

# AI for Software Dev

## Video #2 – AI Agents

Jim Fawcett & Mike Corley

# AI Agents

- Agents are software applications that:
  - Focus on local projects
  - Define commands for frequent operations
    - Sequences of actions that support project development
    - Defined by the project domain
  - Provide helper functions to read from and write to project files
  - Send prompts and receive responses from a remote LLM
    - Defined by a platform key
    - Uses platform web messaging API

# Advantages

- Unlike chat bots, agents only send prompts for AI processing
  - No need to paste code text or zip files at end of prompt
  - That means fewer tokens transferred, faster processing, and more reliable actions since those are defined in user application code
- Agents can be defined using any language for which there are messaging APIs
  - Python, Rust, C++, C#, and JavaScript
  - Existing libraries can be imported by the agent source to make development more productive and have more domain knowledge

# Example – Basic Support for Development

- The example agent, `dev_agent.py`, provides support for:
  - File analysis
  - Project improvement suggestions
  - Show project directory tree
  - List project files
  - Generate README markdown file
  - Custom prompts
- It was generated using a `claude.ai` prompt and sent to local download
- It executes in a Windows 11 PowerShell terminal

# Example – Prompt & Partial Response

You: `/analyze ./src/lib.rs`

 Analyzing...

Agent: ## Analysis of `./src/lib.rs`

## ### 1. Purpose and Functionality

This is a generic directory navigation library (`rust\_dir\_nav`) that provides a configurable way to traverse directory trees and process files/directories. Key features:

- **Generic Design**: Uses a trait-based approach (`DirEvent`) allowing users to define custom handlers for files and directories
- **Pattern Matching**: Filters files by extensions (patterns)
- **Configurable Traversal**: Options for recursive traversal and hiding empty directories
- **Cross-platform**: Handles Windows/Linux path separator differences

The library follows a depth-first search algorithm to traverse directories and calls user-defined handlers for matching files.

# Conclusion

- This second presentation focuses on AI agents
  - You can find all the details here:  
[https://jimfawcett.github.io/NewSite/Code/CodeBites\\_AgentAI.html](https://jimfawcett.github.io/NewSite/Code/CodeBites_AgentAI.html)
- The first presentation explores:
  - AI Chat Bots
  - Use web application defined by platform to communicate with LLM
  - Cannot read or write local files
- The third presentation explores:
  - AI Consoles
  - Uses HTTPS-based API to communicate with remote LLM
  - Can read from and write to local file system
  - Must restart to change current working directory