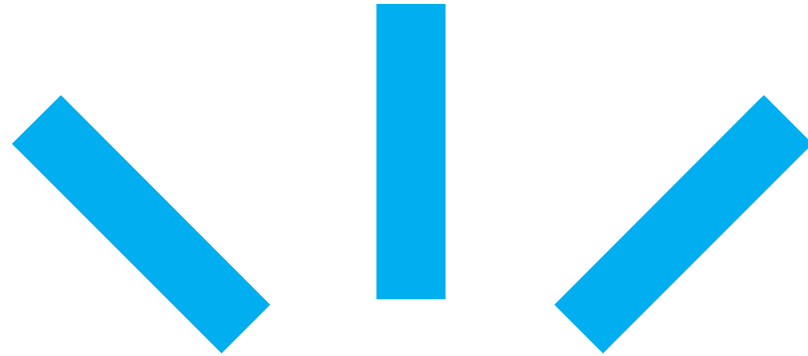# We've been training AI programmers Now, let's learn from them

Burak Turhan

University of Oulu

10.10.2024

Empirical Software Engineering

" [to use] empirical research methods to study and evaluate an SE phenomenon of interest."

10/10/2024   Burak Turhan, Source: https://en.wikipedia.org/wiki/Empirical_software_engineering

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We've been training AI programmers
Now, let's learn from them

1	2	3	4	5
	?	?	?	?

1

Humans build and program machines;

Humans tell machines what to do

Machines do

1	2	3	4	5
Humans build and program machines;	Humans learn how to train machines	?	?	?
Humans tell machines what to do	Humans train machines with examples			
Machines do	Machines learn			

1	2	3	4	5
Humans build and program machines; Humans tell machines what to do Machines do	Humans learn how to train machines Humans train machines with examples Machines learn	Humans learn how to train machines to self-study Humans offer vast data Machines learn	?	?

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1	2	3	4	5
Humans build and program machines;	Humans learn how to train machines	Humans learn how to train machines to self-study	Machines learn to program machines	?
Humans tell machines what to do	Humans train machines with examples	Humans offer vast data	Machines tell humans what to do	
Machines do	Machines learn	Machines learn	Humans do	

