

Guide to Using Generative AI in Programming

Generative AI has changed the landscape of programming. How can AI tools be used effectively and safely, and what is the role of human programmers now?

This unique textbook/guide is a comprehensive introduction to using generative AI in programming. Based on both practical experience and scientific studies, it shows how AI tools can be applied effectively to programmers' tasks—such as information retrieval, code generation, test creation, and code analysis. The book explores both the new possibilities and the risks of using generative AI, emphasizing the importance of programmers' expertise: Whereas AI tools can make programmers more productive, their use may also lead to serious problems. The book also addresses how learning and teaching programming are evolving in the era of generative AI.

Topics and features:

- Explains how large language models work under the hood, and how this affects their abilities and limitations
- Includes a wealth of practical examples of using AI tools in a variety of programming languages
- Offers advice on how to build effective prompts for tasks such as generating professional code and learning new programming languages
- Explores recent scientific literature on using generative AI in software development and programming education
- Shows how generative AI connects to the history of programming, including developments in programming paradigms and abstractions

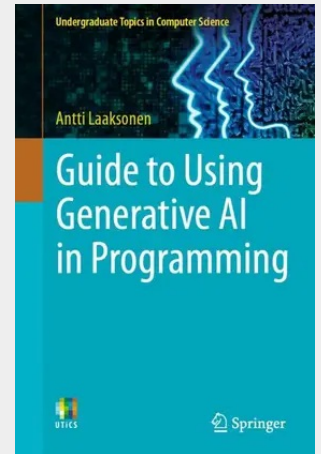
This textbook is an ideal guide for students and programmers wishing to understand the role of generative AI in programming, as well as to learn both how to use AI tools in practice and the theory behind them. The book assumes basic programming knowledge, but no prior experience with AI tools is necessary. It is suitable both for beginners learning programming and for experienced programmers looking to update their skills.

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