Q: Which quote best emphasizes simplifying patterns in problem-solving?

iClicker

A. “Abstraction defines patterns and generalizes instances.” [Wing]

B. “Synthesizers make wise choices with the right information.”[Wilson]

C. “Solve an easier problem if you can’t solve the original.” [Polya]

D. “Break big problems into smaller, manageable ones.” [Anonymous]

CPSC 100

Computational Thinking

Generative Artificial Intelligence

Instructor: Parsa Rajabi
Department of Computer Science
University of British Columbia

Agenda

- Tentative Course Schedule

- Generative AI
  - Background
  - Class Activity

Learning Goals

Learning Goals

After this lecture, you should be able to:

- Explain the tentative course schedule
- Explain the concept of **Generative** **A**rtificial **I**ntelligence
  - Describe the relevance of Generative AI in CPSC 100
- Identify and list various GenAI tools to date
- Identify opportunities to use and not use GenAI

Tentative Course Schedule

Labs Schedule (tentative)

~10 Labs throughout the semester (due Thursdays)

- Lab 1 - Jan 16
- Lab 2 - Jan 23
- Lab 3 - Jan 30
- Lab 4 - Feb 6
- Lab 5 - Feb 13
- Lab 6 - Feb 27
- Lab 7 - Mar 6
- Lab 8 - Mar 13
- Lab 9 - Mar 20
- Lab 10 - Mar 27

Midterm Date (tentative)

- In-person exam
- To be done individually
- Based on lecture material, discussions, labs etc.
- **~1 Week Before or after reading break**

Generative AI

Generative AI

What does Generative mean?

Generative refers to systems, models, or algorithms designed to **create or produce new data** that **resembles the input data** on which they were trained.

Generative AI

What does AI mean?

Artificial Intelligence (AI), which refers to the **simulation of human intelligence** in machines that are programmed to think, reason, learn, and **act in a way** that mimics human cognitive abilities

Background Information

Hello ChatGPT!

- Previous conversational chatbots (~1960-2000s)
- ELIZA[1], PARRY[2], A.L.I.C.E.[3] & Cleverbot [4]
- Rise of ChatGPT-3.5 in November 2022
  - Chat **G**enerative **P**re-trained **T**ransformer
- Wide range of capabilities
  - Human-like responses [5]
  - Understanding conversation context [6]
  - Writing code & debugging [7]

Chatbots are NOT new!

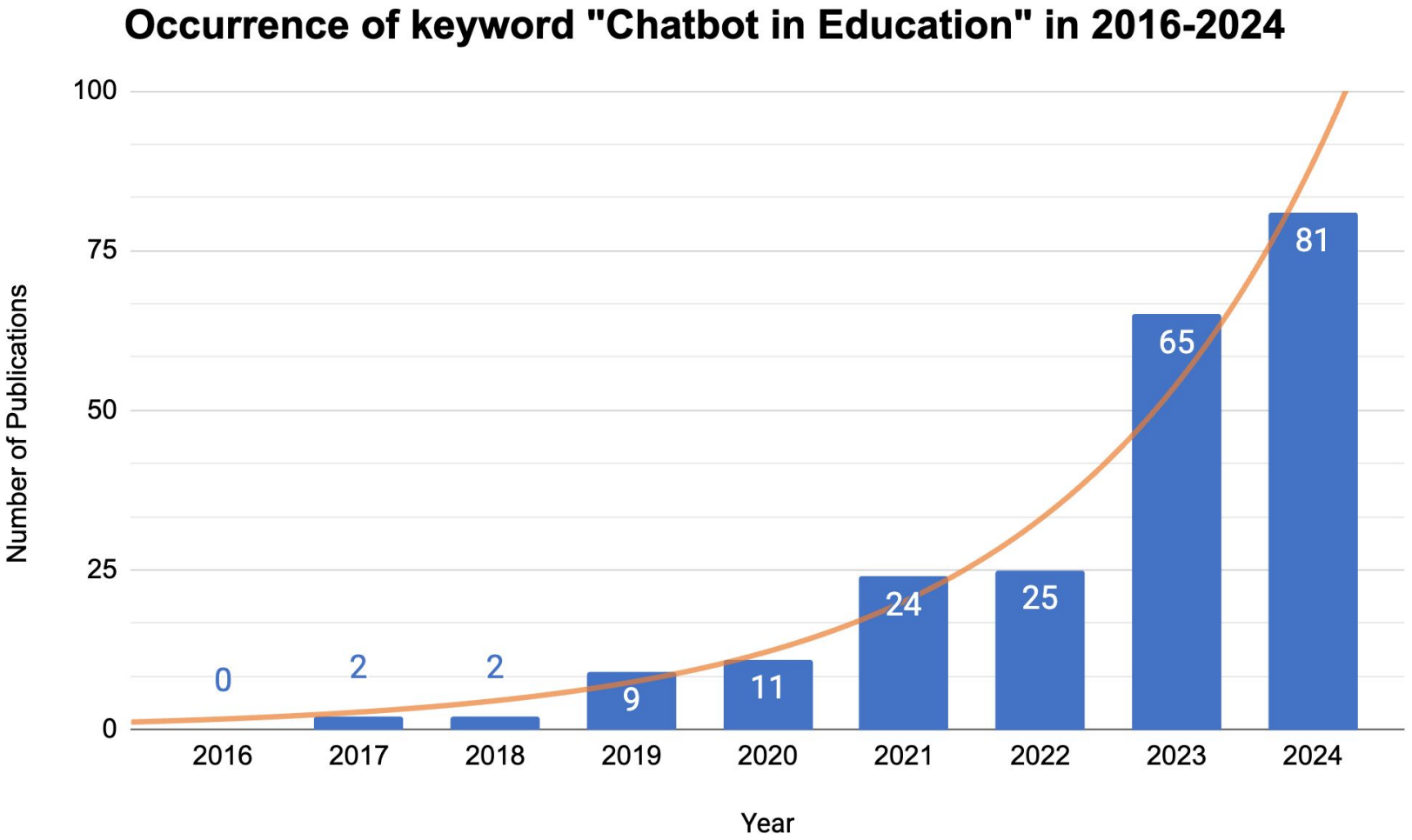
Unleashing the Potential of Chatbots in Education: A State-Of-The-Art Analysis

