Why Human-AI Collaboration Matters

Unleash the full potential of AI

Adapt human roles to address AI-induced disruptions and potential job displacement

- Reevaluate traditional job functions
- Explore new ways of work
- Develop new skillsets

Help organizations adapt to the future of work

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Common Forms of Human-AI Collaboration

Division of labor

Ensemble

Assign AI and human different prediction problems (e.g., Murray et al., 2020; Puranam, 2021; Jia et al., 2024)

• e.g., AI in medical triage, recruiting prescreening, customer intake

AI and human perform the same prediction problem & aggregate predictions (Choudhury et al, 2020; Lebovitz et al., 2022; Choudhary et al, 2023; Xi and Kim, 2024)

• e.g., AI diagnostic, AI ratings for investments

• Overlaps with "horserace" and training (Tong et al., 2020; Gaessler and Piezunka, 2023)

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Division of labor

Ensemble

Prediction Problem A
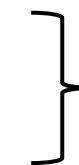
Human

Human
AI
Integration

Prediction Problem B

AI

Human
AI
Integration

*Integration requires **judgement calls**:
Which predictions to use or how to aggregate them?*

Informed Choice
based on assessing
quality of predictions

(Choudhary et al, 2023)

**AI + Human >= AI
& AI + Human >= Human**
Achieving Complementarity

Deviations From Informed Choice

Benchmark/Ideal case

Overreliance on Human
Giving human-generated
predictions heavier weights than
suggested by "informed choice"
(e.g., Dawes, 1979; Lebovitz et al., 2022)

Informed Choice
based on assessing
quality of predictions

(Choudhary et al, 2023)

Overreliance on AI
Giving AI-generated predictions
heavier weights than suggested
by "informed choice"
(e.g., Vasconcelos et al., 2023; Dell'Acqua, 2024)

AI + Human ~ Human
Less likely to achieve complementarity
unless human happens to make higher
quality predictions

**AI + Human >= AI
& AI + Human >= Human**
Achieving Complementarity

AI + Human ~ AI
Less likely to achieve
complementarity unless AI happens
to make higher quality predictions

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Problem: Barriers to Making Informed Choice

Decision Based on Quality of Predictions

- Barriers to making "informed choice"
  o Uncertainty over quality of predictions
  o Varying abilities to assess prediction quality
  o Varying willingness (diverging objectives)

Decision Based on Human Discretion

- Organizational factors shape human discretion

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Factors Influencing Reliance on Human or AI: Cognitive Biases

Overreliance on Human
(AI + Human ~ Human)

Informed Choice
(AI + Human >= Human
& AI + Human >= AI)

Overreliance on AI
(AI + Human ~ AI)

*Cognitive bias
(individual-level)*

← →

Algorithm Aversion

Drivers:
- Algorithm errors (e.g. Dietvorst et al., 2015)
- Lacking procedural justice (e.g. Newman et al., 2020)
- Deprivation of human autonomy (e.g. Newman et al., 2020)
- Threats to human power (Kolbjørnsrud et al., 2017)
- Threats to job security (e.g., Tong et al., 2021)
- Creates discrimination and bias (e.g., Kleinberg et al., 2018)
- other ethical concerns (e.g., Gal, et al., 2020)

Algorithm Appreciation

Drivers:
- Non-experts' decisions (Logg et al., 2019)
- Trust in algorithm quality (Dell'Acqua 2024)
- Perceived objectivity of task (Castelo et al., 2019)
- Perceived human control over outcome (Dietvorst et al., 2018)
- Reduced concerns over job loss (Granulo et al., 2019)
- Algorithm's agency (Srinivasan et al., 2021)

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Overreliance on Human
(AI + Human ~ Human)

Informed Choice
(AI + Human >= Human
& AI + Human >= AI)

Overreliance on AI
(AI + Human ~ AI)

Cognitive bias

Strategic Considerations – information

Source Credibility

Information adoption literature (Sussman & Siegal, 2003; Zhang & Watts, 2008)

- Organization's need for explanations of decision
  - Relative **interpretability** of predictions by AI vs. involved human

- Organizational overall trust of AI's abilities vs. involved human

Strategic Considerations – Incentives

- Organization's need for accountability of decision
  - Absence of societal consensus on AI accountability

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Decision-makers' Private Incentives

Overreliance on Human
(AI + Human ~ Human)

Informed Choice
(AI + Human >= Human
& AI + Human >= AI)

