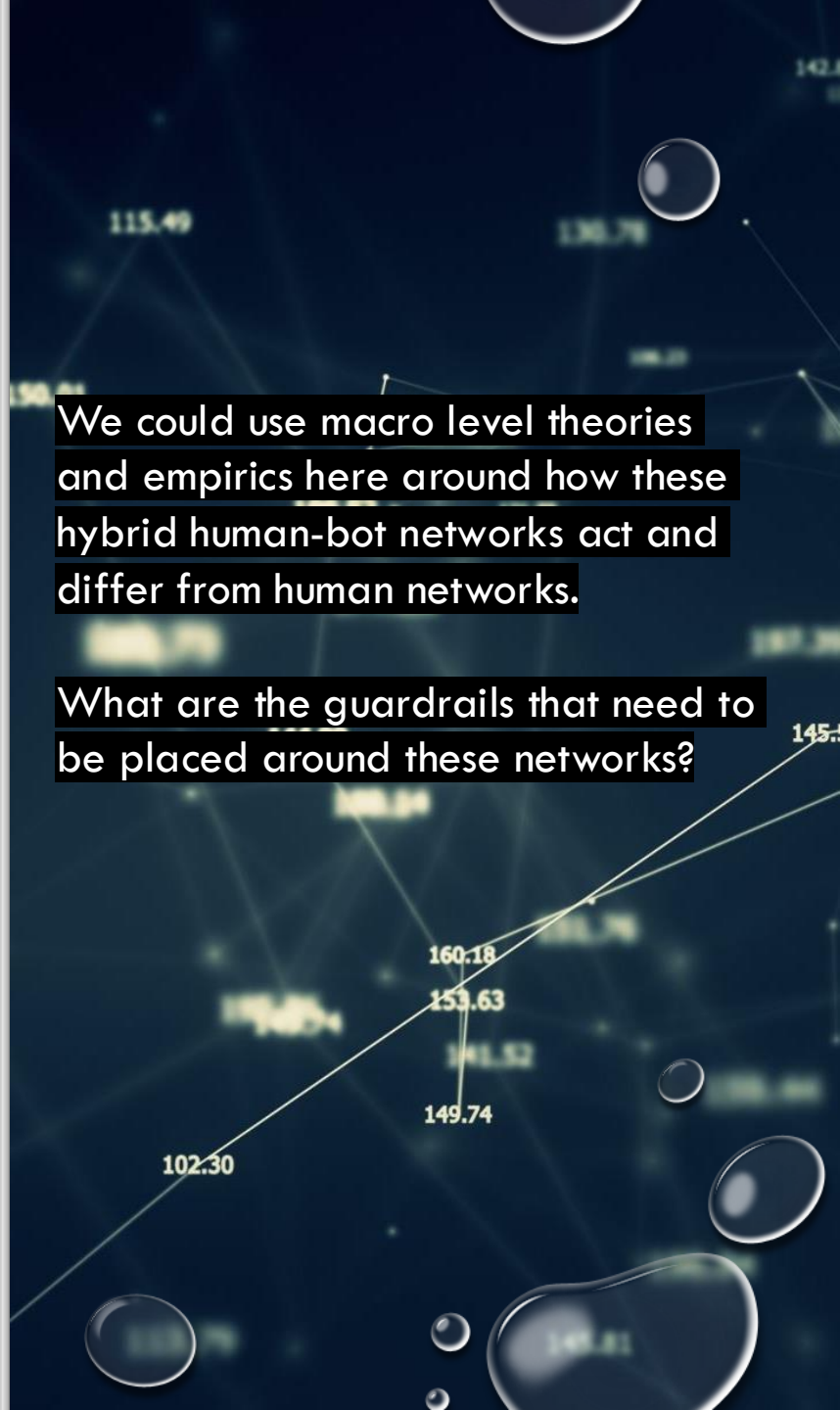
BOTS IN 2014

- WHEN WE WROTE OUR ORIGINAL PAPER, WE SAW SOCIAL MEDIA AS PRIMARILY A HUMAN-TO-HUMAN SOCIAL NETWORK, WITH BOTS RESERVED FOR OTHER SPACES LIKE WIKIPEDIA

- GERALD C. KANE, JEREMIAH JOHNSON, AND ANN MAJCHRZAK. "EMERGENT LIFECYCLE: THE TENSION BETWEEN KNOWLEDGE CHANGE AND KNOWLEDGE RETENTION IN **OPEN ONLINE COPRODUCTION COMMUNITIES**." *MANAGEMENT SCIENCE* (60:12), DECEMBER 2014, PP. 3026–3048.
    - BOTS WERE PERFORMING ROUTINE TASKS (E.G., CORRECTING ERRORS, CATEGORIZING ARTICLES, AUTOMATICALLY IMPORTING DATA)
    - BOTS ACCOUNTED FOR 15% OF ALL EDITS ACROSS WIKIPEDIA IN 2014
    - BOTS WERE INTERACTING, UNDOING EACH OTHER'S WORK AND ENGAGING IN "BOT FIGHTS," WHICH PERSISTED FOR LONGER DURATIONS AND WITH MORE NEGATIVE RECIPROCITY THAN HUMAN INTERACTIONS

EMERGENCE OF HYBRID HUMAN-BOT NETWORKS

- BOTS AS INFLUENTIAL NETWORK ACTORS THAT ARE MUCH MORE ACTIVE IN THEIR NETWORK ROLES:
  - DISSEMINATION OF MISINFORMATION
  - MANIPULATION OF PUBLIC OPINION
  - ENGAGE IN METRIC INFLATION
  - AND THEY CAN DO ALL THIS WITHOUT HUMAN LIMITATIONS (E.G., ACTIVE 24/7, INSTANTANEOUS REACTIONS)
- EXAMPLES:
  - POLITICAL BOTS ON SOCIAL MEDIA SUCH AS TWITTER/X
  - RECENT GROK AI ISSUE ON X SPEWING ANTI-SEMITIC, WHITE SUPREMACIST HATE SPEECH