Rainer Winkler and Matthias Soellner March 2018

psychology literature before examining and individually coding a relevant subset of 80 articles.

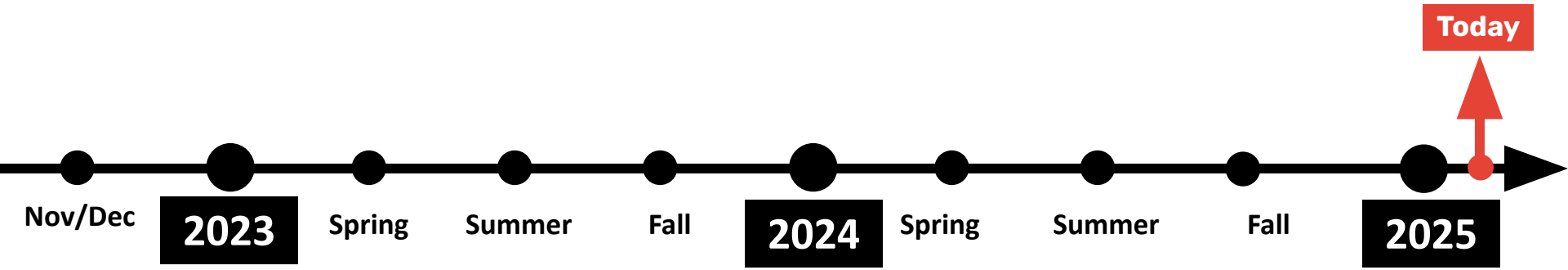
The results show that chatbots are in the very beginning of entering education. Few studies suggest

the potential of chatbots for improving learning processes and outcomes. Nevertheless, past

