# **How can Artificial Intelligence programmers benefit Human programmers?**

Amani Hunter

Georgia State University

Human-Computer Interaction Spring, 2023

Professor Carol Bales

February 2nd, 2023

## AI Pair Programmers

Millions of programmers often become blocked and are unable to proceed in a project with a running solution before running to the popular website Stack Overflow. The abrupt stop that a programmer faces when coasting along in a project can hinder progress to meet their end goal. When a programmer faces such a problem, they often must share code snippets to online blogs and platforms.

Say for instance that a software engineer works for a startup and their code is the very reason the company exists, the company will have protocols in place so that outside eyes will not be able to see source code. As reported by Stack Overflow’s career site, they receive an estimated 100 million visitors monthly. According to an article written by (Sartore, M) Stack Overflow is known for its resistance to beginner programmers asking questions. Where will novice programmers go if the very site designed to help all programmers does not want them? Another problem programmers face is that they cannot code 24/7 and if they do the output might not be as efficient because they need rest. What if there was a product where programmers could write code and whilst they sleep the AI pair programmer could create a separate branch to keep working and have the engineer review it when they wake?

Currently on the market, there exists GitHub Copilot, which would be a competitor to the proposed solution. One major problem GitHub Copilot faces is an intellectual property controversy where companies are allowing engineers to access Copilot for work. According to (Wiggers, K) GitHub plans to add more features aimed at developers. These features will inform potential users on which code is publicly assessed so that they can decide to use it or not. Another limitation at this time is that Copilot only works with text-based prompts using natural language processing, which means that a user has to always has to initiate instead of immediately receiving hints or suggestions. The programmer enters a prompt and copilot outputs a code snippet it deems adequate. Copilot only works with four editors: Visual Studio, Neovim, VS Code, and JetBrains IDEs. These editors limit copilots market potential because there are numerous IDEs that are unable to utilize this resource. As an iOS Engineer, I use Xcode because Apple only supports Xcode to develop apps for their device app stores. There are also other IDEs and editors that would also benefit from a product offering code suggestion type functionality such as Netbeans, Eclipse, Sublime Text, and Atom. GitHub Copilot is not compatible for all tools.

A machine learning model that understands semantics of a required programming language and learns from the way an engineer architects their project would be a gamechanger. As a programmer, there have been numerous occasions where I could have benefitted tremendously from another set of eyes looking at my code on a project. The solution that I propose for these intricate set of problems is a command line tool that uses a trained ML model based on a specific programmer needs to integrate into their project. A command line tool allows ease of access and can reach all files within a directory. When using the tool, the user can specify if they are being blocked from solving a problem and request AI support, request the AI to continue where the programmer left off so that work is continuously being done and they will become one step closer to their goal, and can generate starter projects based on text input such as “Create an Xcode project that connects to my AWS resources”. In conclusion, this tool would be advantageous for those of whom are requesting help or feedback programming and allow continuation of code creation while the programmer is preoccupied with other tasks.

**References**

*Empowering the world to develop technology through collective knowledge.* Stack Overflow. (n.d.). Retrieved February 1, 2023, from <https://stackoverflow.co/>

Sartore, M. (2022, July 5). *What is stack overflow? A forum for all who code*. ZDNET. Retrieved February 1, 2023, from <https://www.zdnet.com/education/computers-tech/what-is-stack-overflow/>

Wiggers, K. (2022, December 8). *GitHub launches copilot for business plan as legal questions remain unresolved*. TechCrunch. Retrieved February 2, 2023, from <https://techcrunch.com/2022/12/08/github-launches-copilot-for-business-plan-as-legal-questions-remain-unresolved/>