AI for Software Teams

Course Introduction

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Module Backlog

What are we forecasting for this module?

- Course overview
- Prerequisites
- Team formation
- Trainer and student introductions
- Working agreement
- Environment setup
- AI tools identified

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- A leader in AI, DevOps, and Scrum knowledge
- Helped thousands of teams and individuals implement DevOps and Scrum, and become more agile
- Has a close working relationship with Microsoft
- Course creator and steward for Scrum.org
- Has trainers that are Microsoft MVPs, Professional Scrum Developers, Professional Scrum Trainers, and authors

www.accentient.com

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Course Creator: Richard Hundhausen

- President of Accentient
- Author of software development books
- First Microsoft DevOps MVP
- AI leader
- Professional Scrum Developer
- Professional Scrum Trainer
- Nexus scaled Scrum framework co-creator

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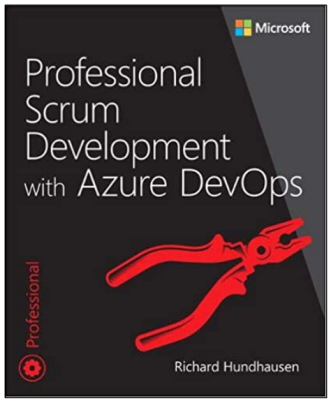

http://bit.ly/PSDAzDo

PSD PST

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Course Overview

- This course presents practical applications of AI to enhance collaboration and boost productivity of a cross-functional development team
- Modules
  - What is AI
  - AI for Product Owners/Product Managers
  - AI for Scrum Masters/Agile Coaches
  - AI for Developers (members of a Scrum Team)

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Prerequisites

- Ideally, you …
  - Work on a team
  - Develop and deliver a software product
  - Follow an agile approach (e.g. Scrum, Kanban)
  - Are familiar with Generative AI
  - Have used ChatGPT, Gemini, Copilot, Claude, or similar tools

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Form Into Teams | 5 MIN

If necessary, your instructor will facilitate the creation of equally sized (5 team members or less), cross-functional teams.

- Identify yourself by experience/skillset …
  - Software development
  - Product management/Product Owner
  - Scrum Master/coach
  - AI/prompt engineering
  - Agile/Scrum/Kanban
- Form into cross-functional teams (of 5 members or less)
- Collocate
- Introduce yourself (if necessary)
- Decide on a team name (e.g. “Avengers”, “Minions”, “Ctrl Z”, etc.)
- Write your name and team name where it is visible to others in the class

What is the name of your team? _____

Who are your team members? _____

_____

_____

_____

_____

Introductions

- Name
- Title/role
- Development experience
- Agile/Scrum/Kanban experience
- AI experience
- Expectations

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Working Agreement

What should be our guidelines for these?

- Cameras on
- Off-track discussions
- Distractions
- Lunch and break times
- End of day timing

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Install Courseware Files

👤👤👤 | 7 MIN

In this activity, working on your own or as a pair, you will install the files required by this class.

Dependencies

- Signed in with *local administrator* permissions

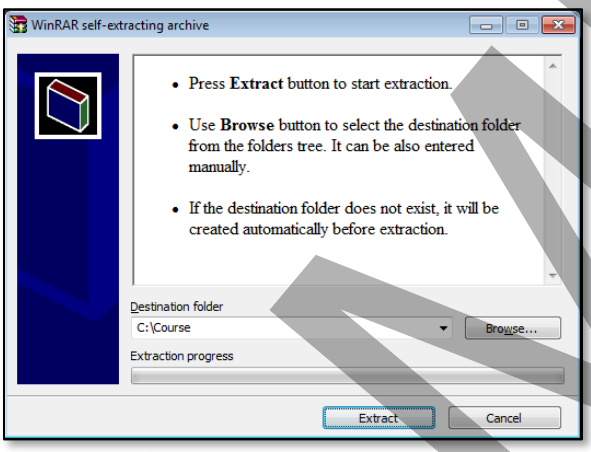
1. Verify that the **C:\Course** folder does not exist.

