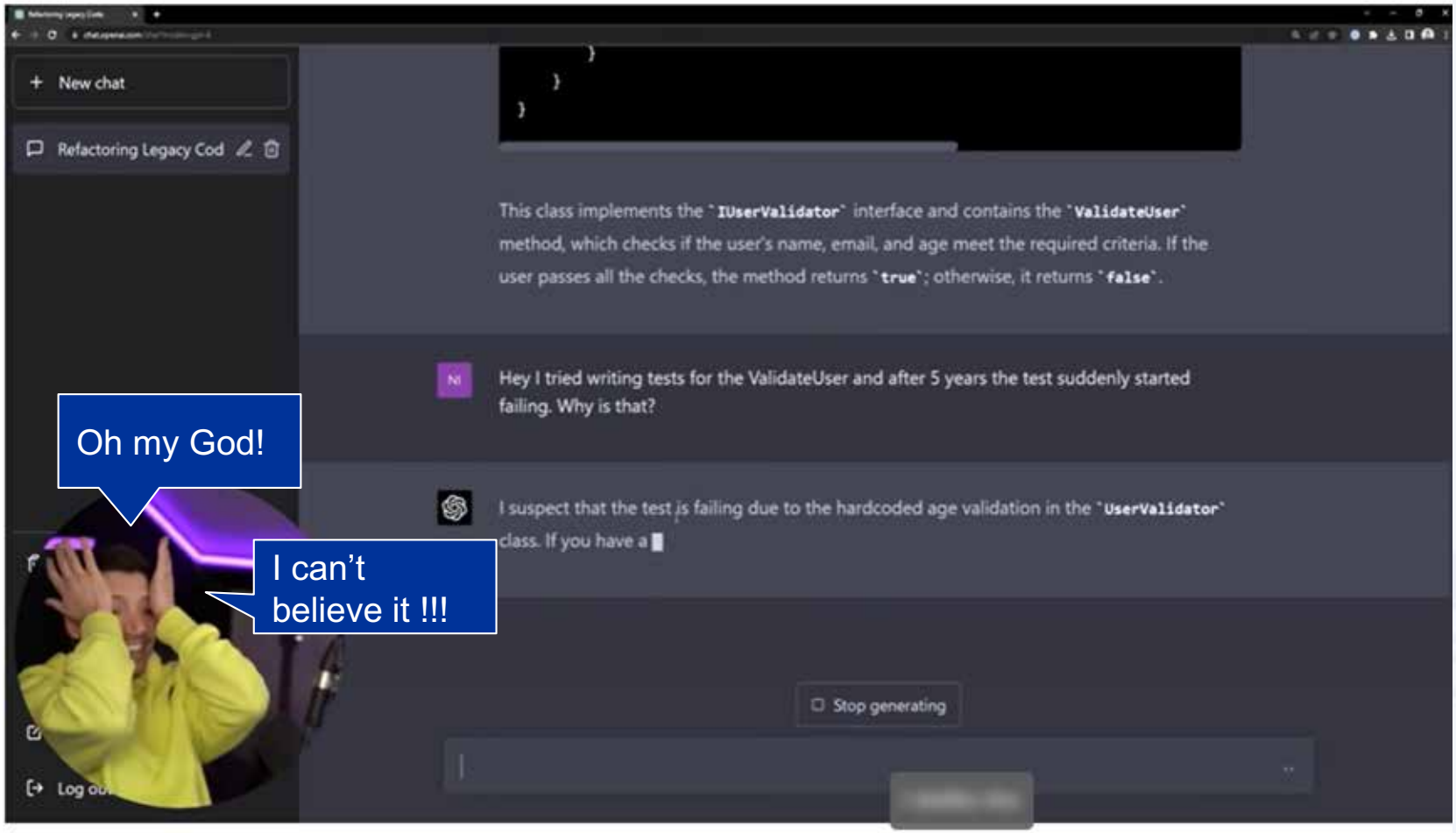
The Potential Impact of GPT-like Tools on Computing Education and Career Opportunities

Speaker: Prof Damith Rajapakse

Abstract: This talk explores three important questions related to the impact of GPT-like AI tools on computing professionals. Firstly, to what extent can these tools automate the work of computing professionals? Secondly, how will the increasing use of such tools affect the career prospects of computing professionals? And finally, how can teaching and learning computing degree programs be adapted to keep pace with these changes?



I Asked GPT-4 To Refactor My Legacy Codebase

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Scope: Software Engineering (SWE) Careers

