

Computação em Nuvem

Organização e Visão Geral

Pontifícia Universidade Católica de Campinas

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O que você **espera** desta disciplina?

Objetivo da Disciplina

Prover aos alunos o conhecimento sobre como são **criadas e gerenciadas** soluções em computação em nuvem e seus componentes internos e externos.



Ementa e Escopo

- Sistemas Distribuídos
- Contêineres e Virtualização
- Orquestração
- Armazenamento de dados
- DevOps e CI/CD
- Modelos de Serviço: IaaS, PaaS, SaaS
- Segurança

A vertical image on the left side of the slide shows two female students in a classroom. They are sitting at a desk, looking at a book or paper. The lighting is warm, coming from a window in the background.

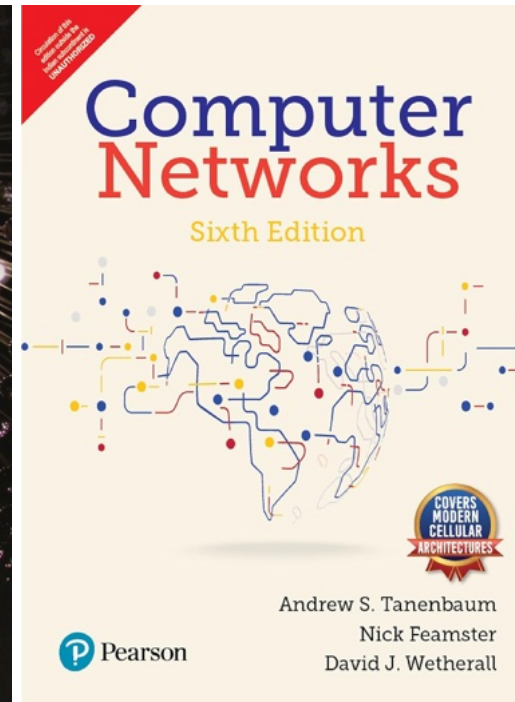
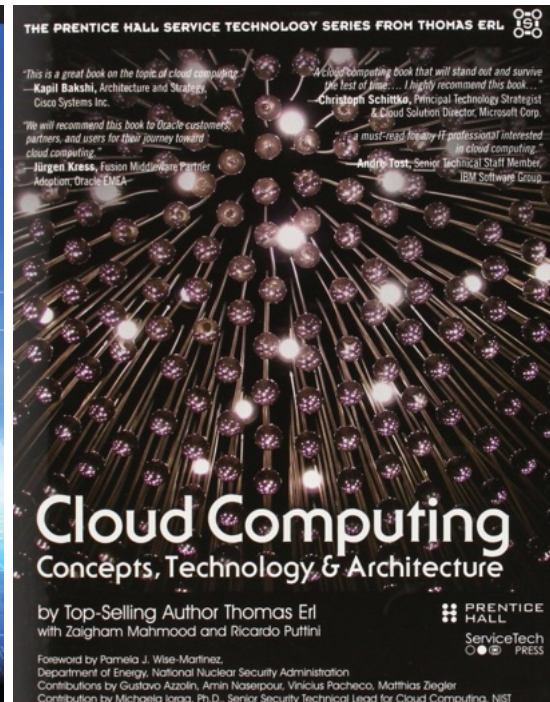
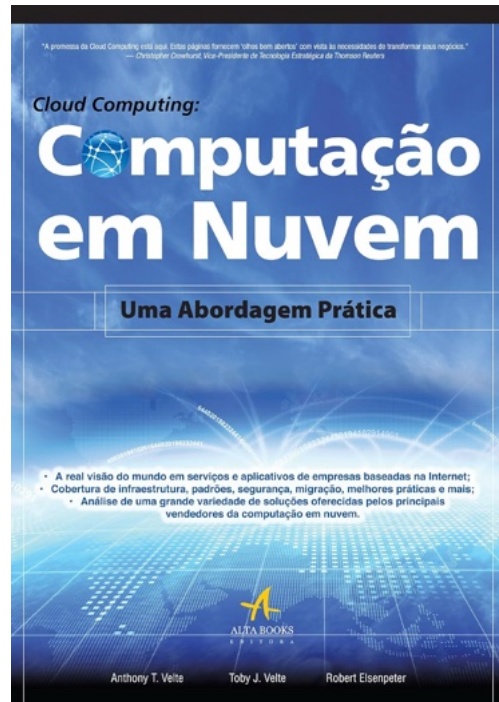
Avaliação

Foco no **processo** e não no produto final.