   Note: If this folder already exists, then this computer may have been used for a prior training class. Please check with your instructor if you suspect that this is the case.

2. If necessary, copy the courseware (self-extracting) file to your desktop.

   This file may already be on the desktop. If not, you may have to ask your instructor for help locating and/or copying this file. If you cannot locate this file, please email support@accentient.com to obtain a copy.

3. Extract the courseware files, specifying **C:\Course** as the **Destination folder**.



   The folder *C:\Course* will be created during the process as well as one or more subfolders. Take a moment and explore the files that were installed.

Identify Your Team's AI Tools | 5 MIN

In this activity you will identify the AI tools your team will use during class.

1. What **Generative AI** tools (e.g. ChatGPT, Google Gemini, Microsoft Copilot, Claude, etc.) will your team be using in class?

   Notes _____

2. Are these free tools? Do you need/have a subscription?

   Notes _____

3. What **AI Code Assistants** (e.g. GitHub Copilot, Cursor, Claude Code, etc.) will your team be using in class?

   Notes _____

4. Are these free tools? Do you need/have a subscription?

   Notes _____

5. Will you save the responses? If so, how and where?

   Notes _____

Important: Let your instructor know if nobody on your team has the necessary tools. The instructor may reform teams accordingly, or help you find tools that will work for this class.

Module Review

What have we accomplished and learned?

- Teams formed
- Introductions made
- Prerequisites reviewed
- Courseware installed and AI tools identified
- Agenda and logistics clarified

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AI for Software Teams

What is AI?

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Module Backlog

What are we forecasting for this module?

- AI is just software
- Types and examples of AI
- Popular AI tools
- How can AI help a software team?
- Prompt engineering
- Potential harms

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AI is Just Software

- AI is just a tool
  - AI operates based on code written by humans – it's not magic
- Pattern recognition, not intelligence
  - AI models analyze data patterns but don't "think" like humans
- Dependence on data
  - AI relies on large datasets to function and improve; good data = good results
- Automating tasks, not decision-making
  - AI can help with repetitive or data-driven tasks, but humans still need to make the final decisions
- Requires maintenance
  - Just like any software, AI systems need updates, monitoring, and fine-tuning

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The Agile Manifesto Authors "Predicted" AI

"We are uncovering better ways of developing software by doing it and helping others do it."

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AI's Views on the Agile Manifesto | 5 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. Are you familiar with the Agile Manifesto?

Notes _____

2. How does AI fit with the Agile Manifesto?

Notes _____

3. Does AI replace any of the Agile Manifesto?

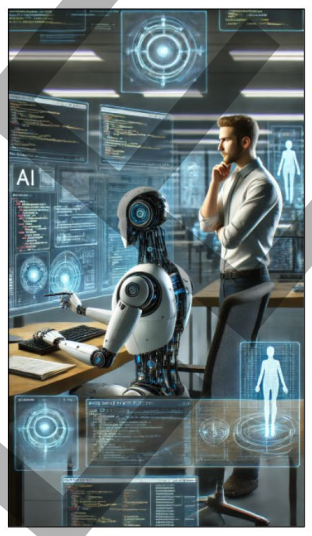
Notes _____

4. Rewrite the preamble, making it more AI focused

Notes _____

AI Won't Replace You

But another professional who knows how to leverage AI might



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The Many Types of AI

- Generative – Used to create new content, such as text, images, or other forms of data
- Predictive – Used to forecast future events or trends based on historical data
- Agentic - Plans and carries out multi-step tasks by using tools, with limited human input
- Reasoning - Works through a problem step by step before giving an answer
- Multimodal - Works across text, images, audio, and video, not just one kind of input
- Descriptive – Focuses on analyzing data to describe what has happened
- Prescriptive – Not only predicts, but also recommends actions to take
- Narrow (weak) – Designed to perform a single, specific task, such as facial recognition
- General (strong) – Hypothetical ability to learn and apply knowledge to any problem
- Self-Aware – Machines with their own consciousness (entirely speculative)
- Collaborative – Works alongside humans to augment their capabilities
- Explainable – Focuses on making AI decisions understandable to humans
- Adaptive – Adapts behavior based on new information or changes in the environment