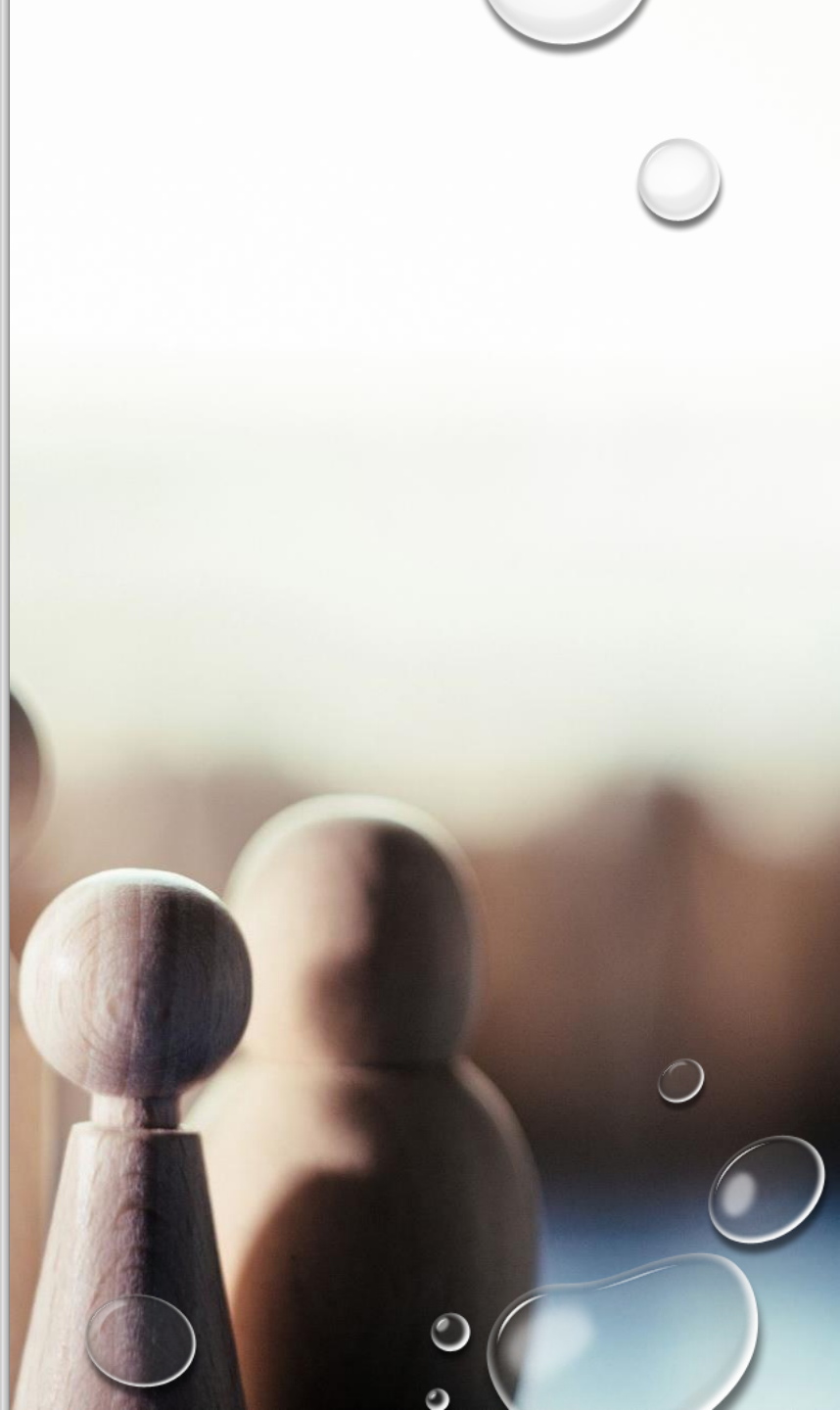


SOCIAL MEDIA BOT ATTACKS ON ORGANIZATIONS

- MALICIOUS SOCIAL MEDIA BOTS MIMIC HUMANS IN AN ATTEMPT TO CHANGE POLICIES, HARM REPUTATIONS, DISRUPT OPERATIONS, AND FACILITATE FRAUD
  - **CHANGE POLICIES** THRU AMPLIFICATION OF POSTS (E.G., THOSE CHALLENGING DEI AT JOHN DEERE & TRACTOR SUPPLY)
  - **REPUTATION DAMAGE** THRU MISINFORMATION, NEGATIVE REVIEWS, FALSE ACCUSATIONS, ESP. DURING A PR CRISIS
  - **DISTORTING ANALYTICS AND WASTING MARKETING BUDGETS** THROUGH FAKE ENGAGEMENT AND CLICK-THROUGHS
  - **FLOODING CUSTOMER SUPPORT CHANNELS** WITH FAKE INQUIRIES
  - **STOCK MARKET MANIPULATION** THROUGH SPREADING FALSE INFORMATION

SYNTHETIC INFLUENCERS AND AUTHENTICITY

- AI-GENERATED PERSONAS
- ETHICAL AND PRACTICAL IMPLICATIONS:
  - CHALLENGES TO AUTHENTICITY AND TRUST
    - WHAT DOES IT MEAN ONCE YOU CAN'T DISTINGUISH BOTS AND HUMANS?
  - IMPACT ON HUMAN INTERACTIONS AND RELATIONSHIPS?



Micro level

BOTS IN ORGANIZATIONAL CONTEXTS

- AGENTIC AI THAT CAN TAKE ACTIONS ON BEHALF OF THE USERS
- HOW DO THEY INFLUENCE ORGANIZATIONAL COMMUNICATION AND DECISIONS?
- ISSUES OF ACCOUNTABILITY:
  - AUTONOMOUS ACTIONS BY BOTS (TASK EXECUTION, DECISION MAKING)
    - WHO'S RESPONSIBLE FOR THAT: THE PROGRAMMER? THE BOT? THE PERSON ACTIVATING THE BOT? THE PLATFORM HOSTING THE BOT?
- STRATEGIC CONSIDERATIONS FOR INTEGRATING BOTS ETHICALLY

METHODOLOGICAL INNOVATIONS NEEDED

Limitations of traditional social network analysis (SNA)

What is the meaning of centrality when you have bots that can maintain a nearly infinite number of ties?
Every network will now have a power law distribution, so what now?
What new metrics do we need when considering hybrid human-bot networks?

Some proposed methods:

Computational and agent-based modeling

Algorithm auditing

Qualitative analysis of the network flows themselves using generative AI

FUTURE RESEARCH DIRECTIONS

How do algorithms reshape network dynamics?

Ethical frameworks for managing bots and algorithmic influence

Understanding hybrid human-bot interactions and their organizational effects

CONCLUSION AND CALL TO ACTION

- RECOGNITION OF BOTS AND ALGORITHMS AS INTEGRAL ACTORS IN NETWORKS
- NECESSITY FOR UPDATED THEORETICAL AND METHODOLOGICAL FRAMEWORKS
- ENCOURAGING RESPONSIBLE INNOVATION BALANCING TECHNOLOGICAL ADVANCEMENT WITH ETHICAL STANDARDS

THANK YOU!

Enhancing Nonprofit Operations with AI Chatbots

The Role of Humanization and Emotion

Scott Schanke, Siddharth Bhattacharya, Pallab Sanyal

Terry College of Business
UNIVERSITY OF GEORGIA

Background & Motivation

Social justice donations soared in the months after George Floyd's murder, but then fell — what happened?

The share of donations to social-justice and racial-equity causes plunged from 51% in June 2020 to just 5% in December, a recent report says

By Meera Jagannathan Follow

Last Updated: May 25, 2021 at 7:00 a.m. ET
First Published: April 21, 2021 at 4:43 p.m. ET

Chatbots

- Software agents designed to interact with humans using natural language
- Firms widely use chatbots across various functions and contexts—customer service, marketing, sales, finance, healthcare etc.
- For firm-customer interactions, the goal is to improve operational efficiency – 24/7 availability, reducing response times, lowering costs

"the average person will have more conversations with bots than with their spouse"

Chatbots in Organizations

KLM: Chatbots Are The Future Of Customer Support

"Chatbots are increasingly common on airline websites and mobile apps. They assist customers with inquiries, bookings, and flight changes, offering a 24/7 service that is both efficient and user-friendly." – Forbes (Mar. 29, 2024)

Air Canada ordered to pay customer who was misled by airline's chatbot

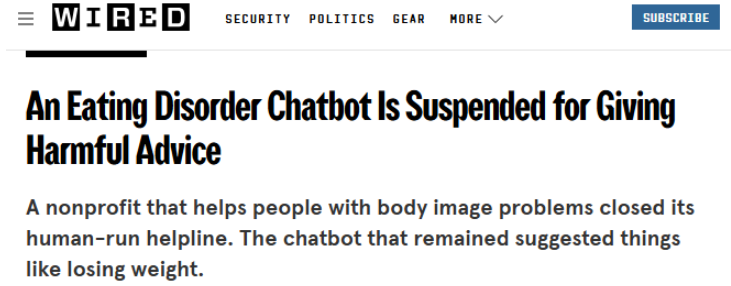
Organizations therefore need to be careful in their design and deployment of these technology artifacts

Chatbots for Nonprofit Organizations

Conversational AI agents can be expected to address emotionally sensitive issues such as race and health

Deploying such agents can be a double-edged sword for nonprofit organizations.

