

# THE ETHICAL AND SOCIAL DILEMMA OF AI USES IN THE CONSTRUCTION INDUSTRY

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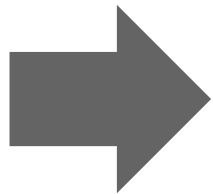
## MAIN POINTS

- Growth in data collection and AI uses in AEC Industry.
- Need to study ethical and social considerations for employees in the industry and for society in general.
- Many decisions will be made by AI algorithms and not by humans.
- This is an exploratory paper our aim is to spark further research and discussion within the Lean Construction community - Respect for people.

# ARTIFICIAL INTELLIGENCE

“Artificial intelligence or AI, attempts to understand intelligent entities. Thus, one reason to study it is to learn more about ourselves. But unlike philosophy and psychology, which are also concerned with intelligence, AI strives to build intelligent entities as well as understand them.”

Russell and Norvig (2019)



**If AI achieves superhuman intelligence:  
Would AI then be more valuable than humans?**

Harari (2019)

# SOCIAL AND ETHICAL DILEMMAS

- **Ethical Dilemma:** Alternatives are not fully acceptable ethically
- **Ethical behavior:** Following values, norms and rules of the society
  - justice
  - moral rights
  - individualism
  - utilitarian
- **Social dilemma:** Conflict between self and collective interest

# CURRENT ISSUES OF AI IN CONSTRUCTION

## Planning and Control

To **optimize schedules**, by automating the process of generating alternative schedules (ENR 2021, Schia et al. 2019).

## Generative Design

To **optimize design**, by generating numerous design options (Oh et al. 2019).

## Claim Analysis

To **identify the cause of a schedule variance**, to help determine responsibility of each party (Riad et al. 1991).

## Environmental performance

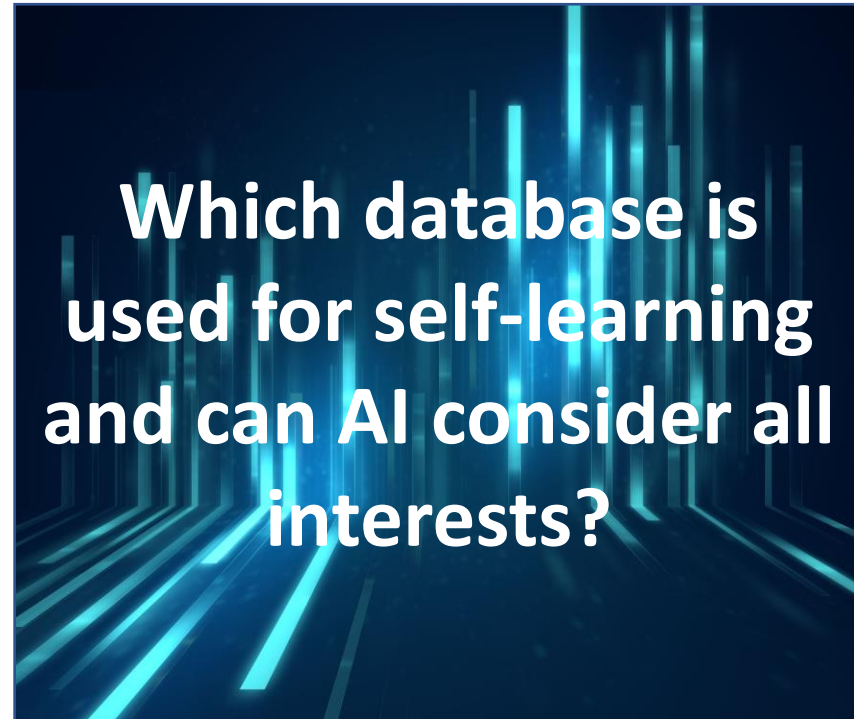
To **predict the environmental performance** of buildings (Fernandez et al. 2019).

# AI AND DILEMMAS

	Questions
Ethical dilemma	<b>What is the source of data?</b>
Ethical behaviour	<b>Can we trust AI Decisions?</b>
Social Delimma	<b>Are AI algorithms biased? Do we need to please the algorithm? Does AI impact project team motivation?</b>