We will primarily be using *Generative* and *Predictive* AI in this class

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Generative AI (GenAI)

- A type of AI that focuses on creating new content, such as text or images, by learning from existing data and using models to generate outputs that resemble human-created content
  - It can create new, unique content based on patterns in training data
  - Powers tools like chatbots, art generators, and content creation systems
- Examples
  - Draft Product Backlog items based on input from customer feedback and business goals
  - Analyze team communication during events and generate summaries, along with improvement suggestions

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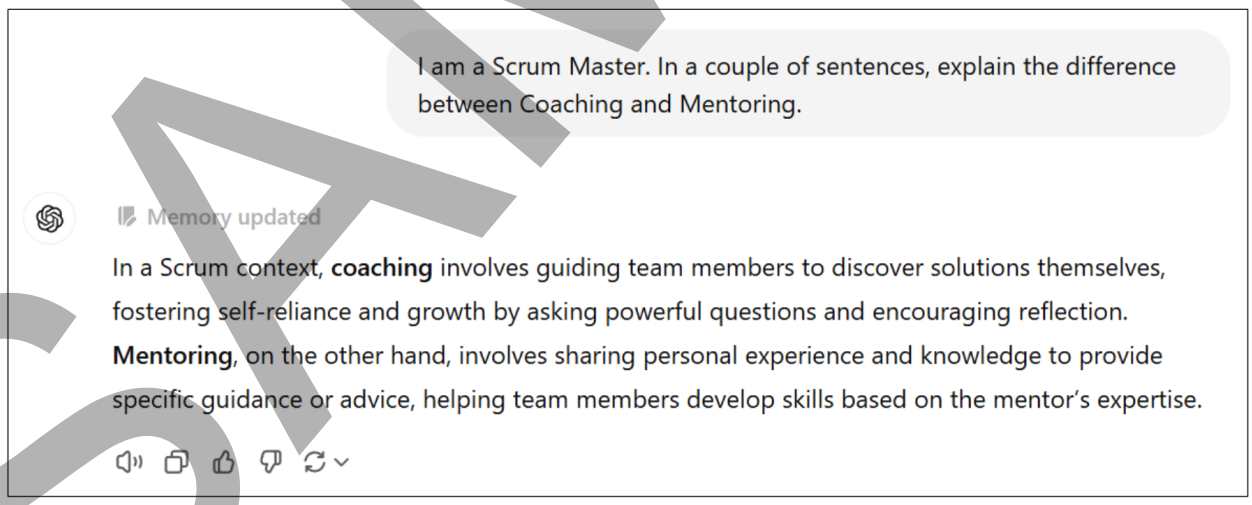
Generative AI: Example



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Predictive AI

- A type of AI that focuses on analyzing historical data to forecast future outcomes or trends
  - It uses machine learning models to identify patterns and make predictions
  - Used for demand forecasting, risk assessment, and behavior prediction
- Examples
  - Forecast which Product Backlog items will likely provide the most value based on historical data of customer engagement and market trends
  - Analyze historical bug data and predict areas of the codebase that are most likely to introduce bugs in future releases

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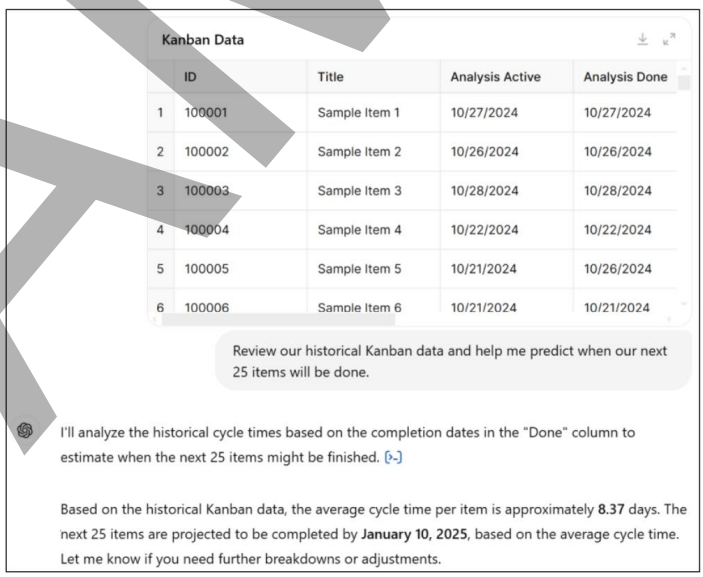
Predictive AI: Example