Data	Atividade
24/09/2025	Prova P1
26/11/2025	Prova P2
Mês de Novembro	Seminários
04/12/2025	Prova Recuperação











- **Cálculo de Notas:**
 - MP = Média aritmética das notas das provas
 - MT = Média aritmética das notas dos trabalhos/seminários
- **Média Final (MF):** $MF = 0.4 \times MP + 0.6 \times MT$
- **Prova de Recuperação (REC):** Se $MF < 5.0$, então: $MF = (MF + REC) / 2$


Bibliografia Básica



- VELTE, A.; VELTE, T.; ELSENPIETER, R.; Computação em Nuvem: Uma abordagem Prática, 1a Ed., Alta Books Editora, 2011
- Thomas Erl, Ricardo Puttini, and Zaigham Mahmood. 2013. Cloud Computing: Concepts, Technology & Architecture (1st. ed.). Prentice Hall Press, USA.
- TANENBAUM, A. S., Computer Networks, 4rd. Ed., Prentice-Hall, 2003.

Top 10 fastest growing skills by 2030

1.  AI and big data
2.  Networks and cybersecurity
3.  Technological literacy
4.  Creative thinking
5.  Resilience, flexibility and agility
6.  Curiosity and lifelong learning
7.  Leadership and social influence
8.  Talent management
9.  Analytical thinking
10.  Environmental stewardship

 Cognitive skills  Self-efficacy  Working with others  Management skills  Technology skills  Ethics

Note: The skills selected by surveyed organizations to be increasing most rapidly in importance by 2030.

Source: World Economic Forum. (2025). *Future of Jobs Report 2025*.

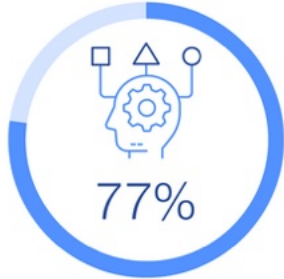
Contexto da Disciplina

Trabalhabilidade > Empregabilidade

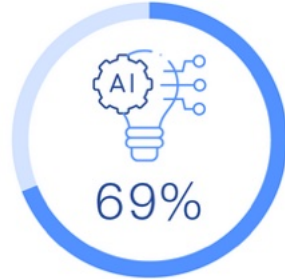
"In the next five years, 170 million jobs are projected to be created and 92 million jobs to be displaced (...)." - [The Future of Jobs - Report 2025, WEF](#).

Como se preparar para posições de trabalho que **ainda não existem**?

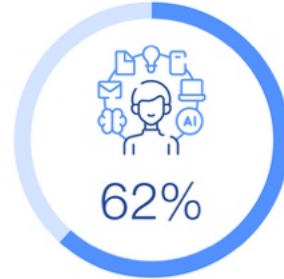
How will businesses respond to AI developments?



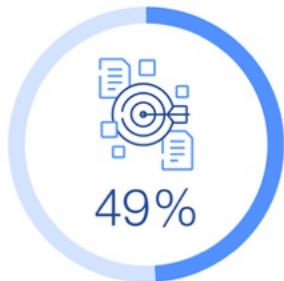
Reskilling and upskilling existing workforce to better work alongside AI



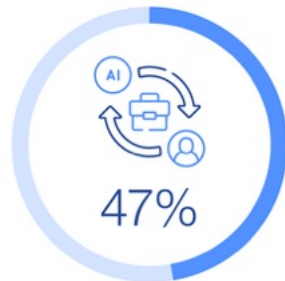
Hiring new people with skills to design AI tools and enhancements appropriate for the organization-specific skills