- On the one hand, these organizations must strive for operational efficiency and find innovative ways to reduce costs
- On the other hand, they need the bots they deploy to be designed to consider the appropriate social and emotional cues for the context



GenAI might not be appropriate

Designing Persuasive Appeals: Emotional

- A significant lever organizations can manipulate in their messaging is the tone of an appeal - more **rational** versus more **emotional**

- Tactics such as *distress* (Kogut and Ritov 2005), *sadness* (Small and Verrochi 2009), and *guilt* (Hibbert et al. 2007) drive pro-social behavior

- However, intense negative appeals can sometimes backfire, leading to a negative emotional state where individuals resist the pressure to conform (Brehm and Brehm 2013)

Designing Persuasive Appeals: Rational

- Meant to inform or provide logical arguments as to why one should comply with a specific action (Johar and Sirgy 1991)
- Charitable organizations utilizing these types of appeals use facts and analysis as to why pro-social behavior towards their cause is important
- Decety and Yoder (2016) evaluated how people respond to injustice and found that rational arguments perform better in persuasion than emotional arguments

AI-Agent Design: Anthropomorphism

- A well-researched lever that AI designers manipulate in their design of AI agents is anthropomorphism
  - attributing human-like qualities to non-human entities
- Adding life-like individuals to a medical website can cause individuals to perceive the website as more credible (Kim and Sundar 2012)
- However, when a chatbot designed to be human-like (anthropomorphic) behaves in ways that contradict user expectations, it can lead to discomfort, distrust, or disengagement
  - *Uncanny Valley* (Mori 1970) - refers to a harsh negative reaction to the perceptions of the AI agent

WSJ

When Humanlike Chatbots Work for Consumers—and When They Don't

They're fine if customers need something simple done. But if the consumer is already angry, the chatbots will make them even angrier.

By Cammy Crolic

Nov. 22, 2021 8:00 am ET

Research Questions

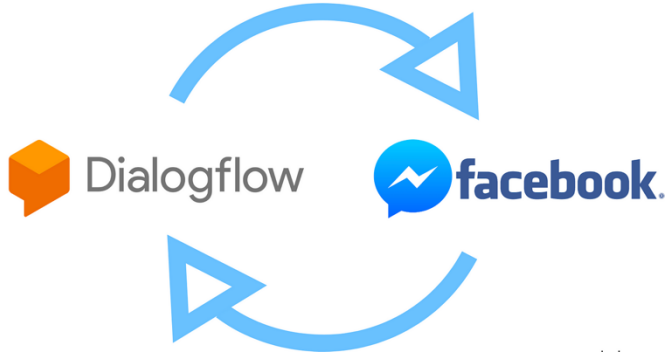
RQ1: To what degree does the anthropomorphism of a chatbot influence service *completion* in a nonprofit context?

RQ2: To what degree does the increased emotion of a chatbot influence service *completion* in a nonprofit context?

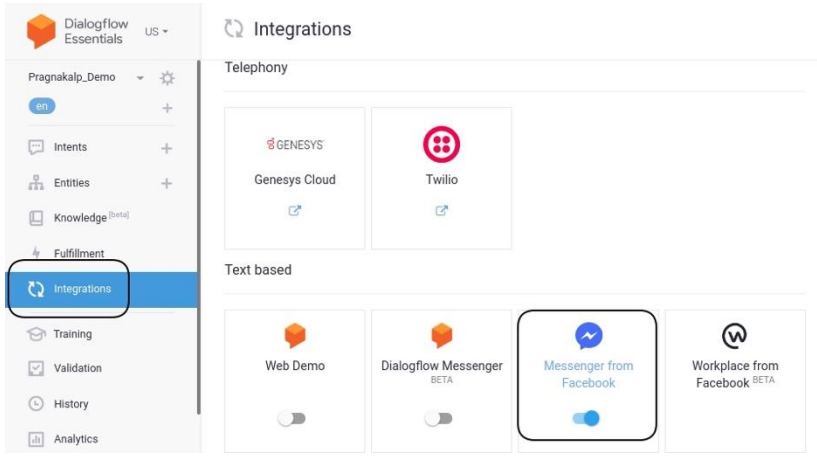
Service Completion: Whether a potential benefactor completes the interaction with the chatbot

Chatbot Design

- Custom chatbot using Google Dialogflow and Python
- Integrated with the Facebook messenger API
  - Allowed individuals to interact with the chatbot through the Meta messaging platform

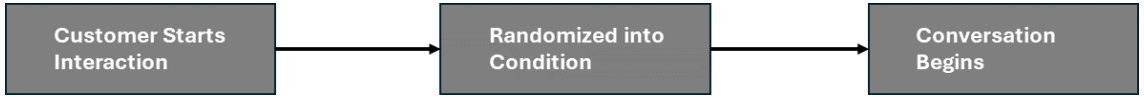


- Dialogflow vs. GenAI solutions (e.g., ChatGPT, Gemini, Claude…)
  - More deterministic
  - Extremely high standards of data security



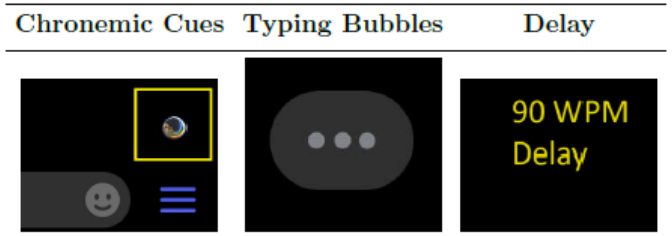
Study Design

- A randomized field experiment at a Minneapolis-based nonprofit organization that advocates for minority female health
- Chatbot embedded in their Facebook page
- The bot interacted with visitors regarding organizational outreach
  - Introducing the organization followed by four “asks” in random order
- A total of 291 subjects participated
  - June 4, 2023 - July 21, 2023



Treatment Implementation

- First, randomized into an Anthro (more human-like) or Bot (more AI-like) interface
  - Chronemic cues – to enforce feelings of a real socially present human
- Second, four solicitations in random order
  - Each solicitation was imbued to have emotional or informational content
- Outcome Variable: Completion
  - Whether a potential benefactor completes the interaction with the agent



	Emotional	Informational
Contains	Emotional phrases/words like "fair", "bias" etc. that appeal to human senses (Atkin 1979).	Numbers, statistics, percentages etc. which convey information.
	Often convey someone's opinion/judgement and are subjective by nature (Edell and Staelin 1983).	Contain facts that are true and objectively verifiable (Resnik and Stern 1977).

Manipulation Checks

- Assessed anthro/bot using Powers and Kiesler (2006) survey items
- Assessed emotional/rational using the methodology of Fredrickson et al. (2003)
  - "to what extent the following message made you feel each of the following emotions:"
- Survey carried out on Prolific

Index	Questionnaire Items
Anthropho-morphism	(Fake - Natural), (Machinelike - Humanlike), (Unconscious - Conscious), (Artificial - Lifelike), (Moving rigidly - Moving elegantly)

Emotion Items
1) Interested, 2) Grateful, 3) Happy, 4) Compassionate, 5) Calm, 6) Enthusiastic, 7) Proud, 8) Thankful, 9) Kindness, 10) Inspired

Descriptive Statistics

- 291 participants took part in the study between June 4, 2023, and July 21, 2023.
- Out of these, 15 participants were removed due to disruptive or inconsistent interactions, leaving us with 276 participants for our final analysis.