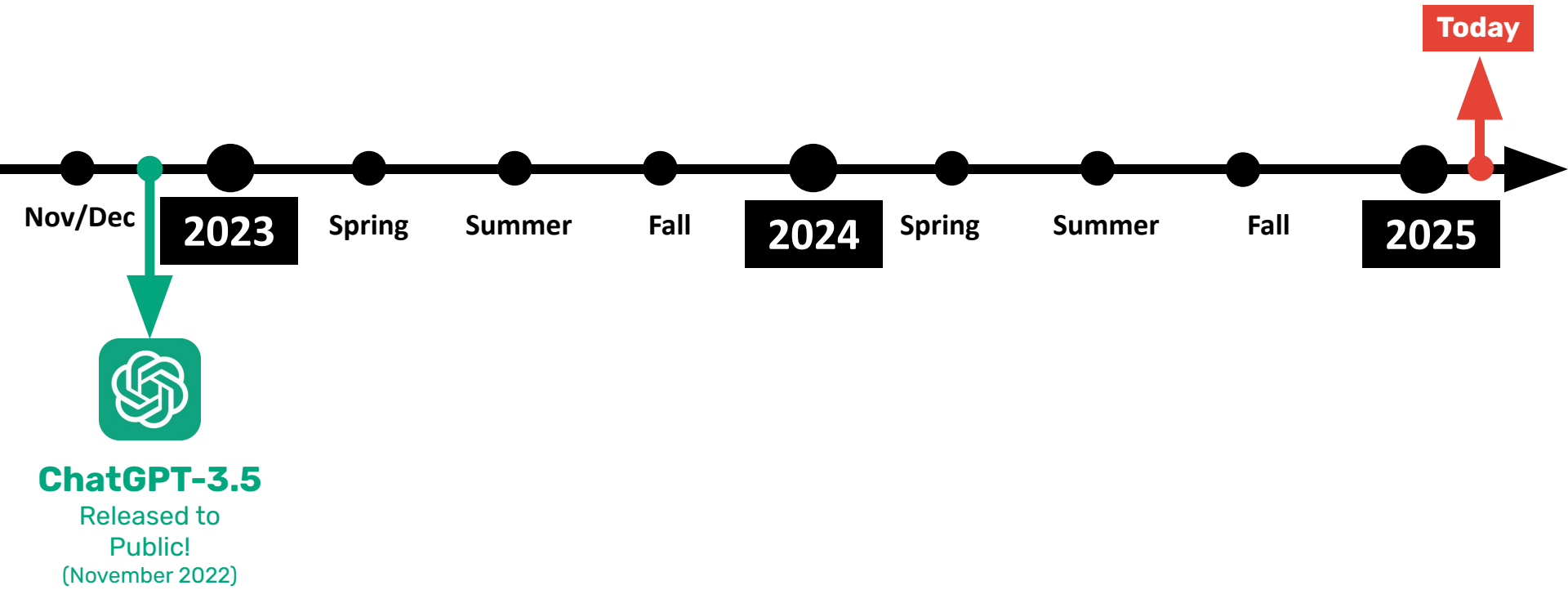

Occurrence of keyword "Chatbot in Education" in 2016-2024
Number of Publications
100
75
50
25
0
0
2
2
9
11
24
25
65
81
2016
2017
2018
2019
2020
2021
2022
2023
2024
Year