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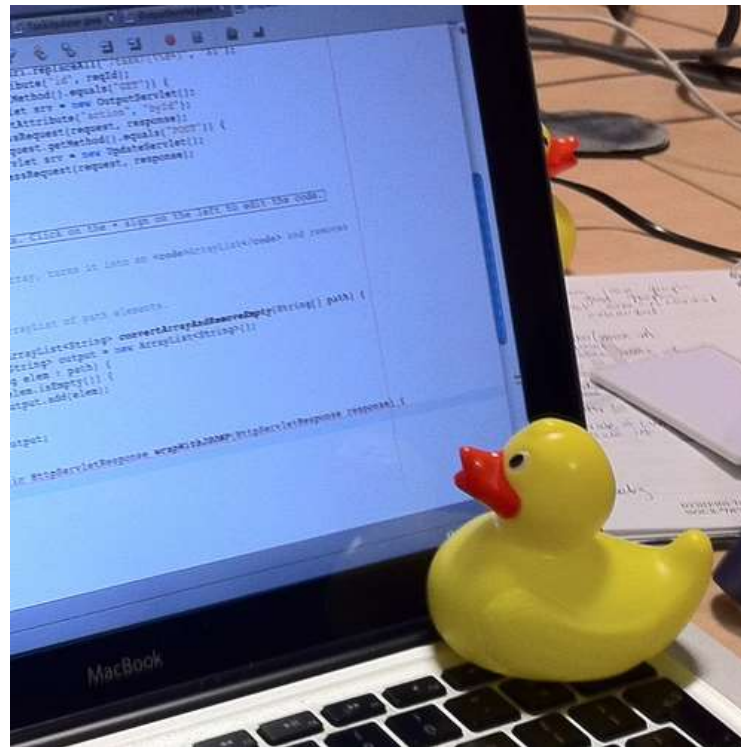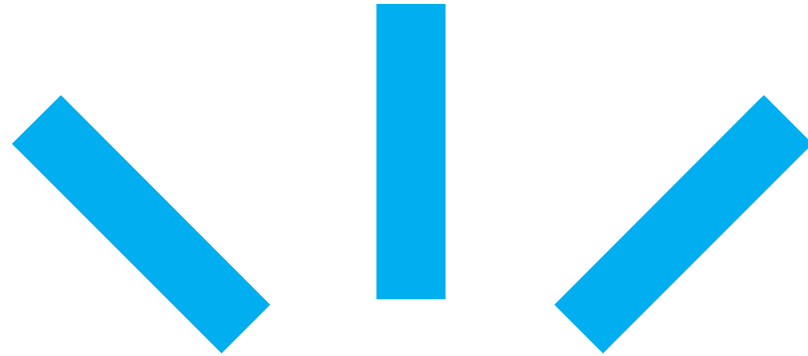| 1	2	3	4	5
Humans build and program machines;	Humans learn how to train machines	Humans learn how to train machines to self-study	Machines learn to program machines	Machines learn how to train humans
Humans tell machines what to do	Humans train machines with examples	Humans offer vast data	Machines tell humans what to do	Machines train humans with examples
Machines do	Machines learn	Machines learn	Humans do	Humans learn
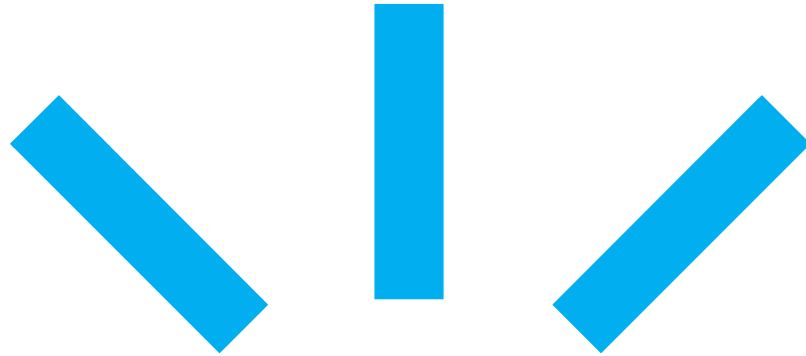
"[…] if you give a man a fish he is hungry again in an hour. If you teach him to catch a fish you do him a good turn."

10/10/2024   Burak Turhan, Source: https://en.wiktionary.org/wiki/give_a_man_a_fish_and_you_feed_him_for_a_day;_teach_a_man_to_fish_and_you_feed_him_for_a_lifetime   **University of Oulu**

A rubber duck is the best assistant!

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Use AI tools to learn

not to delegate your work

"By leveraging LLMs teams can significantly boost productivity, improve code quality, and foster better learning and collaboration environments."

10/10/2024   Burak Turhan, Source: https://fiif.fi/fiif-event-harnessing-the-power-of-llms-like-chatgpt-in-software-development/   **University of Oulu**

Marcus on AI

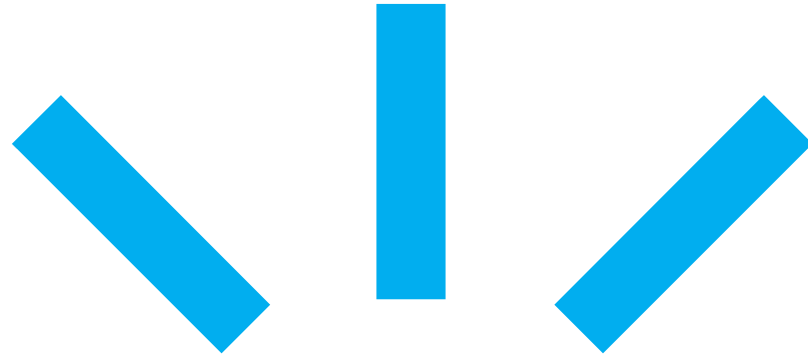# Sorry, GenAI is NOT going to 10x computer programming

Here's why

GARY MARCUS
OCT 01, 2024

"Use it to type faster, not as a substitute for clear thinking about algorithms + data structures."

Invest in people, yourself

not in AI tools

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Remember:

"Developers' dilemma: Code from scratch or assemble existing code"*

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Q & A

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