Table 2 Subjects by Anthropomorphic Condition

Condition	Subjects
Bot	134
Anthro	142

Table 5 Randomization Checks

	Mean of Bot	Mean of Anthro	T value	P value
Interaction Length	166.61	169.01	-0.116	0.907
Mean of Number of Emotional Appeals	2.059	2.133	-0.434	0.664

Table 3 Number of Emotional Appeals Received

Emotional Appeals	0	1	2	3	4
Count	49	55	53	58	61

Table 4 Emotional Appeals by Anthropomorphic Condition

	0	1	2	3	4
Bot	24	27	27	29	27
Anthro	25	28	26	29	34

Model free evidence

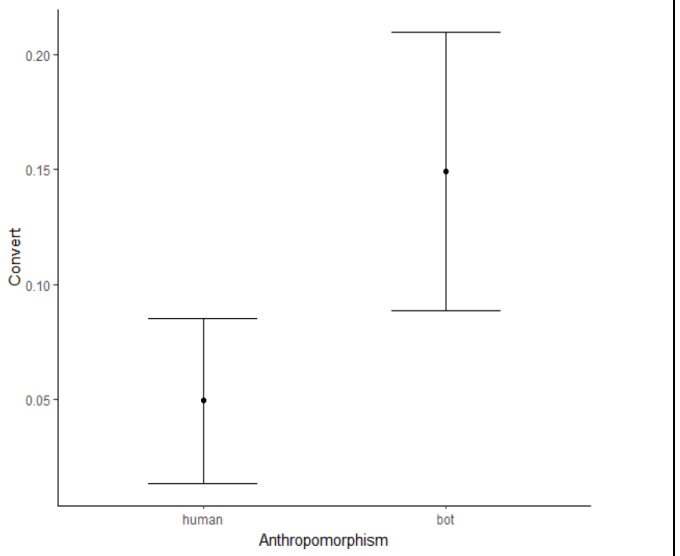


Figure 4 Completion Rates by Anthropomorphic Treatment (95% Confidence Intervals)

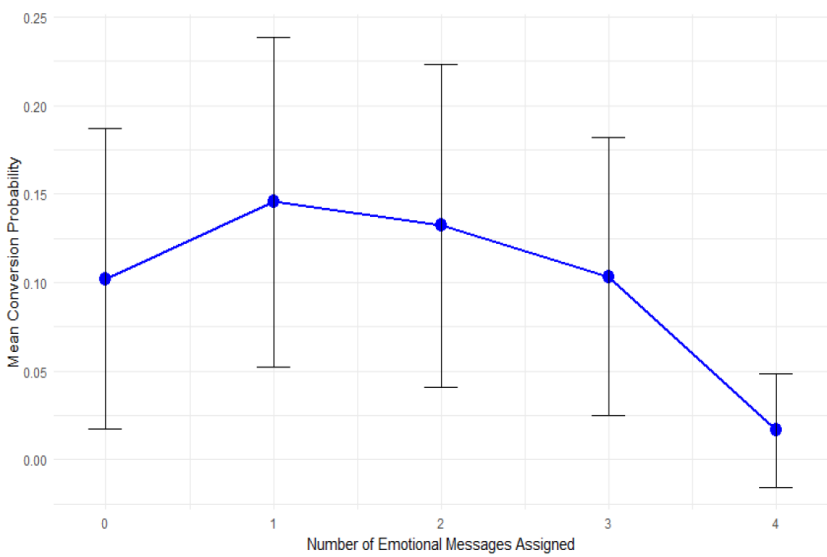


Figure 5 Completion Rates by Number of Emotional Treatments (95% Confidence Intervals)

Model & Result: ITT Analysis

$$\log\left(\frac{P(Completion=1)}{1-P(Completion=1)}\right)=\alpha+\beta_1 Anthro+\beta_2 NumEmoAppeals+\beta_3 NumEmoAppeals^2+\varepsilon$$

Table 6 ITT Effects: Linear, Quadratic, and Quadratic with Fixed Effects (Robust Standard Errors)

	Dependent Variable: Completion			
	Linear	**Inv-U**	**Inv-U + FE**	**Inv-U + Interaction + FE**
Intercept	−1.2430*** (0.3133)	-1.7610*** (0.4748)	-0.7243 (0.5605)	-1.0334 (0.6453)
NumEmoAppeals	−0.2644** (0.1255)	0.8104 (0.5397)	1.0940* (0.5646)	1.2517** (0.5990)
$NumEmoAppeals^2$		−0.2915** (0.1365)	−0.3862*** (0.1498)	−0.3867*** (0.1486)
Anthro	−1.2164*** (0.4574)	−1.2059*** (0.4575)	−1.4399*** (0.4469)	−0.6944 (0.6146)
$NumEmoAppeals^2 \times Anthro$				−0.2650* (0.1473)
Donation Fixed Effects	No	No	Yes	Yes
Observations	276	276	276	276
Log Likelihood	−82.7742	−80.5288	−74.7502	−73.4636
Akaike Inf. Crit.	171.5483	169.0575	163.5003	162.9271

Note: Robust SEs. *p<0.1; **p<0.05; ***p<0.01.

Findings from ITT Analysis

- We find a nonlinear relationship between emotional appeals and completion rate, where moderate emotional appeals enhance service completion, but excessive emotion becomes counterproductive.
- Increasing anthropomorphism in interactions significantly reduces the likelihood of service completion.
- Suggestive evidence that anthropomorphism's negative effect is moderated by the number of emotional appeals.

Turning Point Analysis: Optimal Number of Emotional Messages

$$\widehat{Optimal\ Emotional\ Message} = \frac{-\beta_2}{2\beta_3}$$

$$\widehat{Optimal\ Emotional\ Message} = \frac{-1.094}{2 \times -0.3862} = \frac{1.094}{0.7724} \approx 1.42$$

Addressing Non-Compliance

There may still be some degree of non-compliance:

- Some individuals may not have seen all the emotional appeals they were randomized to receive.
- Using the number of emotional appeals that an individual sees in a regression is endogenous.
- To better assess the effect of our treatment on compliers, we execute a 2 Stage Residual Inclusion Strategy (2SRIS) (Terza et al. 2008).

$$PredictedNumEmoSeen = \alpha + \beta_1 \cdot NumEmoAppeals + \beta_2 \cdot Anthro + \varepsilon$$

$$\log\left(\frac{P(Completion = 1)}{1 - P(Completion = 1)}\right) = \alpha + \beta_1 Anthro + \beta_2 PredictedNumEmoSeen + \beta_3 \text{Anthro} \times PredictedNumEmoSeen^2 + \delta\hat{e} + \gamma\hat{e}^2 + \varepsilon$$

First Stage: LATE Analysis

- **F-test of 11.26** indicates **strong instrument.**
- We capture both the predicted values from this OLS regression and the residuals to include in our LATE analysis.

Table 7 First-Stage Regression Results

	Predicted Num Seen
Intercept	0.0649
	(0.0746)
NumEmoAppeals	0.1605***
	(0.0336)
Anthro	−0.0623
	(0.0947)
Observations	276
R^2	0.0762
Adjusted R^2	0.0694
F Statistic	11.26*** (df = 2, 273)

Note: Robust SEss. Predicted values of Num Seen are used in the second stage. ***$p \leq .01$

Second Stage

Table 8 LATE Effects: Linear, Quadratic, and Quadratic with Fixed Effects (Robust Standard Errors)

	Dependent Variable: Completion			
	Linear	**Inv-U**	**Inv-U + FE**	**Inv-U + Interaction + FE**
Intercept	-0.8064*	-1.5041*	-0.7152	-1.5021
	(0.3987)	(0.5866)	(0.7227)	(0.8997)
PredictedNumEmoSeen	-3.9384**	1.9489	2.8123	6.6538
	(1.7376)	(3.8608)	(3.9484)	(4.5998)
$PredictedNumEmoSeen^2$		-8.2586	-9.2712	-13.7692*
		(6.2409)	(6.3456)	(7.2858)
Anthro	-1.7397***	-1.4716**	-1.7001**	-0.2537
	(0.5032)	(0.4800)	(0.4994)	(0.7245)
$PredictedNumEmoSeen^2 \times Anthro$				-20.3173**
				(5.9924)
Residual (First Stage)	1.4752***	2.1642***	2.0113***	1.3294*
	(0.3616)	(0.7001)	(0.6736)	(0.7010)
$Residual^2$ *(First Stage)*		-0.3292	-0.3076	0.3250
		(0.1925)	(0.1926)	(0.2956)
Fixed Effects	No	No	Yes	Yes
Observations	276	276	276	276
Log Likelihood	-66.145	-63.743	-61.275	-56.816
Akaike Inf. Crit.	140.289	139.485	140.550	133.634