Timeline

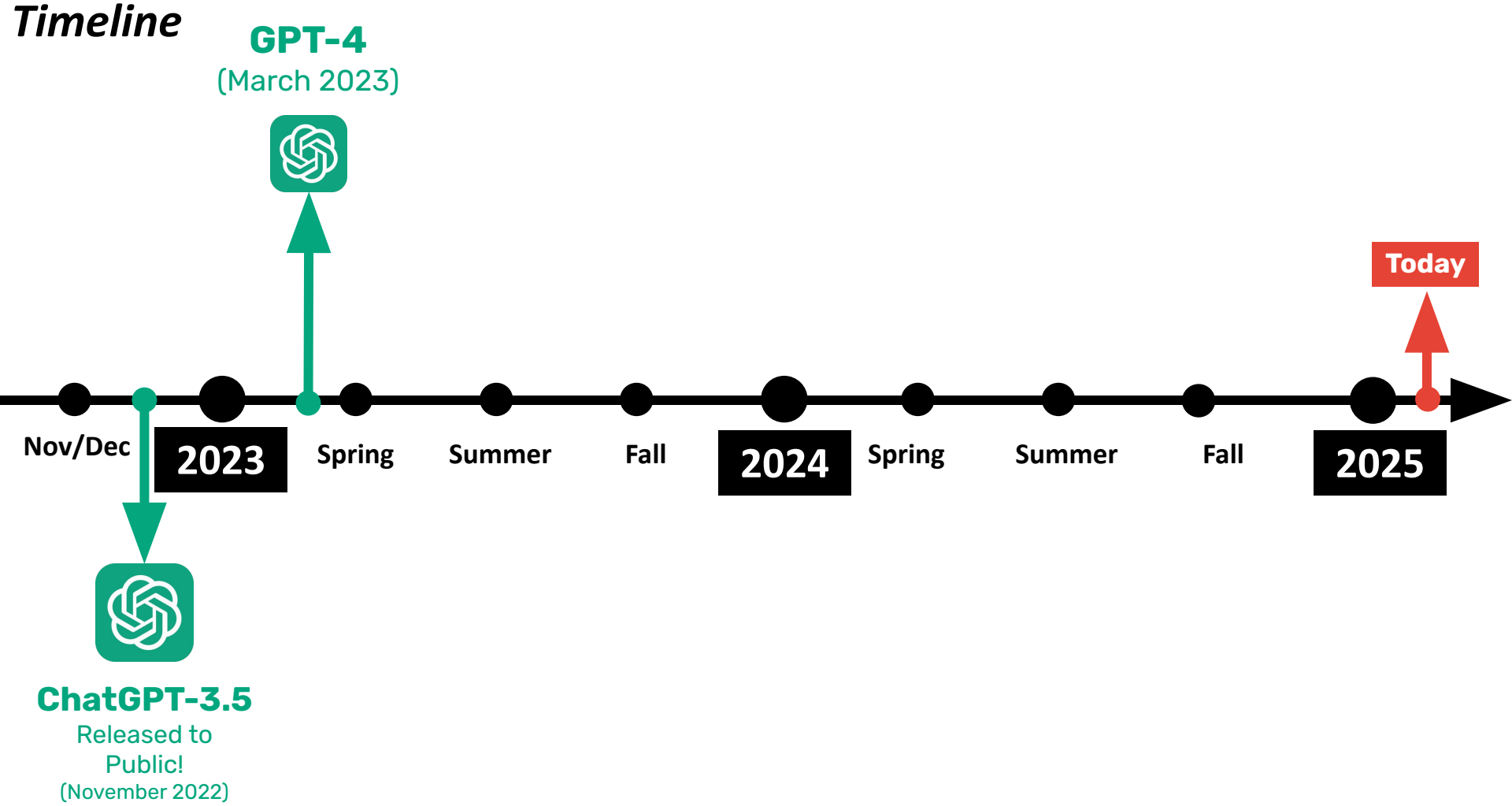
Timeline

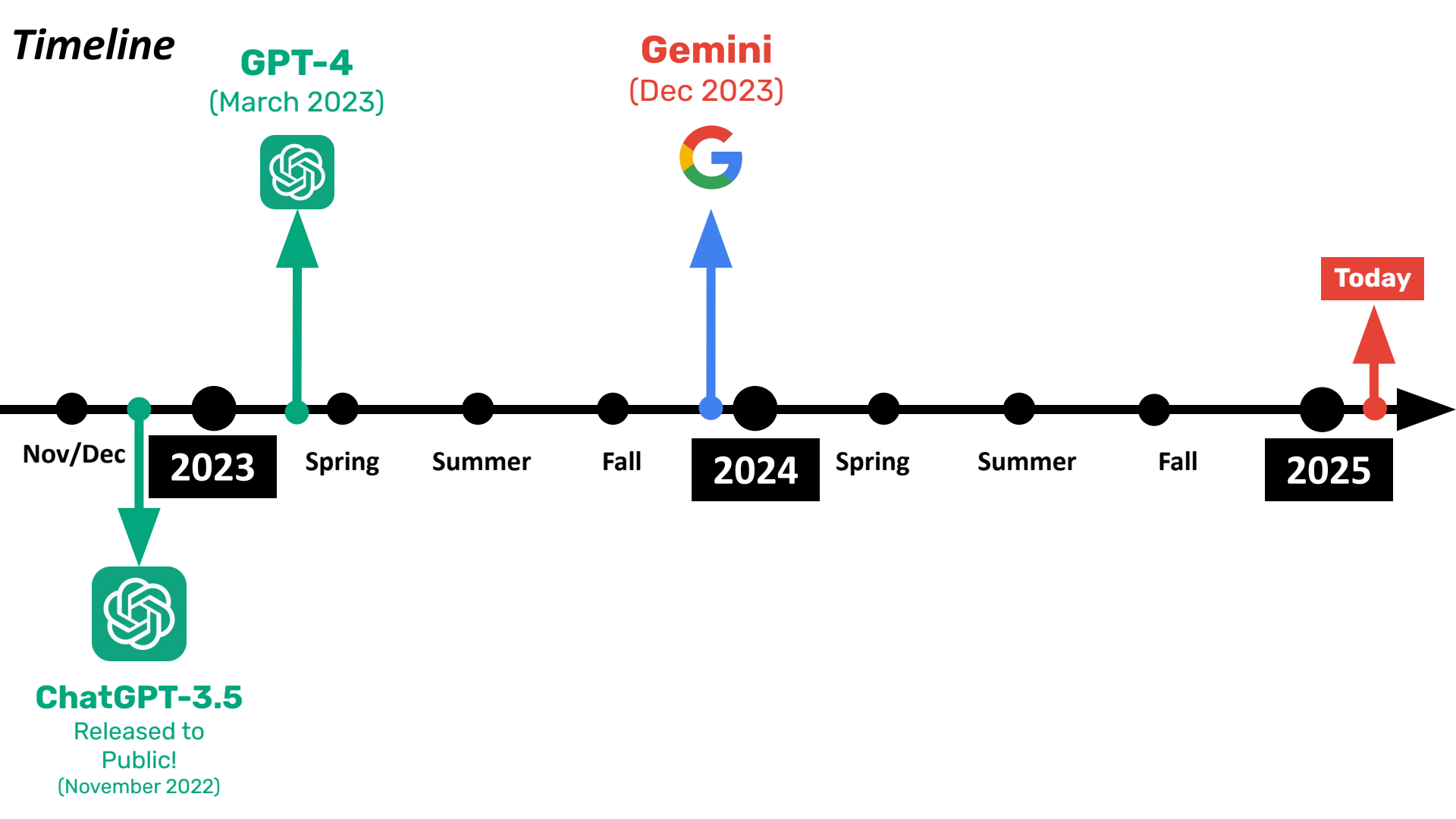

Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025

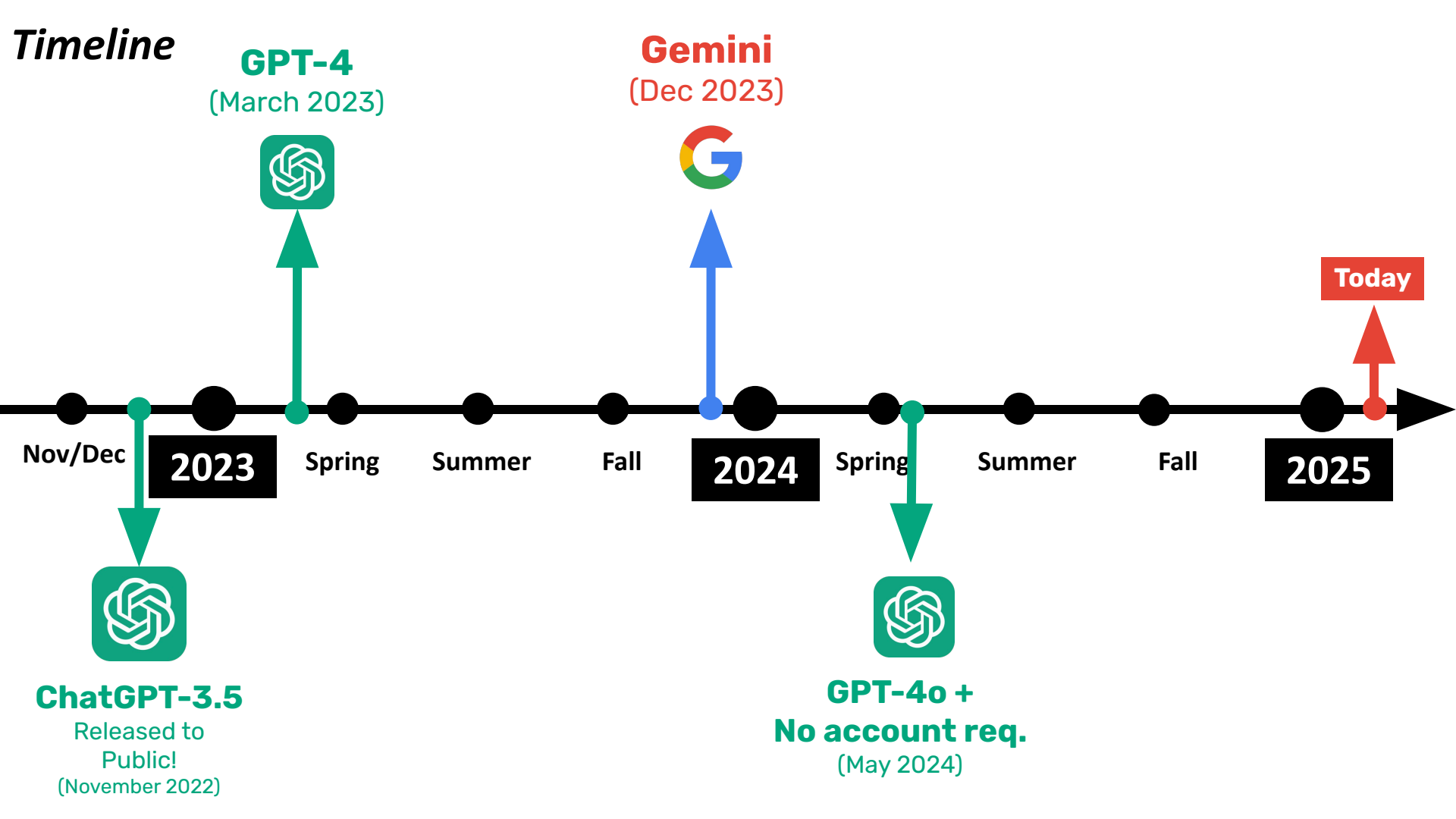
