



# 12 Ways People & AI Work Together

People and artificial intelligence applications are learning to work together, creating Human+AI hybrid decision processes: Think insurance underwriting, medical diagnosis, factory maintenance.

Humans can interact at varying levels of **awareness of, input into, or control over** an AI system. Consider someone in a “self-driving” car: The vehicle might move autonomously, selecting the route and speed – or at the other end of the spectrum, the passenger might assume the driver role.

**Who can do what?** Successful Human+AI collaboration requires that people clearly understand an AI’s capabilities and limitations. Misunderstanding can be disruptive, costly, or even disastrous. Human-in-the-loop systems must allow people to gain insight, exercise discretion, and attribute blame.

Who should take the wheel?		
12 Flavors of Human+AI Collaboration*		
Awareness**	Input**	Control**
VAGUELY AWARE AN ALGORITHM WILL BE DOING THE DRIVING. I’M GOING TO CALL IT ROBBY	PLEASE TAKE THIS WEATHER FORECAST INTO ACCOUNT	WELCOME OUR COMPUTER OVERLORDS! I’LL SIT BACK AND TRY TO RELAX
I’M TOLD OUR ROBOT DRIVER HAS A U.S. LICENSE AND DRIVES A VOLVO	I’VE ASKED ROBBY THE AI TO TAKE THE INTERSTATE	I’M OVERRIDING SOME OF THE AI’S DECISION RULES: GO 5mph BELOW SPEED LIMIT NEAR SCHOOLS
I UNDERSTAND ROBBY’S SYSTEM CAPABILITIES AND DRIVING HABITS	ROBBY HAS EXPLAINED ITS WORLD VIEWS, STREET VIEWS, AND CONFLICT RESOLUTION PROCESS	AGREE TO DISAGREE a/k/a EXCUSE ME WHILE I MANUALLY CHANGE THE ROUTE AT THE LAST MINUTE
I CAN VIEW THE AI’S VIDEOS AND COMPLETE DRIVING HISTORY, AND TRAINING REGIMEN	I’VE PERSUADED ROBBY TO REVISE HOW IT WEIGHS DECISION FACTORS	ROBBY, YOU’RE NOT THE BOSS OF ME. I’M TAKING THE WHEEL
*Perspective of passenger in driver’s seat of an autonomous vehicle		
**Levels listed in ascending order		

**NOTES:**

1. This framework for human-AI collaboration was inspired by Google's white paper, [Perspectives on Issues in AI Governance](#), Box 11, 'Illustration of variance in AI system operator roles'. February 2019.
2. DataRobot has a novel take called **Humble AI**, systems designed to recognize conditions that indicate a "prediction may be unsure, and trigger actions like defaulting to a 'safe' prediction... or not making a prediction at all." From [The Feedback Loop: How Humility in AI Impacts Decision Systems](#), 11 September 2020.
3. Terminology varies when describing the human-AI phenomenon. Museum of AI refers to the **Human+AI hybrid**. Partnership on AI talks about **CPAIS: Collaborations between people and AI systems**.

DataRobot [distinguishes between Human-in-the-loop](#) AI, where someone makes the final decision after reviewing an algorithmic recommendation, and **Human-over(seeing)-the-loop**, where people supervise AI and intervene when necessary. Google often refers to human-AI **collaboration** (Note 1).

Human **augmentation** technology enhances people's productivity, and includes AI systems. Human-AI **decision making** acknowledges the dual man/machine role.

**Thank you for your interest** in Human+AI hybrid decision making.

**How are you prepping for the future of work?**

The Museum of AI team would love to hear your story.

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