*Note: Robust SEs. *p<0.1; **p<0.05; ***p<0.01*

Margins Plot: LATE Analysis

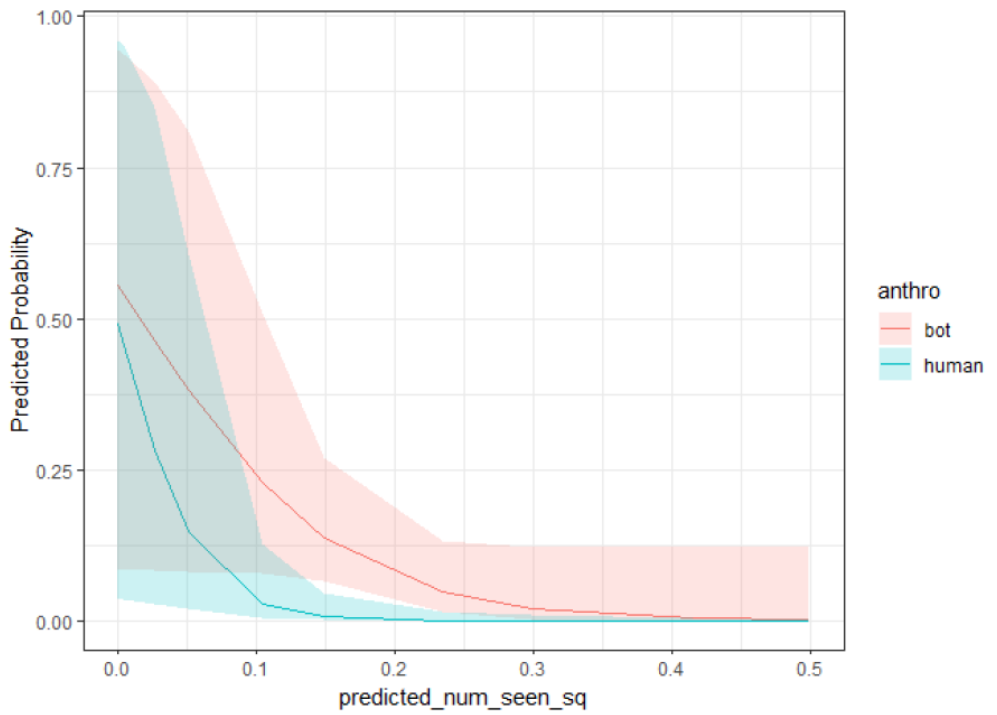


Figure 6 Completion Rate by Number of Emotional Treatments (95% Confidence Intervals)

Main Results

1. Anthropomorphism of the bot reduced the probability of completion by ~9%
2. Moderate levels of emotional appeals can enhance engagement, but excessive emotional content negatively impacts participant interaction.
3. There exists an interaction effect between the intensity of emotional appeals, anthropomorphism, and service completion rates.

Important to **balance emotional intensity** and **anthropomorphism** in chatbot design.

- Overly human-like AI agents using excessive emotional messaging may inadvertently hinder engagement
- than enhance it.

Mechanism Exploration: Anthropomorphism

- Recent studies on anthropomorphism (e.g., Crolic et al. 2022) find that consumers in a negative emotional mindset experience intensified negative emotions when interacting with a highly anthropomorphic chatbot

- We analyze the chatlogs from our chatbot interactions using **Linguistic Inquiry and Word Count (LIWC)** (Pennebaker et al. 2007)
  - to uncover insights into the emotional, cognitive, and structural components of the text

- **Expectancy violation**: The anthropomorphic condition caused subjects to have a heightened negative response to the chatbot, resulting in a 10% increase in negative reactions

Mechanism Exploration: Emotional Appeals

Following Steindl et al. (2015) and (Quick et al. 2014), we theorized the possibility of overuse of emotional appeals to cause a heightened state of reactance

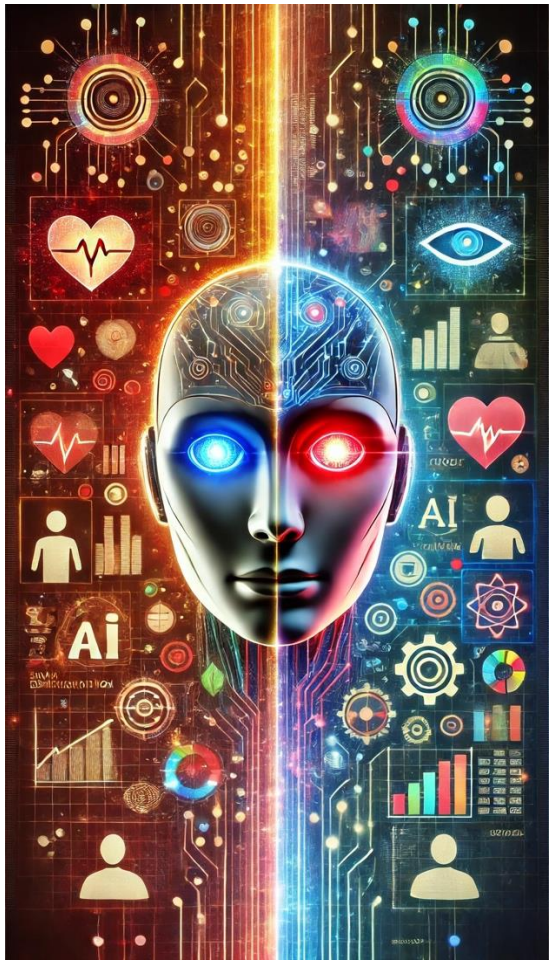
We apply Linguistic Inquiry and Word Count (LIWC) (Pennebaker et al. 2007) again

- to assess the use of emotion words in the text
- regress the number of emotional appeals on an outcome, which captures the number of emotional words (*EmotionCount*)

- **Psychological reactance:** Subjects experienced a heightened emotional state when receiving higher emotional appeals

Summary

- Applying AI in sensitive contexts, such as race and health, poses challenges, as these technologies often lack the nuanced understanding of human emotions necessary for effective interaction
  - underscores the need for designing AI agents that not only enhance operational efficiency but also appropriately address social and emotional cues
- While much of the existing research focuses on AI applications in for-profit sectors, there is a pressing need to develop AI solutions tailored for nonprofits tackling critical societal issues
  - ensuring they can both scale and sensitively engage with the communities they serve
- A delicate balance is required in persuasive communication strategies to avoid counterproductive resistance from the audience



Thank You!

Authority by Design – Should bots mirror real-life bosses?

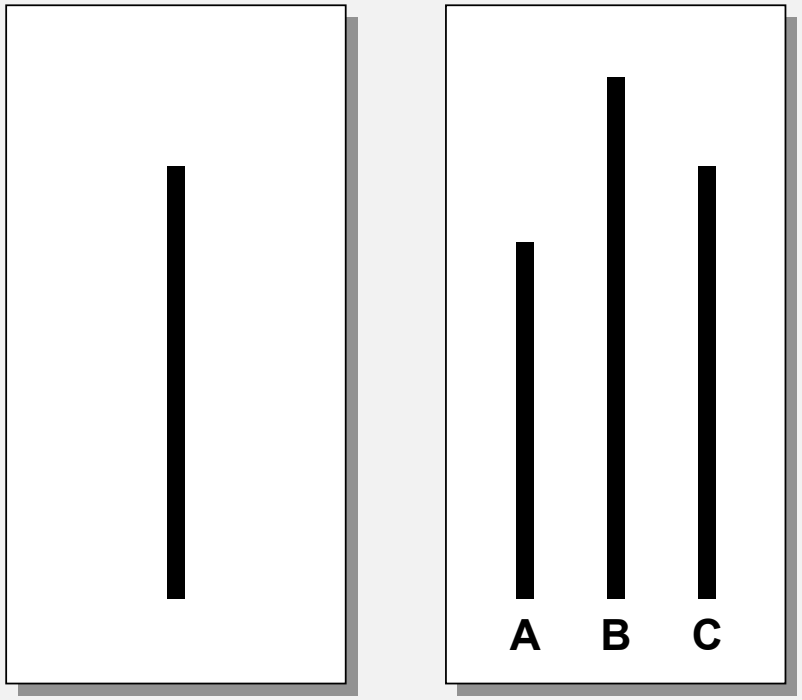
Lior Zalmanson (Tel Aviv University)