Timeline

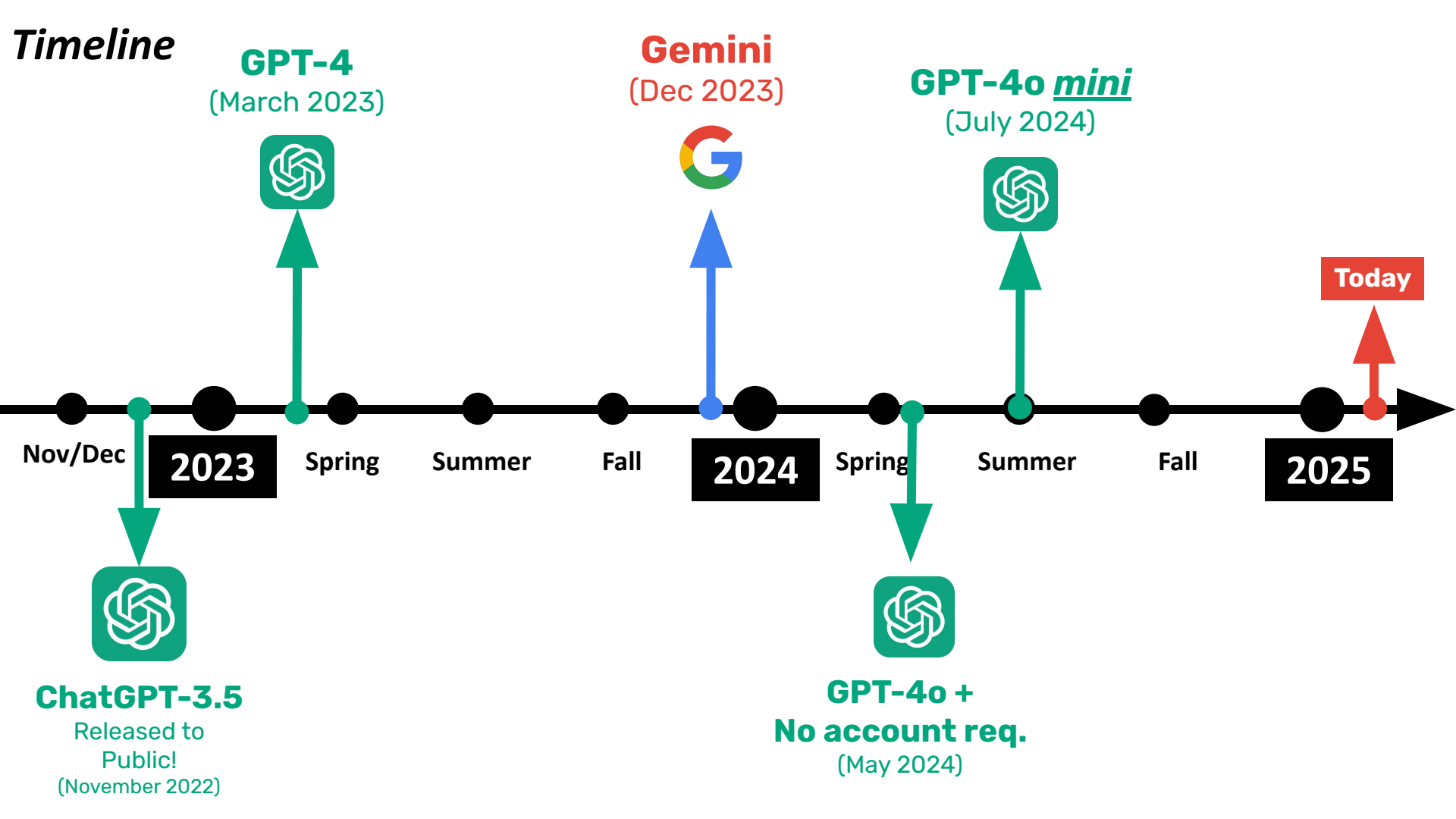

Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)

