

The Power Machine of the Food System

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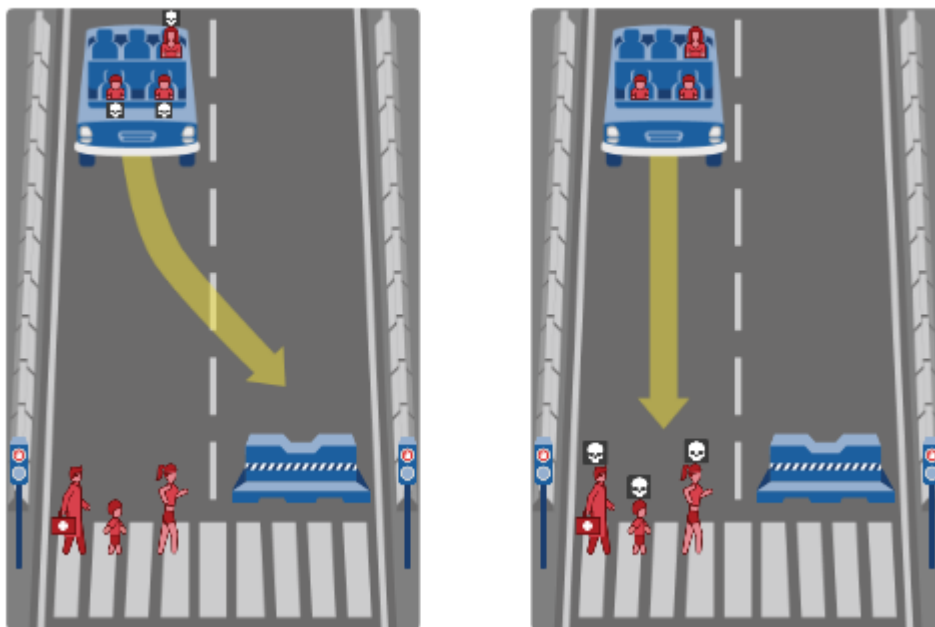
Reflecting on Agro-food AI: Ethical Challenges, Power, and Inclusivity

The **“Moral Machine”** is a project developed by the [MIT Media Lab in Boston](#). It explores the moral dilemmas associated with self-driving cars through an online game. Users are

faced with ethical scenarios where they must decide whose life to save in extreme situations—for example, choosing whether to hit a group of pedestrians or swerve and endanger the car's passenger; the variables include saving or hitting women, athletes, the elderly, thieves, people with high or low income, virtuous or not, animals.

The goal of the Moral Machine is to collect data on people's moral preferences to understand how different cultures respond to these possible scenarios in the relationship between AI and humanity. The studies of the responses revealed that moral preferences vary significantly between different nations and cultures. The final answer is that there is no universal response to the moral dilemmas posed by the relationship between artificial intelligence and humanity.

What should the self-driving car do?



But beyond ethical aspects, there is the question of who holds the power of development and decision-making regarding artificial intelligence in agriculture and food production, as well as the ownership of data. This is the central issue—more so than the technological or ethical questions. The development and governance of AI, even in this sector, is in the hands of a few—far too few. Can we then imagine a Power Machine for the agri-food system that starts a discussion on a deliberative method to define what AI should become in the food sector and how it should become it?

Digital and AI are now necessary in every context, including agri-food. It is time to critically reflect on how AI is shaping power relationships in the food system, how to generate data that help understand public perceptions and preferences that could inform policy development, inspire debates and deliberations among stakeholders on how to govern AI for community-based agriculture.

Today, the development and implementation of AI in agriculture are largely driven by big tech companies and large global agribusinesses. This concentration of power raises concerns about the digital autonomy of farmers and local communities. If farmers become dependent on proprietary AI platforms and tools for making critical decisions, could they lose control over their own production systems? If so, we would face a loss of traditional agricultural knowledge and local resilience, and the needs of small farmers, indigenous communities, or consumers would end up being neglected in favor of solutions that support large-scale industrial agriculture. There's also the local issue. The concentration of AI power could also lead to imbalances in food community matters. If key decisions about agricultural production are made by algorithms controlled by foreign companies, countries and local communities could lose control over their food policies.