Coller School of Management
Tel Aviv University

AIMLAB
AI IN MANAGEMENT, LABOR AND BUSINESS

Story 1 - Conformity to an algorithmic boss (Work with Yotam Liel)

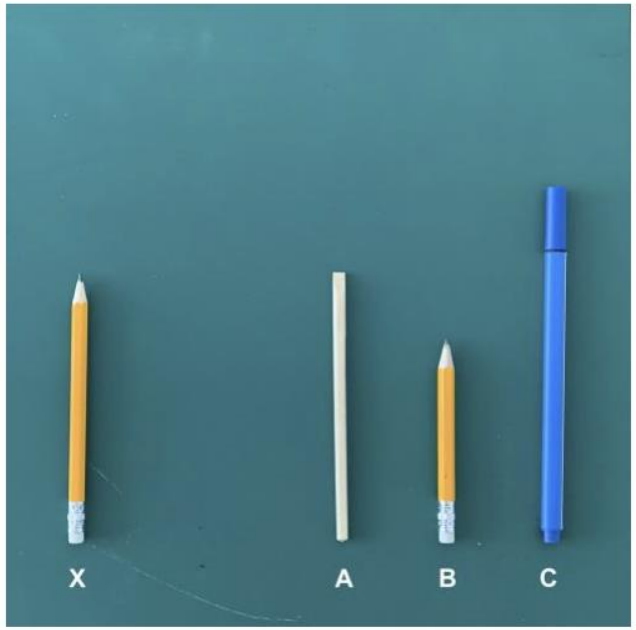
Conformity under social pressure



Solomon E. Asch, 1956:
“Studies of Independence and Conformity”

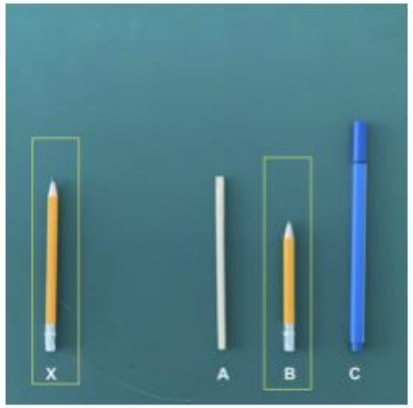
Testing for Algorithmic Conformity (Through Asch)

Instructions:
Identify which one of the three items labeled A, B and C is of the same length as item X.



Algorithmic Analysis:

Based on an image recognition algorithm analysis, the answer is: B



The Drivers of Algorithmic Conformity

We measured participants' perceptions of the AI's:

Normative Authority

The AI is seen as an authoritative figure, holding coercive and reward power.

Informational Influences

The AI is seen as having superior abilities, due to expertise and objectivity.

Three Studies Exploring Formal Authority as a Driver of Algorithmic Conformity

Study 1

- Shows mechanisms at work using Asch's setting

Study 2

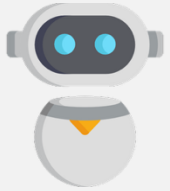
- **Make AI's Formal Authority explicit** by informing participants that their work will be supervised by an AI.

Study 3

- **Reduce the AI's informational influence** by switching to tasks that are perceived as less suitable for AI than for people.

Study 1: Algorithmic vs Human Advice

Three Groups (N = 278)**:**



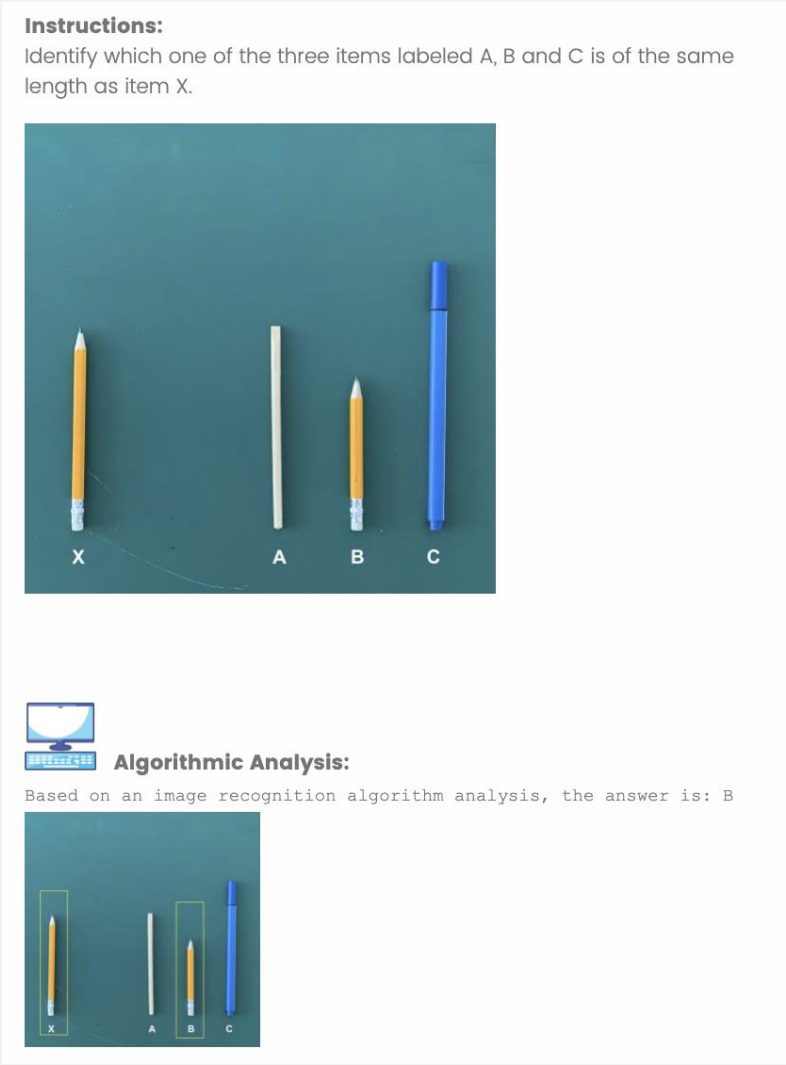
Algorithmic Advice

“based on an image recognition algorithm analysis the answer is: B”

Human Advice

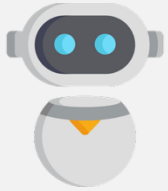
“based on other workers’ answers, the answer is: B”

No Advice (control)



Study 1: Algorithmic vs Human Advice

Results:



Algorithmic Advice

Human Advice

No Advice (control)

29.5% > **21.7%** > **2.6%**

Both **Formal Authority** and **Informational Influence** were significantly associated with conformity.