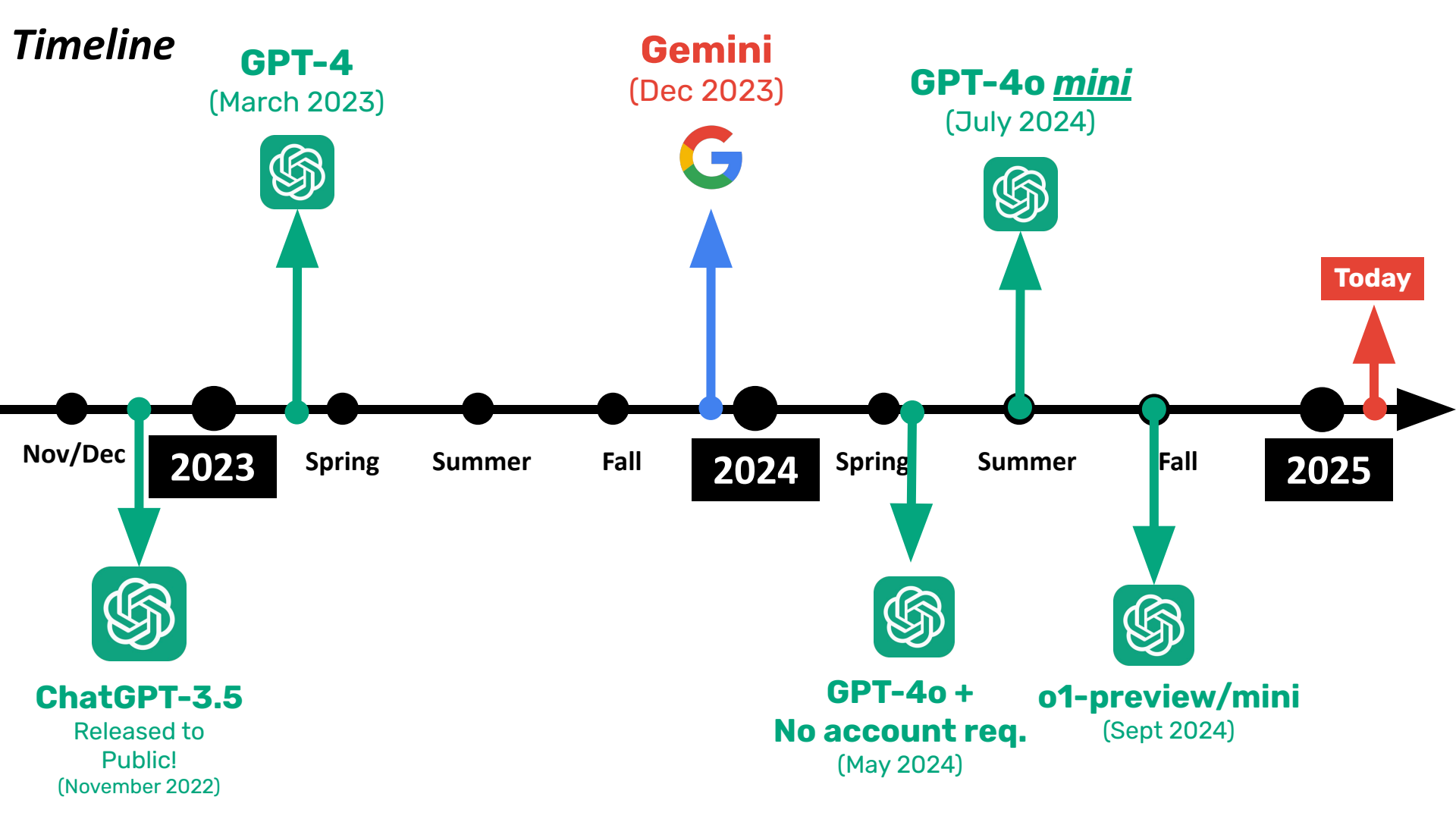
Timeline

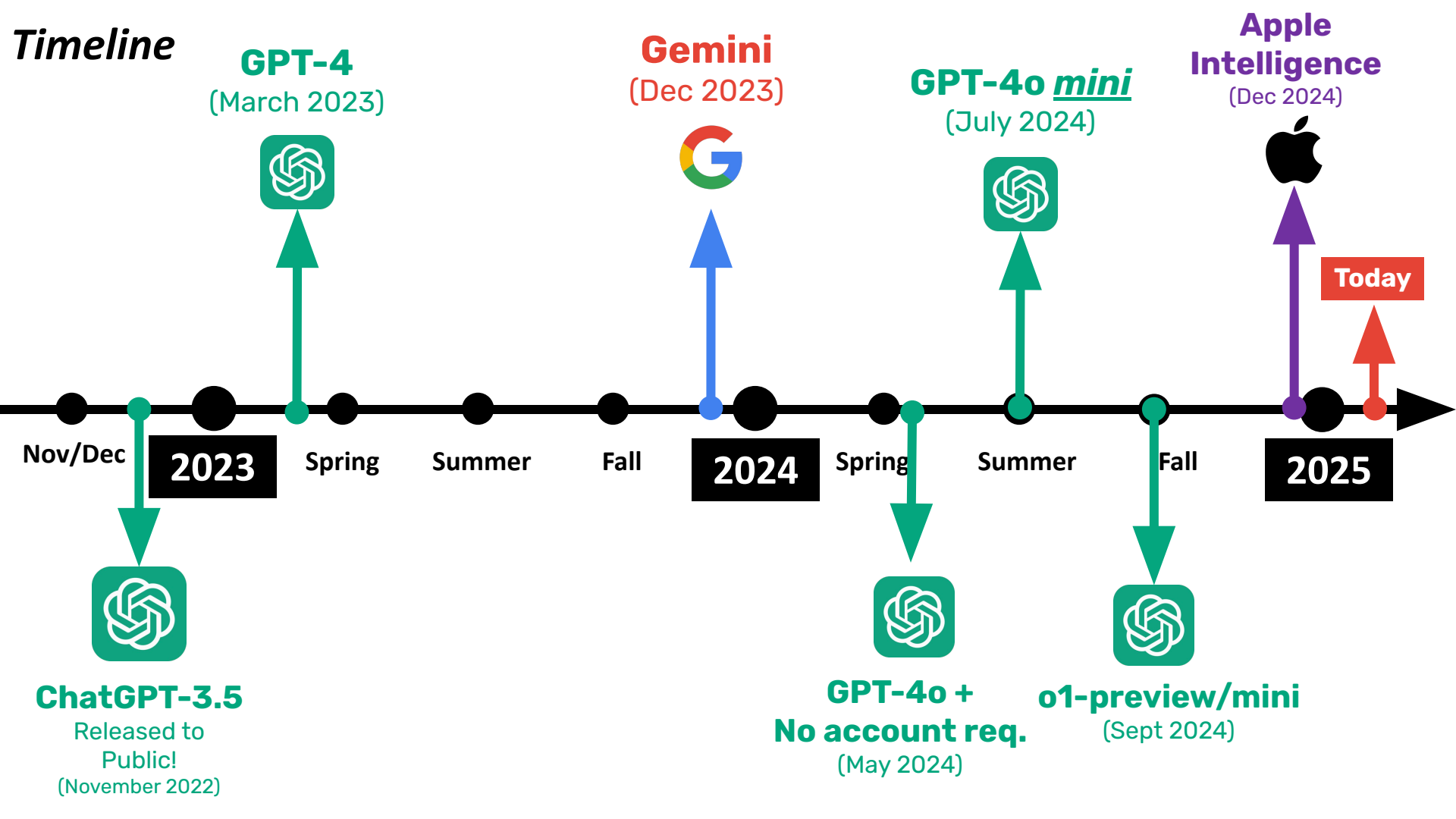

GPT-4
(March 2023)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)

