



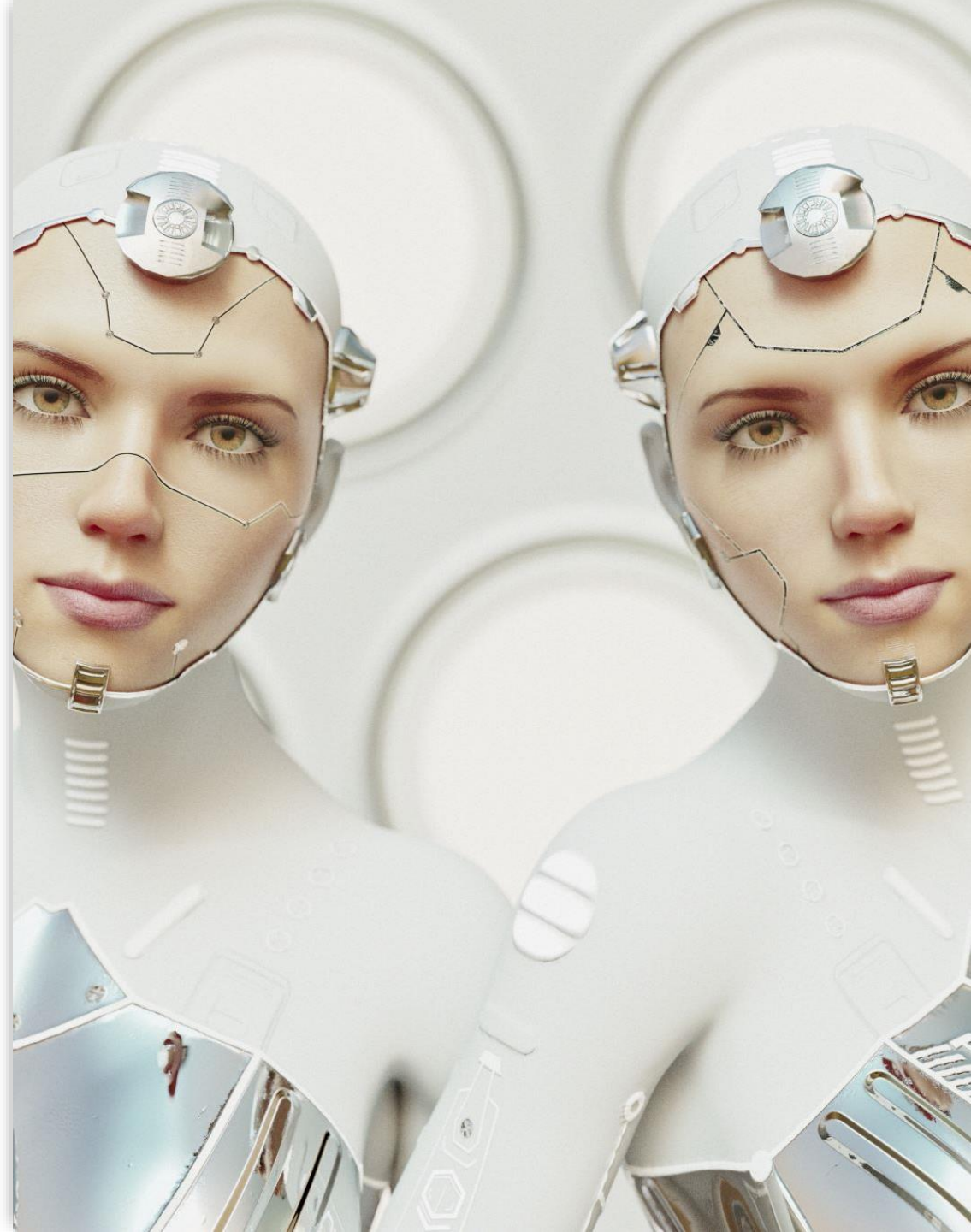
# GitHub Copilot overview

Bohdan Zhyhun

IF2000102

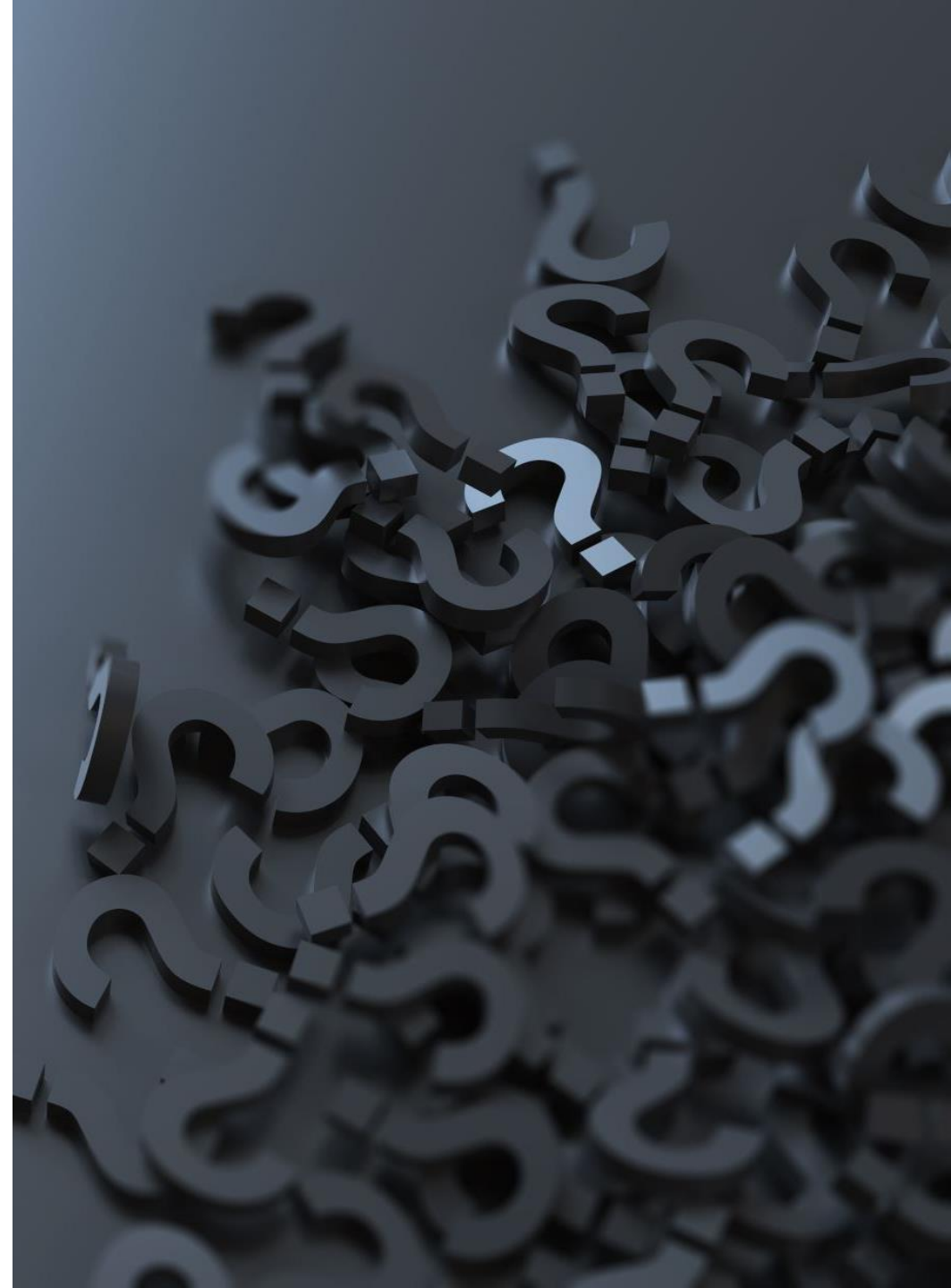
# Artificial Intelligence evolution

- The birth of AI can be traced back to the 1950s.
- Over the decades, AI has transformed from basic algorithms to sophisticated neural networks.
- Today's tools, like GitHub Copilot, are the culmination of decades of research and innovation.



# Modern AI tools rationality

- AI aims to think and act rationally.
- GitHub Copilot, powered by GPT-3, showcases this by providing context-aware code suggestions.
- It "thinks" by understanding the context and "acts" by suggesting relevant code, exemplifying rational behavior in AI.



# General information about the Copilot

- Developed by GitHub in collaboration with OpenAI and Microsoft.
- An AI-powered code completion tool.
- Assists developers by suggesting whole lines or blocks of code.



# Rationality in Modern AI Tools

- AI aims to think and act rationally.
- GitHub Copilot, powered by GPT-3, showcases this by providing context-aware code suggestions.
- It "thinks" by understanding the context and "acts" by suggesting relevant code, exemplifying rational behavior in AI.


# Purpose of the Tool

- Enhance developer productivity.
- Provide context-aware code suggestions.
- Reduce the need for repetitive coding.
- Help in writing code for languages or frameworks the developer is not familiar with.