	Dependent variable:	
	Conformed	
	(1)	(2)
Intercept	0.217***	0.200***
	(0.018)	(0.019)
AI Advice	0.078***	0.061**
	(0.026)	(0.025)
Formal Authority		0.070***
		(0.014)
Informational Influence		0.064***
		(0.019)
Age		-0.006***
		(0.001)
Female		0.061**
		(0.024)
Education		0.037***
		(0.013)
Trust		-0.002
		(0.013)
Note:		*p<0.1; **p<0.05; ***p<0.01

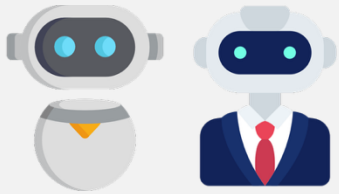
Study 2: Explicit Formal Authority

Four Groups (N = 513)**:**

2 (advisor: AI or human) × 2 (supervision: AI or human)

Supervision = quality assurance review

"QA will be conducted by a specially designed image recognition algorithm"



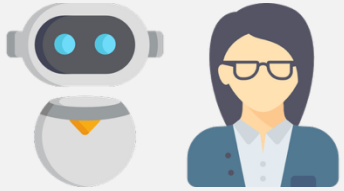
AI Advice

AI Supervision

Human Advice

AI Supervision

by a "dedicated human reviewer from our team"

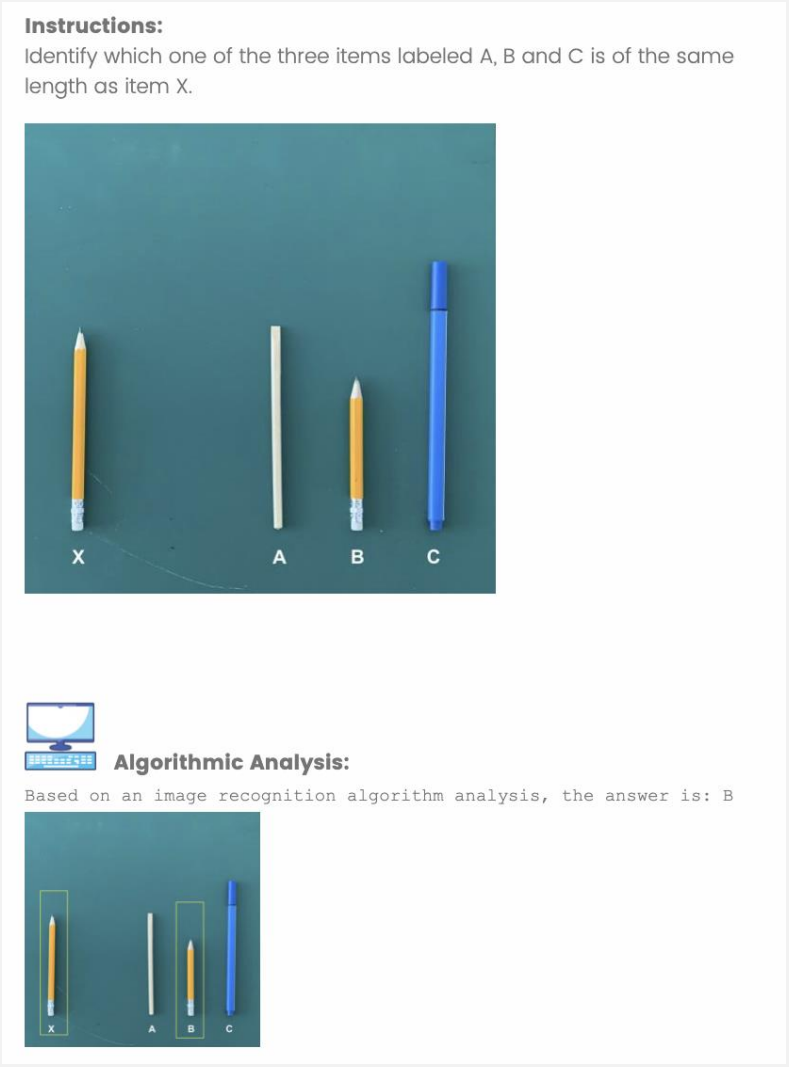


AI Advice

Human Supervision

Human Advice

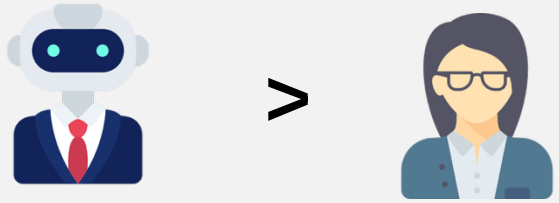
Human Supervision



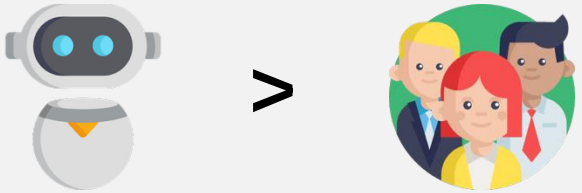
Study 2: Explicit Formal Authority

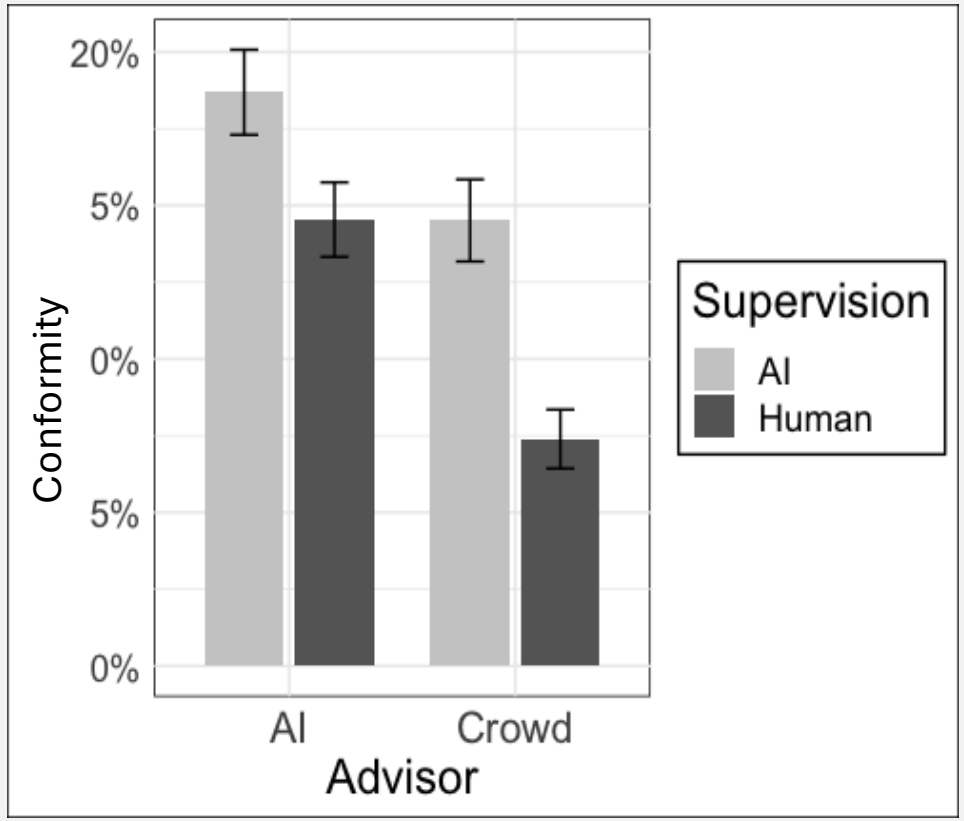
Results:

- **AI supervision** increased conformity, for both types of advice.



- Workers who received **AI advice** were more likely to conform, for both types of supervision.





Takeaway 1: Workers conform when bots **appears authoritative** either by perceived expertise or by being formally in charge.