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Large Language Model (LLM)

- A type of AI system that is designed to understand, generate, and manipulate human language
  - They are a subset of natural language processing (NLP) systems
  - Built using deep learning techniques, particularly neural networks with many parameters (often in the billions or more)
- Key characteristics
  - Specialized architecture (e.g. *transformer* architecture)
  - Training data (vast amounts to gain deep understanding of language)
  - Pre-training (might take weeks or months)
  - Fine-tuning (for specific tasks/domains)

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LLM Applications

- LLMs can be used in a wide range of applications
  - Text generation: Creating coherent and contextually relevant text
  - Summarization: Condensing long documents, threads, and meetings
  - Question answering: Answering from supplied context or retrieved documents
  - Code generation: Writing, explaining, refactoring, and testing code
  - Reasoning and planning: Working through multi-step problems before answering
  - Tool use and agents: Calling tools and APIs to carry out tasks

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Popular AI Tools

Visit https://tinyurl.com/mwtjhkwm for an up-to-date list

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How Can AI Help a Software Team?

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How can AI help a software team? | 5 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. **How can AI help a Product Owner or Product Manager?**

   Notes _____

2. **How can AI help a Scrum Master or coach?**

   Notes _____

3. **How can AI help a member of a software development team?**

   Notes _____

4. **What about a UI/UX designer specifically?**

   Notes _____

5. **Give me a few generative and predictive examples.**

   Notes _____

Prompt Engineering

- Prompt Engineering is the art of crafting effective inputs to optimize responses from language models
- It involves giving clear instructions, relevant context, and examples to guide the AI's output
- The model only knows what you give it, so the context you supply matters as much as the question

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Why Prompt Engineering Matters

- It improves accuracy and relevance of AI responses
- It allows more control over the tone, detail, and format of output
- It optimizes performance for specific tasks like summarization, brainstorming, or detailed explanations

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The Basic Elements of a Prompt

- Explicit instructions
  - Begin with clear instructions like "Explain," "Summarize," or "List"
  - Example: "*List five key aspects of Agile development*"
- Detailed context
  - Provide context to narrow down the AI's response
  - Example: "*Explain Agile principles in a way a new project manager would understand*"
- Output format hints
  - Specify the desired output structure
  - Example: "*Provide a bullet-point summary of these principles*"
- Role-based prompts
  - Direct the model as if it were a particular expert or persona
  - Example: "*As a Scrum Master, explain how to implement Scrum in a remote team*"

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Prompt Engineering Examples

Prompt	Type of AI Response
"Explain Agile principles"	General overview, broad explanation
"Explain Agile principles for a medical device team focused on compliance"	Targeted explanation with compliance considerations
"List 3 benefits of Agile for software development in healthcare"	Specific, numbered benefits in healthcare context
"Summarize Agile principles in 3 bullet points"	Concise, structured list of principles

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Proven Practices for Effective Prompts

- Be specific about the task, the audience, and the outcome
  - Example: "Explain Agile to a new project manager in two paragraphs"
- Set constraints on length, tone, and format
  - Example: "In two sentences, explain Agile for beginners"
- Break a large request into ordered steps
  - Example: "First outline the Agile principles, then explain how each helps a team adapt"
- Ask for comparisons to surface tradeoffs
  - Example: "Compare Agile to Waterfall development for a healthcare project"
- Treat the first response as a draft, then refine and verify it

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Advanced Techniques in Prompt Engineering

