PacificCPE

COURSE
82502A

Stay Irreplaceable with AI: Data Sensemaking and Reperception

AI can process enormous amounts of data, but making sense of that data—and knowing what questions to ask—remains a deeply human skill. Drawing on real-world examples like the rise and fall of BlackBerry and lessons from Tinder's evolving metrics, this course explores how professionals can develop sharper data intuition. You will also discover reperception: the ability to reframe problems and see situations differently, illustrated through innovations at John Deere and NASA's Earth-2 project. These skills help you stay valuable when AI handles the number crunching.

CREDIT HOURS **2** | FIELD OF STUDY **BUSINESS** | EXAM QUESTIONS **10**

Start Course ↓ | Final Exam Copy ↓

LEARNING ASSIGNMENTS AND OBJECTIVES

Assignment

- Study the full course materials included here.
- Complete the review questions after each chapter.
- Answer 10 final exam questions.
- Final exam is scored immediately, 70% or better passes.
- Certificate of completion is available in your account.
- Failed exams can be retaken free of charge.

Course Objectives

- Recall the projected global volume of data creation by the end of 2025.
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Identify why graphics processing units (GPUs) are more effective for AI than traditional CPUs.

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Chapter 1: DATA SENSEMAKING

Chapter Objective

After completing this chapter, you should be able to:

- Recall the projected global volume of data creation by the end of 2025.

Imagine a 5,000-piece jigsaw puzzle of the beautiful Rio de Janeiro landscape, with the iconic Dois Irmãos mountain in the background. A stunning image—but a daunting challenge: As you sit before the scattered pieces, from where do you begin? What's your instinctive approach to making sense of the chaos spread across the table?

Surely, you'll rely on visual cues—colors, patterns, recognizable elements in the pieces. A blue piece might belong to the sky or sea, a face to another part of the image, and so on. It's a slow, trial-and-error process, guided by intuition, memory, and a bit of luck. While this approach is creative, engaging, and even fun, we have to admit that it is also incredibly inefficient. You make mistakes, misplace pieces, and spend lots of time searching for just the right fit, constrained by your cognitive limitations.

Now, consider how an AI system would tackle the same puzzle. Instead of relying on colors, visual patterns, or familiar imagery like humans do, the AI approaches the problem from a completely different angle—actually based on the edges and not on the content of the pieces. Rather than getting lost in the complexity of the image, it focuses on structural and mathematical patterns that are almost invisible to us.

For instance, instead of seeing a yellow piece and thinking, "This must belong to the sun," AI categorizes the piece purely by geometric properties—edge angles, connector depth, and statistical fit within the overall structure. It rapidly analyzes all 5,000 pieces at once, identifying patterns in seconds, and—even more impressively—compares each piece against hundreds of thousands of possible placements. Much faster than our slow, social puzzle-solving sessions with family and friends, right?

AI's superiority in solving puzzles has been proven in the real world. Jigsaw, an AI-powered robot built by YouTuber Mark Rober—who counts over 60 million subscribers—competed against one of the world's top human puzzle solvers, Tammy McLeod. An MIT alumna and Guinness World Record holder for completing a 250-piece Hasbro puzzle in just 9 minutes and 58.32 seconds, McLeod was no ordinary challenger, yet Jigsaw won.

But AI's superiority is limited not only to puzzles or to games such as Go and chess. It also extends to all forms of decision-making in fields where vast amounts of data enable learning, training, and optimization. Whether it's in medical imaging—where AI detects diseases faster and more accurately than doctors—or in predictive maintenance, where it prevents equipment failures before they happen, AI has consistently demonstrated its superiority. As these models continue to evolve, their accuracy improves. AI is now expanding into more complex, human-like tasks: recognizing emotions, interpreting nuanced language, and optimizing decisions in ways that challenge our very definition of intelligence.

Wherever data exists, AI's superiority is not just possible—it's inevitable.

But there's one important catch, highlighting a fundamental difference between humans and AI: unlike human decision-making, AI decision-making lacks true understanding. This catch is best illustrated by philosopher John Searle's Chinese Room thought experiment.

The Chinese Room Thought Experiment

Imagine a person locked in a room who doesn't speak or understand Chinese. Inside the room, they have a set of instruction manuals written in English, explaining exactly how to manipulate Chinese symbols based on specific input–output rules. Outside, a native Chinese speaker writes questions in Chinese and slides them under the door. The person inside follows the manuals, matching the symbols to craft a response, and slides it back out—without ever understanding what was asked or answered.

To the Chinese speaker outside, it seems like they're communicating with someone fluent in Chinese. But in reality, the person inside has no comprehension of the language: they're simply following a set of instructions.

In short, AI—like the person in the Chinese Room—processes information syntactically, as it shuffles symbols, identifies patterns, and applies computational logic with impressive efficiency, but it doesn't understand the meaning behind those symbols. Humans, on the other hand, process information semantically: although inefficiently, we interpret it, give it context, and connect it to a broader understanding of the world.