Story no 2: The need to personify the algorithm to gain authority (With Omer Hacker)

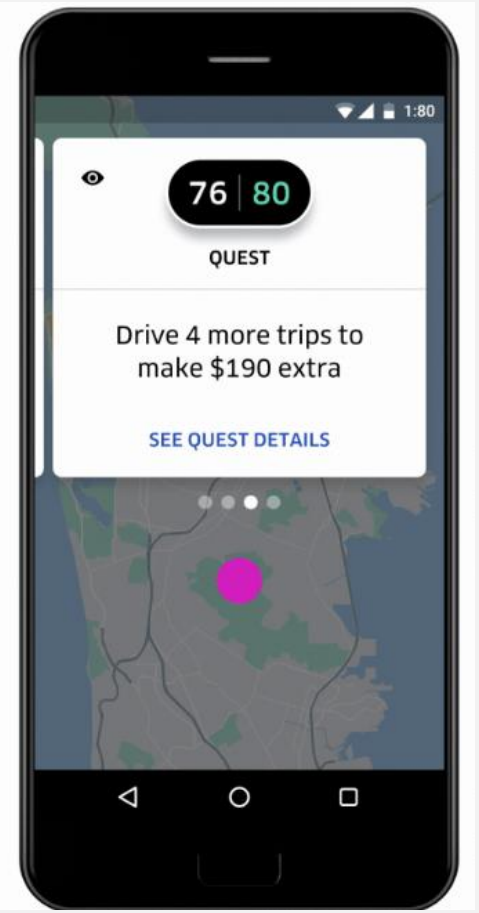
Separating the manager: Weber to Uber

- Bureaucracy: Separating the person from the office
- “Without regard for persons”

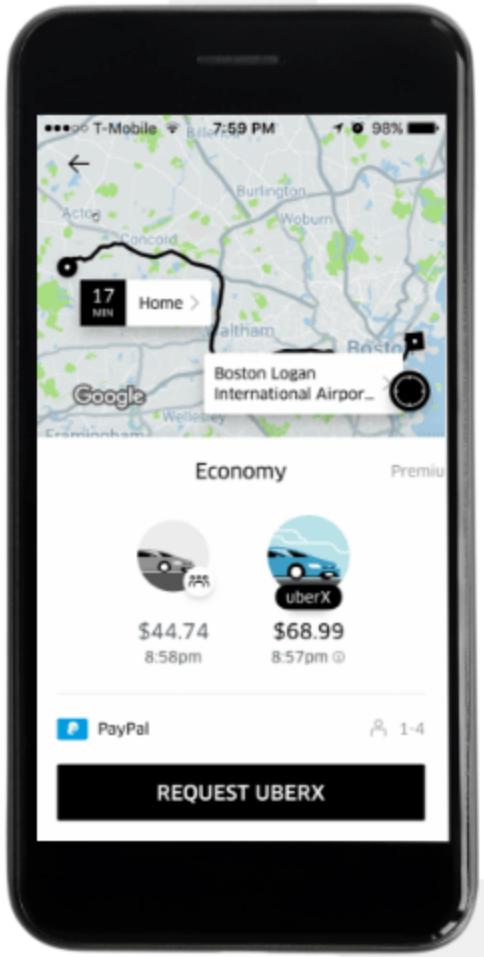
“The fully developed bureaucratic mechanism compares with other organizations exactly as does the machine with the nonmechanical modes of production” (Weber).

The Fantasy: Bossless Management

- Uber-like dreams of pure algorithmic control
- Remove messy human bias
- Let data lead



© Uber website



Uber for X

- Uber for Delivery
- Uber for Trucking
- Uber for Women
- Uber for Food
- Uber for Tutoring
- Uber for Kids
- Uber for Pets
- Uber for Photographer
- Uber for Doctors
- Uber for Babysitter

SPACEO TECHNOLOGIES

Fieldwork in Algoshop

- Tel Aviv startup
- Management and communication app for retail
- 30-50 workers
- Clients: dozens chains with hundreds of stores
- Ongoing office ethnography and interviews with clients.

Algoshop is Solving for Retail

- Retail is people-driven.
- Day-to-day decisions rely on informal authority, personal trust, and social cues.
- But it’s under pressure.
- Chains are scaling fast, and digital systems promise consistency and oversight.
- Enter the algorithmic manager.A new generation of tools aims to replace or augment human supervision with data-driven directives.

We'll Uber retail!

- The threat of net-based trade
- Datafying the ancient trade

"We would ask the store manager: Do you see the product that the screen is showing? Do you know it? This is the company's bestseller, and it is not on display. **It turns out that they don't know anything**; they just don't know anything. They're insane." (Nadav, Algoshop co-founder)

The reality: Nobody listened!

- The challenge of speaking from the outside
- Authority empowering data (and not vise-versa)

Actually, we weren't able to reach through the stores. **They didn't really listen to us. We had to come from the managers.** The managers have to be listened to. And if we have the managers, then the stores will have to listen to us. Actually, what is a manager? What do they do? To manage, you have to talk or motivate. That's why we had to include communication in the software.
(Amir, Algoshop CEO and founder)

Ask yourself, where is the employee likely to do what you want him to do? When I tell him or his manager? The answer is clear. His manager needs to tell him [what to do]. In order to be heard I need authority, to be an authority I need to go through the managerial structure of the company, which is where I entered. (Nadav)

Designing Authority Back In

1

Reintroduce the human manager as an avatar

2

Add a voice

3

Place it inside the org structure

4

Create a chain of command — not just data flow

Re-personification: From algorithm to Avatar

- Adding a communication platform
- The avatar for the human manager
- Faithful representation

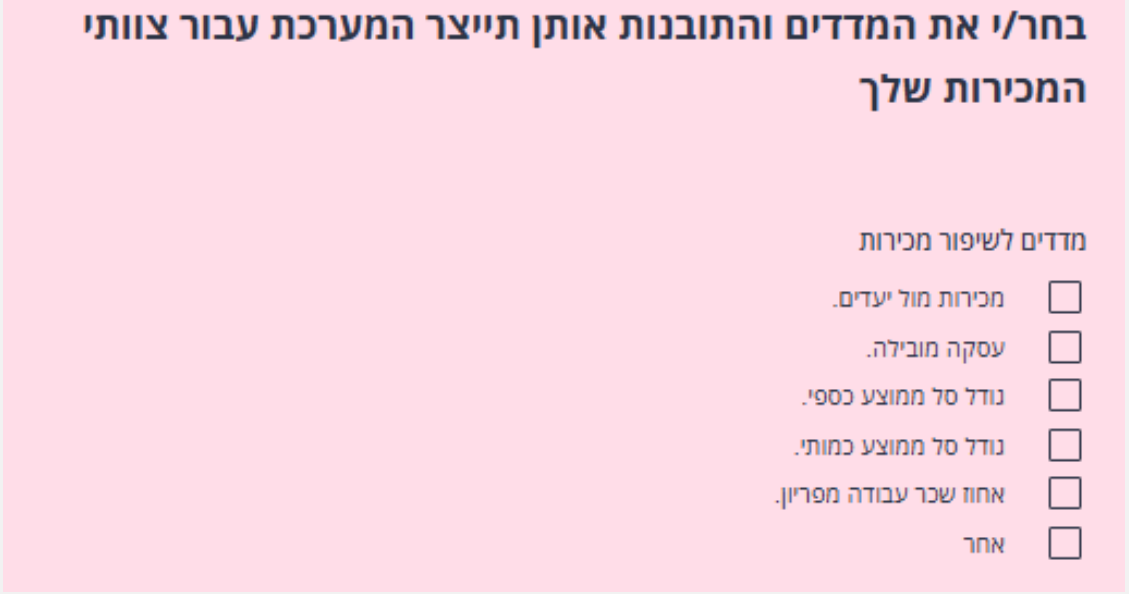
Personification: Voice

Creating interpersonal commitment:

"Why do you need regional managers? Why do you need them? Human interactions. You need a human touch. For sure in retail you need it. Who is my manager? I need to see him, he needs to talk to me, he needs to push me to make me use what I need to use. I can never replace that [...]. The manager will be our face." (Amir)

Personification: Preference

- Welcoming back human bias
- Hierarchizing data



Designing Authority at Algoshop - summary

- Human manager’s legitimacy is projected via the system.
- Designers no longer try to substitute - they mediate authority.
- Bot becomes an extension of managerial presence.

Takeaway 2: Designers learned that for bots to be treated as authoritative in retail, it wasn’t enough to mimic human managers -they had to let real managers speak through it.

In other words, authority isn’t just a matter of function or form, but of channeling recognized power through presence, voice, and placement.

Panel

Scott Schanke
UGA

Lior Zalmanson
Tel Aviv University

Carolina Salge
UGA

Aaron Schecter
UGA

RSM Erasmus | Rotterdam School of Management
Erasmus University

Terry College of Business
UNIVERSITY OF GEORGIA

RSM Erasmus | Rotterdam School of Management
Erasmus University

Thank you!

AoM PDW – Bots in Organizations

Terry College of Business
UNIVERSITY OF GEORGIA