- Chain of thought: Ask the model to reason step by step before it answers
- Few-shot prompting: Include examples of the input and output you want
- Structured output: Ask for a specific format such as JSON, a table, or a schema
- Grounding: Supply the files, data, or source material the answer must come from
- Tool use: Let the model call tools, run code, or search to complete the task
- Iterative refinement: Critique the response, then prompt again to improve it

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Practice prompt engineering | 7 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. **Write a Python function that takes a list of numbers and returns the sum of all the numbers in the list.**

   Notes _____

2. **Explain the purpose and functionality of a "for loop" in Python with a simple example.**

   Notes _____

3. **Write a Python function that finds the greatest common divisor (GCD) of two numbers, using the Euclidean algorithm and explain how the function works step by step.**

   Notes _____

4. **Run this code.**

   Notes _____

5. **Create a function in JavaScript that calculates the factorial of a number, using recursion. Include error handling for cases where the input is not a positive integer.**

   Notes _____

6. **Generate an HTML and CSS code snippet for a responsive login form with input fields for a username and password, a "Remember Me" checkbox, and a submit button. Style the form so it centers on the page and works on both mobile and desktop screens.**

   Notes _____

7. **Create a Python Flask API endpoint that accepts a POST request containing a list of integers. The endpoint should return a JSON response with the sum, average, and product of the list. Additionally, write the JavaScript code to send a request to this endpoint and display the result on a webpage. Explain each step of the process.**

   Notes _____

Potential Harms

- Leaning on AI too heavily can harm your team, your product, and your organization
  - Loss of human touch: Fewer of the conversations that build shared understanding
  - Added noise: More generated content to read, review, and maintain
  - Drop in transparency: Harder to explain how a decision or a design was reached
  - Skill erosion: The team gets less practice at the work AI now does for it
  - Misplaced trust: Confident, fluent answers that are wrong
  - Privacy and IP exposure: Proprietary code or customer data sent to a third party

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Module Review

What have we accomplished and learned?

- AI is just software
- AI will make you and your team more productive
- There are many types of AI
- Generative and predictive can be quite helpful
- New language models and AI tools emerge all the time
- Learn and master prompt engineering
- Know the potential harms and use AI responsibly

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What is AI? Quiz | 5 MIN

In this quiz, circle the letter of the best answer for each question.

1. Which of these best describes generative AI?

   A. It forecasts future outcomes from historical data
   B. It creates new content, such as text or images, by learning patterns from existing data
   C. It analyzes data to describe what has already happened
   D. It runs only on a developer's own laptop

2. Which type of AI forecasts future outcomes based on historical data?

   A. Generative
   B. Predictive
   C. Multimodal
   D. Self-aware

3. True or False: A large language model is a subset of natural language processing, built using deep learning.

   A. True
   B. False

4. Which prompt best reflects good prompt engineering?

   A. “Tell me about Agile”
   B. “Explain Agile to a new project manager in two paragraphs”
   C. “Agile?”
   D. The same question asked repeatedly until the answer changes

5. Which advanced technique asks the model to reason step by step before it answers?

   A. Few-shot prompting
   B. Grounding
   C. Chain of thought
   D. Structured output

6. True or False: Because AI answers sound confident and fluent, they can be acted on without review.

   A. True
   B. False

7. Which of these is a potential harm of leaning on AI too heavily?

   A. Faster feedback on ideas
   B. Skill erosion, because the team gets less practice at the work AI now does
   C. Greater transparency into how decisions were reached
   D. Smaller training datasets

AI for Software Teams

AI for Product Owners/Product Managers

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Module Backlog

What are we forecasting for this module?

- Case study introduction
- Review of Product Owner stances
- How can AI assist in product management
  - Strategic planning and vision
  - Understanding the audience
  - Planning, tracking, and execution
- Cautions

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Case Study Kickoff

- We want to start a new company and be the first to enter a new market of retro games running on retro software

- We want to leverage AI to accelerate time to market

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The Many Stances of a Product Owner

- Taking different stances, at different times, will lead to different opportunities and results
  - There is never a 'best' stance in any given situation; Product Owners must be versatile

The Visionary

The Customer Representative

The Experimenter

The Decision Maker

The Collaborator

The Influencer

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