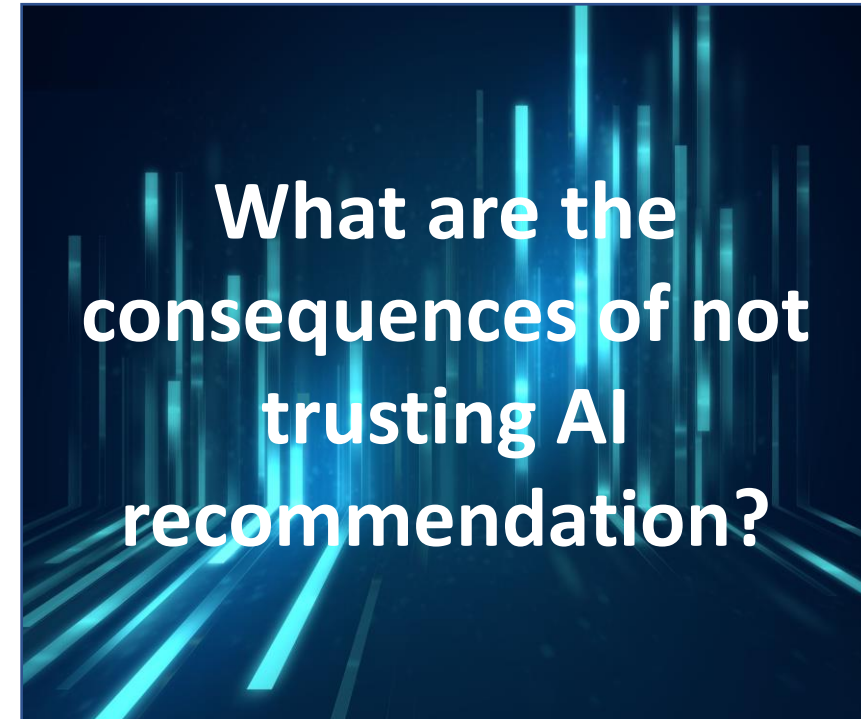
## WHAT IS THE SOURCE OF DATA?

- AI applications will make trade-offs among ethically unacceptable alternatives impacted by the political, economic, social, technological, environmental and legal dimensions as well as moral and ethical boundaries.
- *“When we assume information is objective, we forget that information doesn’t create itself”* (Flores 2012, p. 43).



# CAN WE TRUST AI

- AI applications should follow society's values and norms as they evolve.
- There is a risk that AI cannot adjust to ethical norms.





# ARE AI ALGORITHMS BIASED?

- AI applications will have conflict regarding whose interests are prioritized, and most likely will carry bias from their creators.
- The interests and preferences are often not transparent.



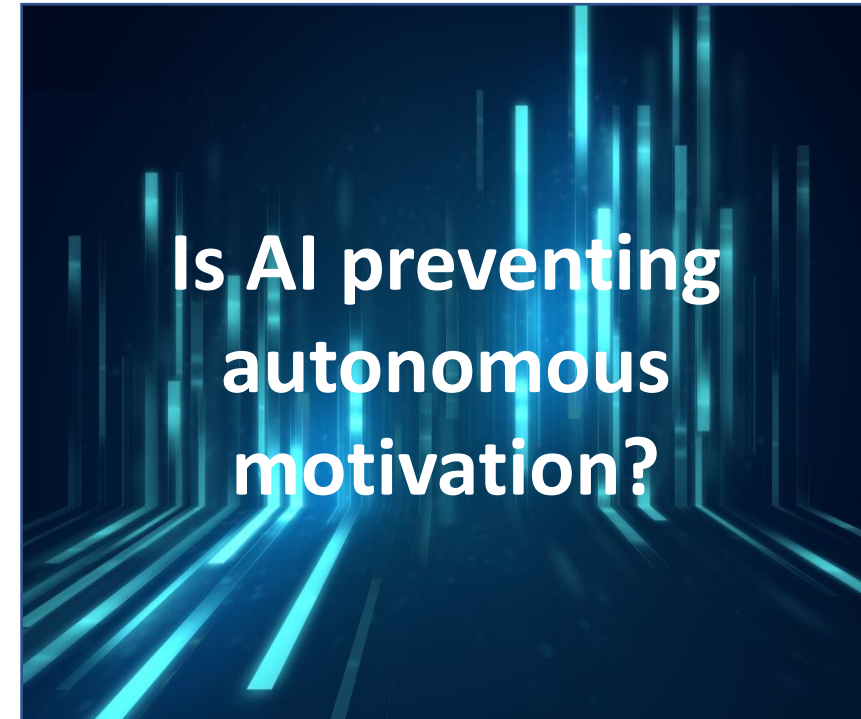
## DO WE NEED TO PLEASE THE ALGORITHM?

- AI algorithms can also reinforce their preferences.
- And users can manipulate the input to optimize the output.



# DOES AI IMPACT PROJECT TEAM MOTIVATION?

- AI will have an impact on our autonomous motivation, which is necessary to accomplish engagement and self-interest for creative problem solving.
- We may be creating a problem if AI makes more decisions for us.



# CONCLUSION

- **AI is in use and will increase, it can make work more efficient.**
- **We need to insist being curious even if AI is not our main interest.**
- **We need to insist on transparency.**
  - Ensure diversity within the design of AI algorithm
  - Test the AI algorithm
  - Make evaluation of the AI algorithm

# THANK YOU!



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