This distinction becomes crucial once AI delivers its output. In Chapter 2 of course 82501A, we saw how prompting— crafting precise, strategic questions—is critical to unlocking AI's potential. But good questions alone aren't enough. AI can generate answers and surface data, but it can't explain what those answers mean, why they matter, or how they apply to your specific context.

That's where data sensemaking as a skill comes in. It's the human ability to go beyond the raw output— to interpret, contextualize, and translate insights into informed action. Without this step, AI's output risks becoming misleading, biased, and unreliable instead of providing valuable guidance, especially in a world of almost infinite data.

Data Overload and the "Rearview Mirror Effect"

Much like when we solve a puzzle, businesses today are flooded with fragmented data. The real challenge isn't just gathering the pieces—it's understanding how they fit together and what bigger picture they reveal. And here's where AI holds a key advantage: it tackles these puzzles far more efficiently than humans.

We have reached a point where the sheer volume of data has far outpaced human cognitive capacity to process it alone—and it's growing exponentially. More than 90% of all the data ever produced by humanity has been generated in just the past decade. By the end of 2025, global data creation is projected to hit an astonishing 181 zettabytes. To put that in perspective, that's equivalent to 6.89 billion years of continuous Netflix streaming in HD—surpassing the current age of the Earth and approaching the estimated age of the Universe. Not even the most dedicated binge-watcher could get through that much content—just as no human, as smart as they might be, is capable of "making sense" of the current volume of data alone[1].

A 2023 Oracle study found that 86% of leaders *feel* overwhelmed by the sheer volume of data in their company, and 78% report being bombarded by more information from more sources than ever before. As a result, 86% admitted that data overload is complicating decision-making in both their personal and professional lives.

Imagine you're planning a weekend getaway to the beach, just a couple of hours from home. You load up the car, gather the whole family, buckle up, and even queue the perfect playlist for the drive. But then, as you shift into first gear, you decide to do something strange: you drive staring only at the rearview mirror, never looking through the windshield.

How far do you think you'd get? Not very. The chances of crashing are almost guaranteed. You might be moving forward, but your eyes are fixed on what's behind you—cautiously swerving, veering off course, and constantly one wrong move away from an accident.

Of course, you might think no one in their right mind would ever choose to drive this way. Yet most companies today resemble a driver fixated on the rearview mirror—analyzing profit-and-loss statements, balance sheets, year-over-year comparisons—all metrics reflecting the past, not anticipating the road ahead. Why does this happen? For two main reasons.

First, as mentioned earlier, humans aren't naturally wired to process large volumes of real-time data. Second, historical data is easier to work with because it's already been collected, cleaned, and stored. It's organized, structured, and ready for analysis. Real-time data, on the other hand, is messy and demanding: it requires continuous monitoring, advanced systems to capture it as events unfold, and significant computational power to interpret it instantly.

The consequence is that critical decisions are based on snapshots of what has already happened instead of what's about to happen, and the risk of this approach is substantial. Few examples

illustrate this approach better than BlackBerry—a striking cautionary tale of how companies can be blindsided not by a lack of growth, but by fixating on the wrong *signals*.

The BlackBerry Blind Spot

Let's rewind to the late 2000s. At the time, BlackBerry wasn't just a successful company—it was a cultural icon. By 2006, BlackBerry commanded around 40% of the U.S. Smartphone market and nearly 20% globally, thanks to its signature physical keyboards and the BBM, a secure messaging system beloved by business professionals, governments, and celebrities alike. Inside the company, confidence was high.

Then, in 2007, Apple launched the iPhone—introducing the touchscreen interface and the App Store, with the promise of revolutionizing what Smartphones could do. Looking back now, we know that Apple delivered on that promise, helping it become the first company to surpass a $1 trillion market cap. In retrospect, it is tempering to assume that 2007 marked the beginning of the demise of the BlackBerry.

But it didn't—at least not immediately. BlackBerry's user base soared from 8 million in 2007 to an impressive 77 million by 2012—a nearly 10-fold increase in just five years. On paper, they appeared unstoppable. Internally, confident executives proudly reported strong quarterly results, convinced they were on the right trajectory. Yet beneath that surface growth, something far more dangerous was quietly unfolding.

What BlackBerry's leadership failed to notice was that the market itself was shifting beneath their feet: while their own numbers appeared strong, the overall Smartphone market was growing much faster—and the iPhone was leading that revolution. New consumers were flocking to Apple's touchscreen interface, seamless app ecosystem, and intuitive design. Meanwhile, BlackBerry clung to what had worked in the past, focusing on incremental improvements instead of reimagining their strategy.

BlackBerry's leadership made a critical mistake: they fixated on internal metrics—unit sales, active users, and quarterly revenue—without considering them in the context of the broader market shifts. By the time they recognized the true scale of the change, it was too late: their market share, once commanding over 50%, had plummeted to less than 10% within just a few years, and in 2018 it amounted to less than 1%.

