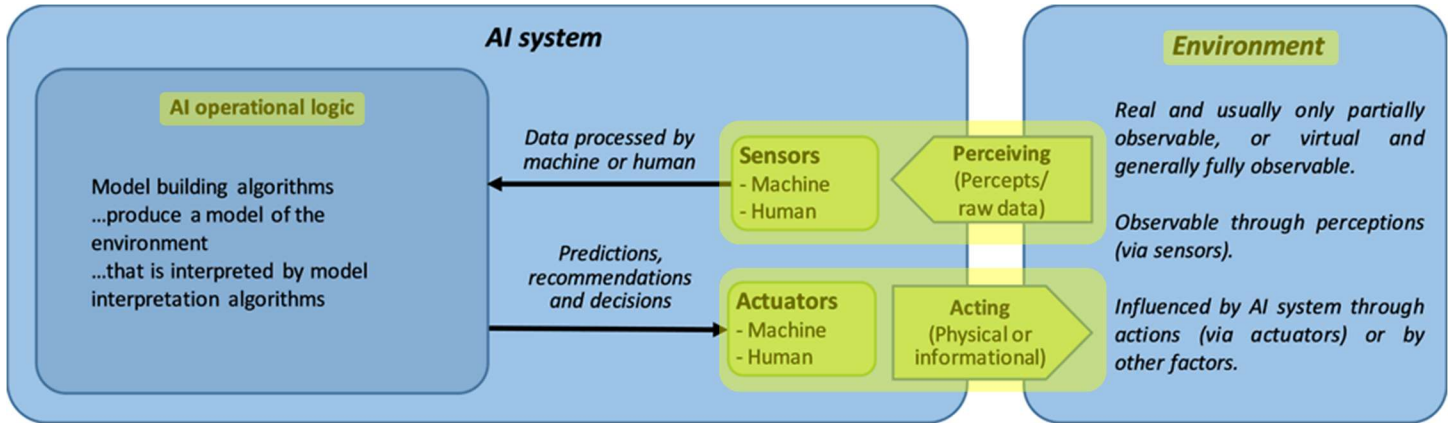


The AI Crop Adviser – Rob Proulx

The ability to understand the operational principles of artificial intelligence tools, and evaluate these tools’ utility for crop production, is becoming another necessary skill set for the crop adviser.

My first take-home message is this: **you have the ability to construct your own high-level understandings of AI systems.** The algorithms (i.e. AI operational logic) behind these systems are complex and beyond the comprehension of a non-expert, but this does not prevent you from constructing a useful high-level understanding of these systems.



For example, I constructed for myself, and present to you in my talk, a clear understanding of an AI-enabled green-on-green spot spraying system:

Component	Definition
Environment	a crop field with intermixed weeds
Sensors	machine – cameras mounted along the boom, constantly taking pictures
AI operational logic	computer vision – computers running an algorithm that differentiates crop and weeds
Actuators	machine – nozzles that spray when a weed is detected, as triggered by the computers human – using generated weed maps to make soil-applied herbicide prescription maps

Perhaps this is unsurprising, as this green-on-green spot spraying is commercially available and Gartner, a business analytics firm, categorizes its underlying AI technology (computer vision) as nearly ready for widespread adoption.

This leads to a second take-home message: **most AI is not yet ready for practical adoption.** It seems that industry recognizes this, based on the Gartner hype cycle for AI, which categorizes nearly all AI technologies as not yet being ready for gradual, practical adoption.

For example, Gartner categorizes decision intelligence and AI simulation as being in the earliest stages of development. As such, it seems that companies marketing field analytics and crop intelligence as deliverables aren’t truly delivering this. Instead, their software programs are presenting outputs from computer vision, a more well-developed technology.

Similarly, Gartner categorizes generative AI, the technology behind chatbots such as ChatGPT, as currently being in the “peak of inflated expectations.” With this in mind, I constructed a broad understanding of a chatbot ag adviser:

Component	Definition
Environment	the body of knowledge relevant to a crop adviser
Sensors	human – people with relevant questions
AI operational logic	generative AI – inner workings of the chatbot
Actuators	human – expand their understandings and/or apply the knowledge to a relevant situation

Relative to the green-on-green spot spraying example, I am unconvinced that this technology, as it currently exists, will prove that useful for a crop adviser. The environment for an ag chatbot (a body of knowledge) is much broader and more difficult to define than the environment for a spot sprayer (an intermixed field of crop and weeds). Also, since the chatbot is dependent on humans to provide input and act upon its output, its outputs may be no more useful than what a well-educated crop adviser could learn through using an internet search engine. When also considering the limitations of the AI operational logic, which is based only on general knowledge and is known to hallucinate false answers, it is clear why these tools come with disclaimers about their use.

This leads to my final point: **a crop adviser's greatest value is in helping their clients solve their most difficult problems.** Keep finding ways to fill this role, using the tools available to you, and you will remain relevant well into the AI age we seem to be entering.