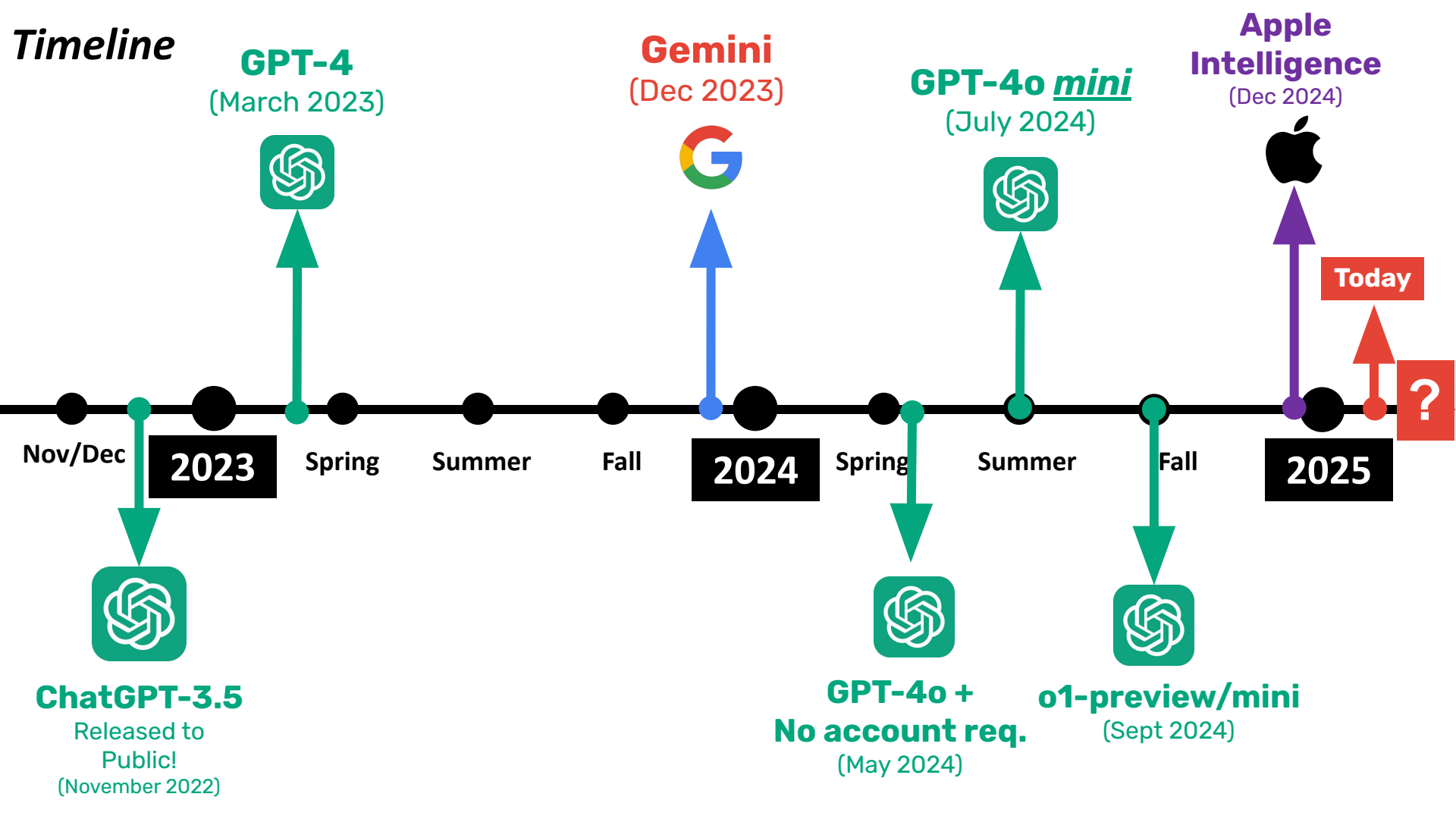

Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)


Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)
GPT-4o +
No account req.
(May 2024)


Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
GPT-4o mini
(July 2024)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)
GPT-4o +
No account req.
(May 2024)


Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
GPT-4o mini
(July 2024)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)
GPT-4o +
No account req.
(May 2024)
o1-preview/mini
(Sept 2024)


Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
GPT-4o mini
(July 2024)
Apple Intelligence
(Dec 2024)
Today
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)
GPT-4o +
No account req.
(May 2024)
o1-preview/mini
(Sept 2024)


Timeline
GPT-4
(March 2023)
Gemini
(Dec 2023)
GPT-4o mini
(July 2024)
Apple Intelligence
(Dec 2024)
Today
?
Nov/Dec
2023
Spring
Summer
Fall
2024
Spring
Summer
Fall
2025
ChatGPT-3.5
Released to Public!
(November 2022)
GPT-4o +
No account req.
(May 2024)
o1-preview/mini
(Sept 2024)

CPSC 100 AI Policy

Class Activity

Class Activity: Course AI Policy

As a class, let's identify where AI can or can not be used in a responsible and effective way.

In groups of 2-3, brainstorm ideas on the Miro Board - be ready to share!

http://tiny.cc/100-W2A

Class Discussion

Wrap up

Wrap Up

- **Labs will begin THIS week!**
  - Go find ICCSx050 **before Wednesday**
- Join Ed Discussion board (link on canvas)
- Complete course survey via Canvas
  - Due January 13 (tonight)
- Stay tuned for a group formation survey