Customers migrated en masse to iPhones and Android devices, shifting both network effects and their loyalty toward these new platforms. BlackBerry's attempts to pivot, whether by launching touchscreen models or overhauling their operating system, came too late.

BlackBerry's downfall wasn't due to a lack of data—they had plenty. Their failure lay in their inability to make sense of it and extract meaningful insights that would help them make the right decisions. Yes, they were driving their "car" looking through the rearview mirror.

Slow and inaccurate human decision-making that results from the rearview mirror effect is one of the main problems affecting organizations globally. According to a Forrester study,[2] for every hour a product team spends on actual work, another 48 minutes are wasted simply waiting for decisions to be made. This equates to more than 3.5 hours of "wait time" in an average 8-hour workday—nearly half the day!

But the damage of poor decision-making goes far beyond wasted time. It leads to misallocated resources, stalled innovation, and missed market opportunities. Projects get delayed, investments rely on outdated or incomplete data, and teams grow disengaged due to a lack of clear direction. Worse still, when decisions are finally made, they're often clouded by cognitive biases, emotional reasoning, or gaps in information—resulting in strategic missteps and costly avoidable errors.

Transforming Raw Data into Forward-Looking Insights

So how can businesses shift their focus from simply having access to data to actually making sense of it—transforming scattered real-time data into forward-looking insights? And how can humans move away from routine data processing tasks, which have grown far beyond our cognitive capacity, and instead focus on higher-order, strategic decisions? That's exactly where AI comes in, as it processes vast amounts of data with unprecedented speed and precision, transforming raw data into actionable insights.

As seen in the Jigsaw example, AI excels at processing vast amounts of data to uncover patterns and make predictions—tasks that are often too complex for the cognitively constrained human brain to handle alone. But transforming those outputs into meaningful decisions still requires human judgment. That's where the skill of data sensemaking comes in: the ability to interpret and contextualize AI's inputs and outputs to make smarter decisions.

Before we use AI to process data and generate insights, we need to understand the inputs we are feeding it—because not all data is created equal.

There's an important distinction—often overlooked—between data, information, and insights. To illustrate the distinction, consider this string of GPS coordinates: 44°20'42"N, 8°32'48"E. Unless you've memorized every spot on the planet, these numbers mean almost nothing to you. They're a perfect example of raw data: unprocessed, context-free, and meaningless on their own. Data is like an uncut diamond in the digital age—valuable, but not immediately useful. While machines can process vast volumes of raw data, humans struggle to make sense of it without structure or context.

But once you input those coordinates into a tool like Google Maps, something magical happens: the raw data is transformed into information—a pin on the map marking Celle Ligure, the small village in Italy where I grew up. Information is what emerges when data is processed, organized, and given context, making it understandable and relevant.

But while information is useful, it's not enough to guide meaningful decisions. What we truly need are insights—the result of connecting information, identifying patterns, and giving them context. That's what actually drives decision-making.

Neither raw data nor isolated facts lead to good decisions. Knowing that a set of GPS coordinates points to Celle Ligure doesn't tell me how to get there—whether I should take a plane or a train, where the nearest ATM is, or which seafood restaurant is worth visiting (spoiler: it's La Lanterna). The real insights only emerge when information is combined, analyzed, and tied to specific questions or inputs we define—yes, the prompts! Insights are the most valuable output because they allow us to identify meaningful patterns and draw actionable conclusions. They help answer the critical questions: "Why?", "How?", and even "What should we expect next?" It's the responsibility of leaders and organizations to prioritize which metrics truly matter and to spot the unique correlations that reveal actionable opportunities. Crucially, this is a uniquely human task, and its relevance varies from person to person. For example, knowing the distance to the nearest ATM might be useful for one individual, but irrelevant for someone who only uses credit cards. Similarly, identifying the best seafood restaurant offers no value to someone with a shellfish allergy.

The same principle applies in business: in a world overflowing with data, the ability to identify and focus on the right metrics is a decisive competitive advantage. After all, it's the correlations among these metrics that often generate the most valuable insights. That's where Key Performance Indicators come into play.

Key Performance Indicators

Key Performance Indicators (KPIs) are the specific metrics an organization chooses to monitor in order to track progress, evaluate performance, and guide strategic decisions. But not all KPIs are created equal: some provide only surface-level visibility, while others unlock deeper, more actionable insights.

The key is not just to select the right KPIs—but to design them when they don't yet exist. Effective KPIs go beyond describing what is happening; they help explain why it's happening and what actions to take next. In some cases, existing metrics will serve that purpose. In others, you may need to create new ones—combinations, ratios, or derived indicators that better reflect your specific business context or strategic goal. Once those KPIs are in place, AI can process the underlying data to identify patterns, trends, and predictions—turning raw input into meaningful guidance. Some best practices to design KPIs that drive insights include the following:

- **Look for non-obvious correlations.** The most valuable insights often emerge not from isolated metrics, but from unexpected relationships between them. Linking employee engagement scores to customer satisfaction, or connecting delivery times to return rates, can uncover levers that truly drive business performance. Be creative and play around