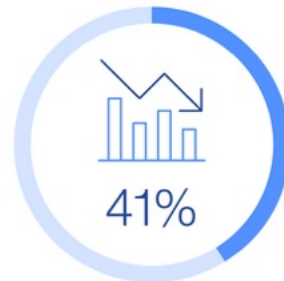
Hiring new people with skills to better work alongside AI



Re-orienting the organization to target new business opportunities created by AI



Transitioning people from jobs that AI will cause to decline, to other roles within the organization



Downsizing workforce where AI can replicate people's work

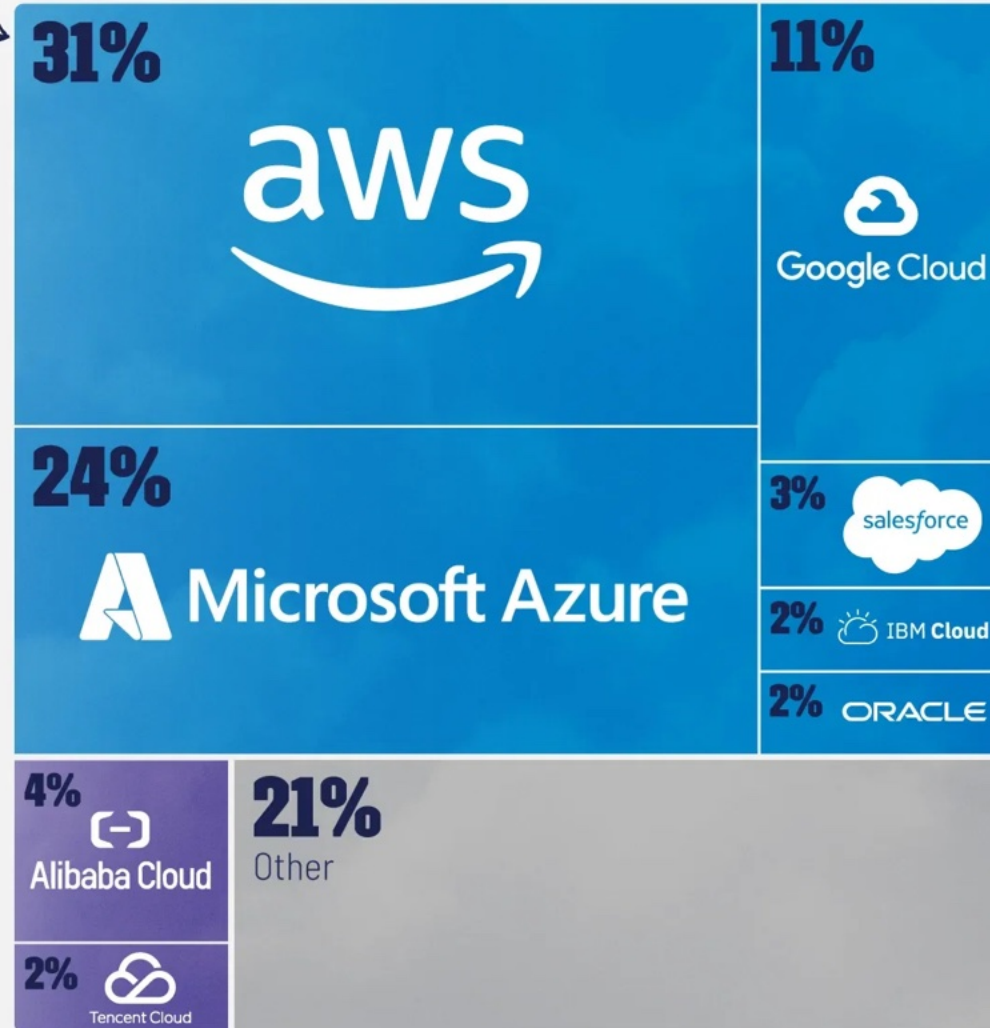
Contexto da Disciplina (cont.)