# Neural network type

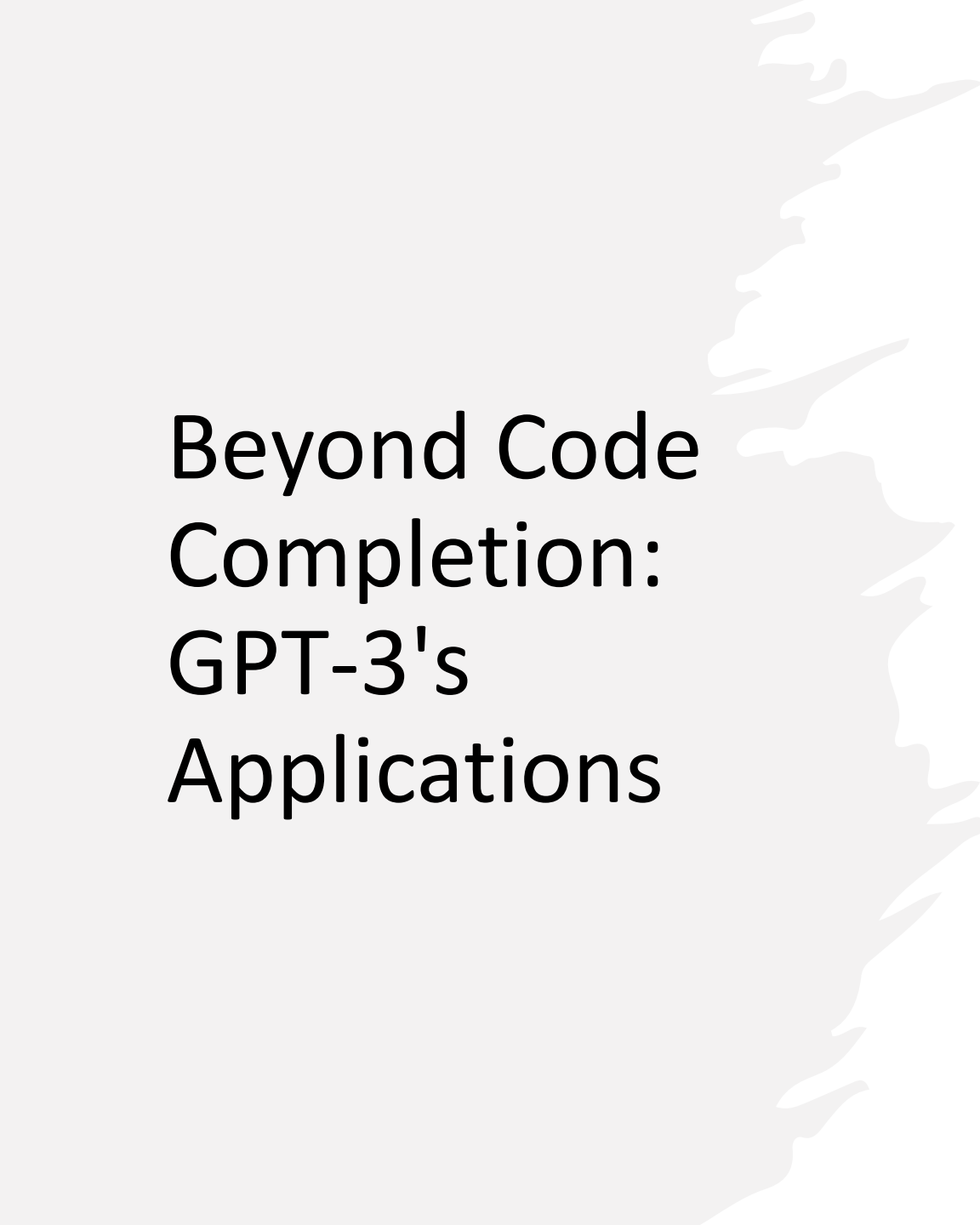
- Based on OpenAI's GPT-3 (Generative Pre-trained Transformer 3).
- GPT-3 is a state-of-the-art language processing AI model.
- It's a type of Transformer neural network, known for handling sequential data effectively.
- Reasons: GitHub Copilot's ability to understand context and generate human-like text is characteristic of GPT models.

# The Neural Architecture Behind GPT-3



- GPT-3 is built on the Transformer neural network architecture.
- Transformers are designed for handling sequential data effectively.
- This architecture is pivotal for GPT-3's ability to understand context and generate coherent text.





# Beyond Code Completion: GPT-3's Applications

- GPT-3's prowess is not limited to code suggestions.
- It excels in natural language processing, enabling human-like conversations.
- Its capabilities extend to forecasting based on textual data, making it a versatile AI tool.



# GitHub Copilot: Facilitating Developer Collaboration

- Collaboration is a cornerstone of successful development projects.
- GitHub Copilot offers consistent code suggestions, ensuring a unified coding style.
- With tools like Copilot, developers can streamline their collaborative efforts and produce cohesive code.



# Differences from Other AI Tools

- Integrated directly into the Visual Studio Code, Visual Studio, Neovim, and the JetBrains suite of integrated development environments (IDEs).
- Trained specifically on a vast amount of code from public repositories.
- Provides not just code completion, but also entire code block suggestions.
- Understands context better due to the underlying GPT-3 model.



## Reasons for Copilot recommendation

I would like to recommend this AI-tool. The reasons for it:

- Significantly boosts coding speed.
- Helpful for beginners to understand coding patterns.
- Assists in coding in unfamiliar languages or frameworks.

# Resources

- <https://github.com/features/copilot>
- <https://marketplace.visualstudio.com/items?itemName=GitHub.copilot>
- <https://www.dev-insider.de/wie-funktioniert-github-copilot-a-10941ef3768ed24068b36909fd430a1e/>
- <https://realpython.com/github-copilot-python/>