Overreliance on AI
(AI + Human ~ AI)
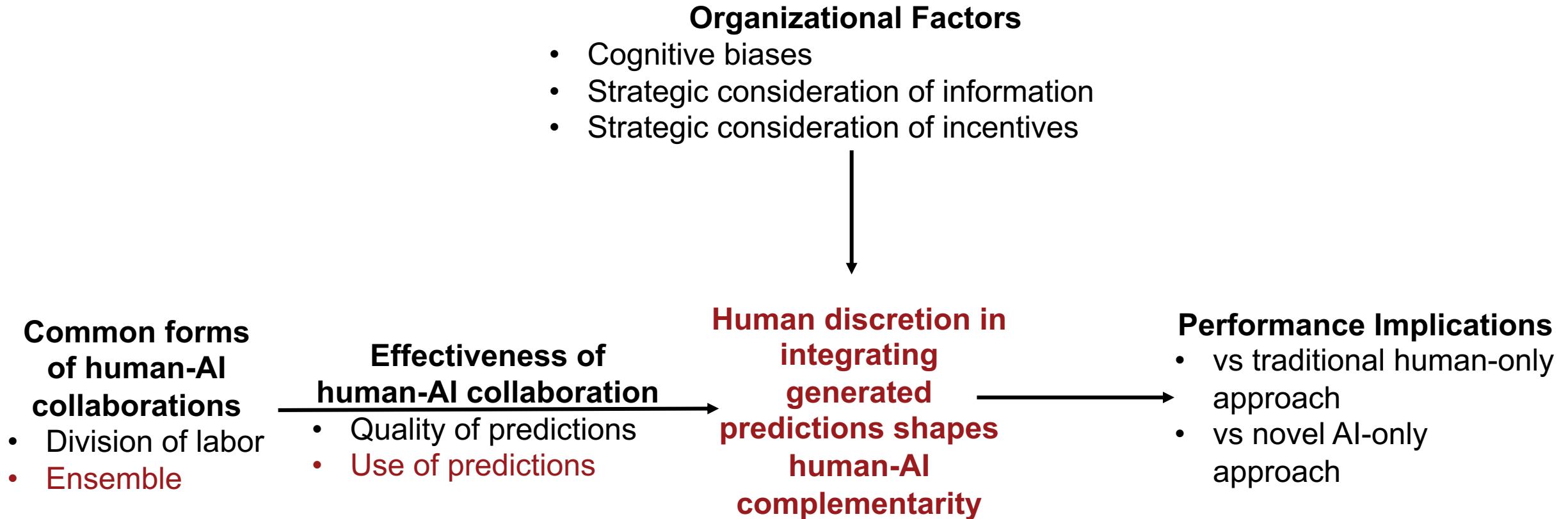
Cognitive bias

Strategic Considerations – information

Strategic Considerations – Incentives

Self Interests of Decision-makers

- Desire to preserve decisionmakers' power and control over outcomes
  - Decisionmakers' own power (Power and control theory; principal-agency theory)
  - General human identity at work (Theory on identity and status)

- Desire to involve a neutral third party
  - Mediation of conflict by neutral third party (Conflict resolution theory)
  - Address trust deficit in decisionmaker or human predictor (principal-agency theory)

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Thought Process Framework

Organizational Factors
- Cognitive biases
- Strategic consideration of information
- Strategic consideration of incentives

Common forms of human-AI collaborations
- Division of labor
- Ensemble

Effectiveness of human-AI collaboration
- Quality of predictions
- Use of predictions

Human discretion in integrating generated predictions shapes human-AI complementarity

Performance Implications
- vs traditional human-only approach
- vs novel AI-only approach

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Intended Contributions

Create human-AI complementarity

• Conditions that enable or hinder the combined power of human and AI to maximize performance

Humans remain critical in the era of AI!

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Broader Implication

How can adopting proliferating AI technologies enable companies to generate and sustain competitive advantages?

- How effectively organizations integrate AI and human predictions shapes value creation

- Performance of technology is critically influenced by organizational factors (Blader et al., 2020; Gibbons & Henderson, 2012; Ichniowski et al., 1995)

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"Strategy and Artificial Intelligence"

Guest Editors:

- Nan Jia (University of Southern California)
- Karim R. Lakhani (Harvard University)
- Robert Seamans (New York University)
- Christopher L. Tucci (Imperial College London)
- Bart S. Vanneste (University College London)

Submission Window

- 9/1/2024-9/30/2024

Scope:

- How AI technology shapes how firms *compete* (competing with others), *strategize* (formulating their strategies), and *organize* (organizing their operations).
- Empirical papers
- Quantitative and/or qualitative methods
- Deductive, inductive, or abductive approaches

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"Handbook on Artificial Intelligence and Strategy"

Edward Elgar Publishing, UK

Editors

- Felipe Csaszar (University of Michigan)
- Nan Jia (University of Southern California)

Expected timeline

- Submission Deadline: 12/31/2024
- Final decision: 8/31/2025

Unique Opportunities to Shape Perspectives on AI & Strategy

- Diverse formats
- Emphasis on exploration
- New perspectives
  - Theoretical frameworks
  - Practical insights
  - Teaching contributions

Contact

- ai-handbook@umich.edu

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DALL-E Image