

Agentic Coding with AI: A case study to develop a program for testing synthetic drum models

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The advent of Agentic Coding, where an AI generates code based on requirements prompted by a developer, allows one to rapidly prototype ideas. The focus of the developer shifts from programming to prompting things into existence. AI-based tools for programmers become more powerful on a daily basis: Tools like Github Copilot, Claude Code and their integration into IDEs such as JetBrains, Cursors or VSCode promise to accelerate development times and shift the developer attention away from implementation to integration and validation.

This paper evaluates the usefulness of AI-systems to rapidly implement a C++ program for real-time testing synthetic drum models. Two publications written in Swedish language – which the Author of this paper is not proficient of –, available in pdf format were used as input data. They contain text and graphics illustrating the DSP-blocks of the synthesis models at an abstract level. As a first step ChatGPT was instructed to interpret those papers, which were uploaded in their original pdf form, and generate C++ classes of their implementation including a description of the model parameters. The resulting source code was moved to an empty JetBrains CLion project. With the help of the plugin version of Github Copilot in Agent mode (preview at the time of the writing), the AI was instructed to create a project structure, using CMake as a build system, DearIMGui and RtAudio as libraries for graphical UI and real-time audio IO and Github Actions for pipelined CI/CD.

It was possible to create a working C++ application in a few hours, which faithfully represents the drum models, allows for DSP parameter tweaking and real-time visualization of the generated waveforms both in time-base and spectrogram view.

In conclusion, Agentic Coding allows rapid prototyping within hours compared to days or weeks. The generated code requires further quality assessment and review.

References:

<https://agentic-coding.github.io/>

<https://github.com/ctag-fh-kiel/md-drum-synth>