Some examples might help clarify the contexts:

1. **Access to data:** Big companies controlling AI platforms can limit small farmers' access to their own data, creating dependency and reducing autonomy.
2. **Algorithmic bias:** AI algorithms may systematically discriminate, for example disadvantaging farmers from smaller communities in accessing credit or insurance.
3. **Technical skills:** Agri-tech companies have the advantage in AI tool development and design, leaving farmers at a disadvantage in decision-making processes.
4. **Intellectual property:** The privatization of AI algorithms can limit widespread innovation and adaptation to local conditions.
5. **Market control:** The vertical integration of AI, robotics, and data can lead to market control by a few major players, eroding competition.
6. **Governance participation:** Farmers and local communities are often excluded from decision-making processes regarding AI development and implementation.

7.Accountability and redress: The opacity of AI algorithms—the black boxes—makes it difficult to assign responsibility for negative outcomes or obtain compensation.

While the “Moral Machine” focuses on the ethical dilemmas that arise when decisions are delegated to AI, a “Power Machine” could examine how AI reshapes power relations among the various actors in the food system. A starting point for a method to understand how community deliberations might take place in discussions on AI and the agri-food ecosystem. How AI influences the distribution of power in terms of:

Access: Who has access to AI tools and platforms, and under what conditions? How is AI changing entry barriers and competitive dynamics in the agricultural sector?

Control: Who owns and controls the data, algorithms, and infrastructure on which AI is based? How does this affect farmers’ ability to make autonomous decisions?

Benefits: Who benefits from AI in terms of increased efficiency, cost reduction, or value creation? How are these benefits distributed among farmers, tech companies, consumers, and others?

Participation: Who is involved in the design, development, and governance of AI used in agriculture? How are diverse interests and types of knowledge represented in the process?

Responsibility: Who is responsible for the consequences of AI use, whether intentional or not? What accountability mechanisms exist to prevent or remedy harm or discrimination?

The Power Machine could present a series of hypothetical yet plausible scenarios in which AI is used to make critical decisions in agriculture. For each scenario, participants are given contextual information and two action options, each with different consequences on power distribution.

Here are a few:

1. Access to data. An agritech company offers a small farmer free access to a precision irrigation AI platform in exchange for exclusive rights to the generated data. Should the farmer accept the offer to stay competitive or refuse to retain control over their data?
2. Algorithmic bias. An AI algorithm used by a bank to evaluate agricultural loans is found to systematically disadvantage women farmers due to skewed historical data. Should the bank continue using the algorithm for efficiency or suspend it to avoid discrimination?

3. Automation. A large agricultural company is considering deploying AI drones for precision spraying, reducing the need for manual labor. Should it proceed to stay competitive or refrain to protect local jobs?
4. Intellectual property. A public research institute develops an AI algorithm to optimize livestock farming. Should it license the algorithm to a private company for commercialization or make it open-source for widespread adoption?

After each choice, participants are shown how their decision affects power distribution in terms of access, control, benefits, participation, and responsibility. At the end, they receive a summary of how their choices add up to a particular vision of AI-driven agriculture.

The Power Machine teaches us that decisions about the power of AI processes cannot be left solely to the companies that develop and own them. An inclusive deliberative process is needed—one that involves all stakeholders—to collectively define the principles and criteria that should guide technological innovation in the agri-food sector. Finding a balance of power requires a holistic—or better yet, ecological—vision. One that ensures food system actors have a say in the development and implementation of AI solutions while also protecting their data rights and autonomy. And just like with the diversity of moral dilemmas, in the redistribution of power it is important to recognize that the opportunities of AI in agriculture may vary depending on local cultures and worldviews. Some cultures may see AI as a tool to dominate nature; others may emphasize harmony and stewardship. Still, any project involving AI and the food system must be sensitive to these differences and designed with the communities involved. Rural Hack is trying—and anyone who wants to lend a hand is welcome.

Fonte: <https://www.ruralhack.org/en/the-power-machine-of-the-food-system/>