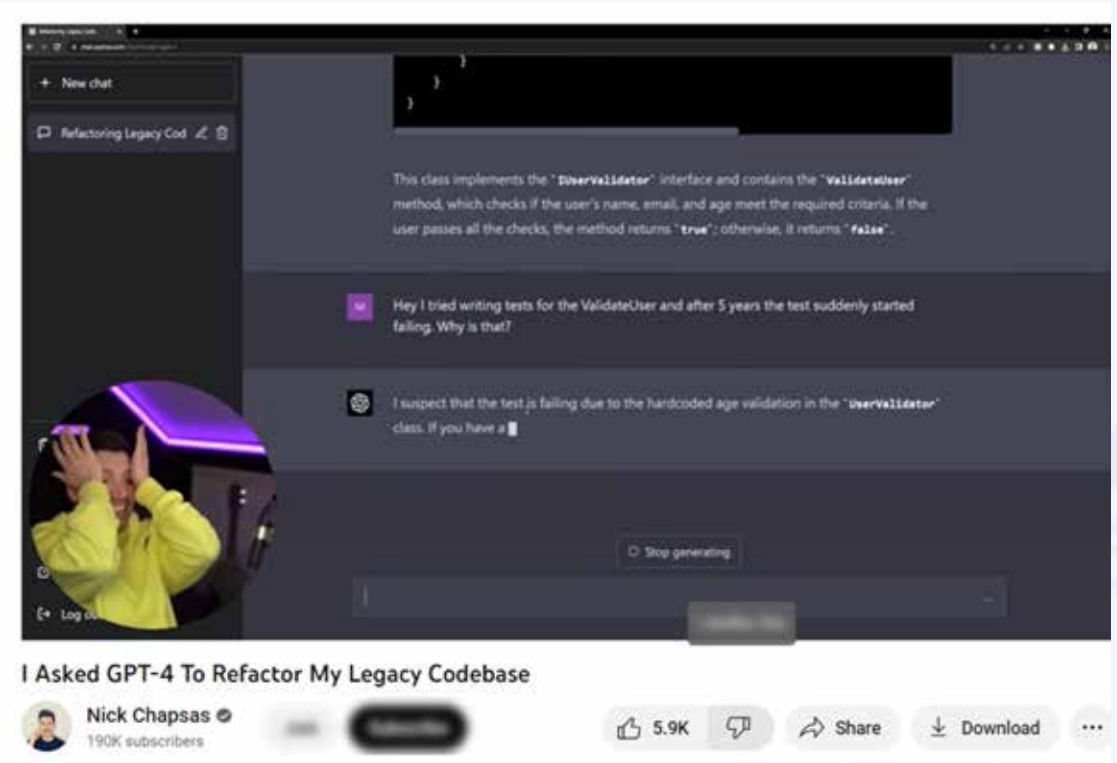
[1] How much of the SWE's work can AI do?

[2] How will it affect SWE career prospects?

[3] How to prepare for AI-assisted SWE careers?

[1] How much of the SWE's work can AI do?

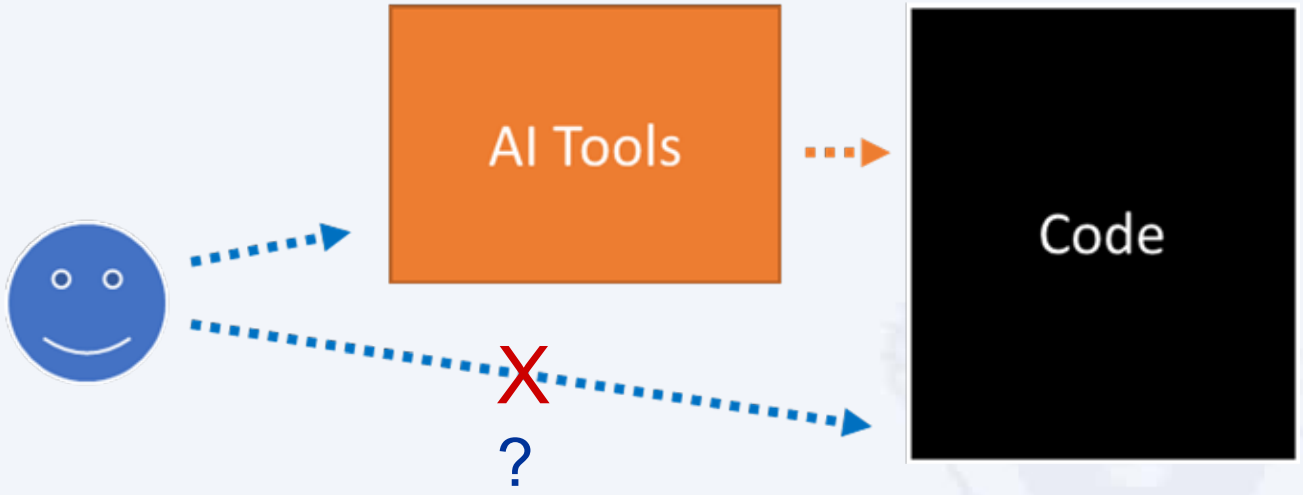
What AI can do seems 'amazing'
-- possibly because of the sudden jump in capabilities.



Capable of small/medium tasks now,
but the **capabilities are likely to grow**.

[1] How much of the SWE's work can AI do?

Will we be able to treat code as a black box?



Unlikely for now.
We still need to monitor, fine-tune, troubleshoot, etc.
Which requires *evaluative judgment* of expert SWEs.

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AI can do a significant portion of the work, but not all.

[2] How will it affect SWE career prospects?

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[2] How will it affect SWE career prospects?

Some work will be a lot faster (e.g., coding)

Some work will be a bit slower (e.g., troubleshooting)
Why? It's harder to make evaluative judgements about code that we didn't write ourselves.

But there will be a net productivity gain.

[2] How will it affect SWE career prospects?

With that productivity gain …

- **Some job opportunities will disappear.**
  Why? Fewer SWEs can do the same amount of work.
- **Some new opportunities will appear.**
  More 'commoditisation' of software development
  → more public demand for it

Job profiles will change for most jobs.

- Current: high demand for SWEs, high salaries,
  high workload, high stress, gender imbalanced, …
- Future: ???

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Demand/work/pay profiles will change,
not necessarily for the worse.

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Need to develop *evaluative judgment* faster!
Normally, developing EJ takes a lot of time and experience
e.g., students rely on instructors' EJ at first.

Need to learn fundamentals but emphasis might change
e.g., less of *writing* code, more of *reading* code.

Need to learn how to make use of AI tools too.

That's **even more things to learn** than before!
Yes, but **AI can improve learning productivity** too.

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Learn the fundamentals,
supplemented with AI skills,
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