"Hiring new people with skills to design AI tools and enhancements appropriate for the organization-specific skills" - [The Future of Jobs - Report 2025, WEF.](#)

THE BIGGEST PLAYERS IN CLOUD COMPUTING

Market share as of Q4 2023

U.S. CHINA



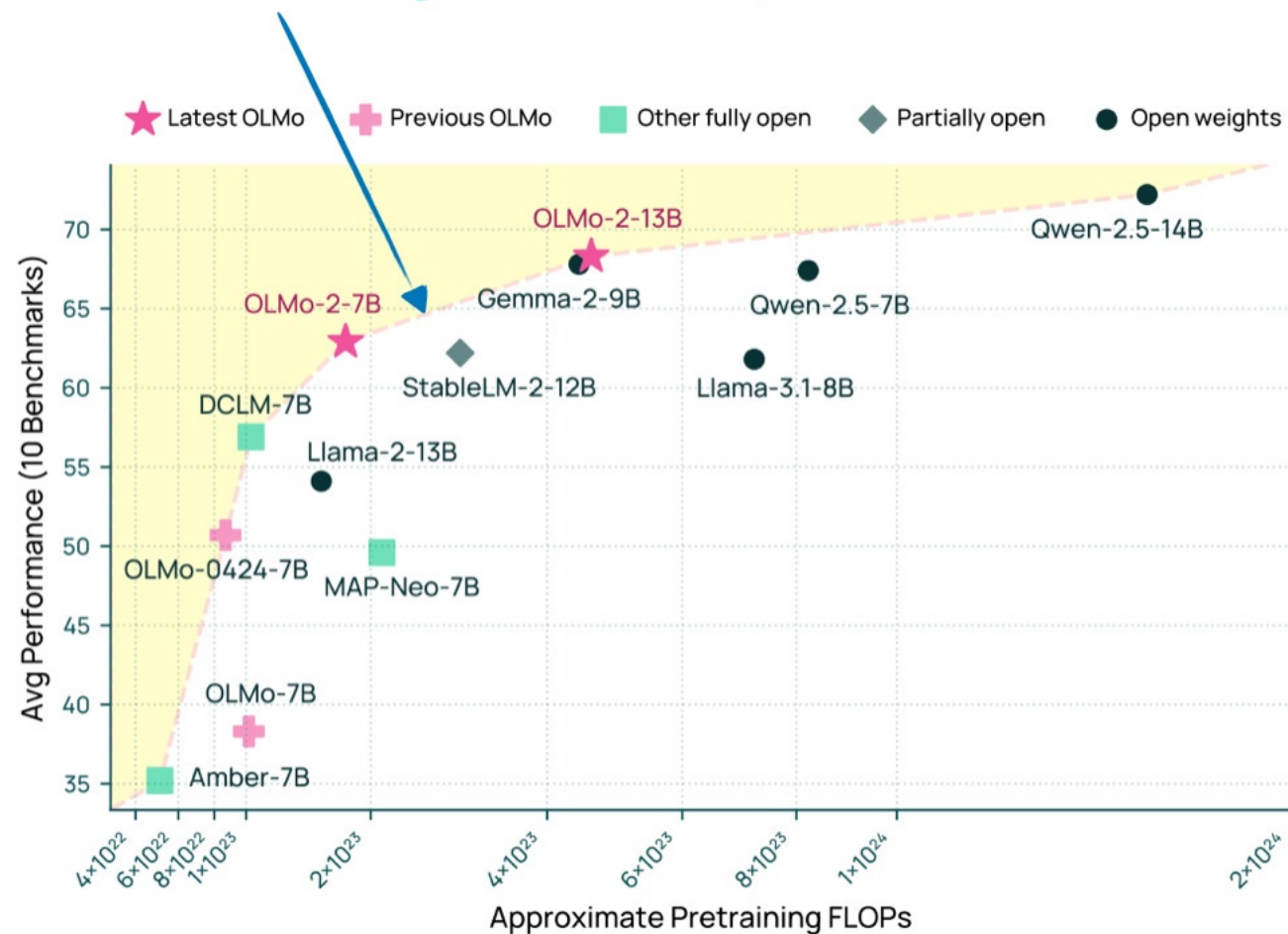
Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services.
Source: Synergy Research Group



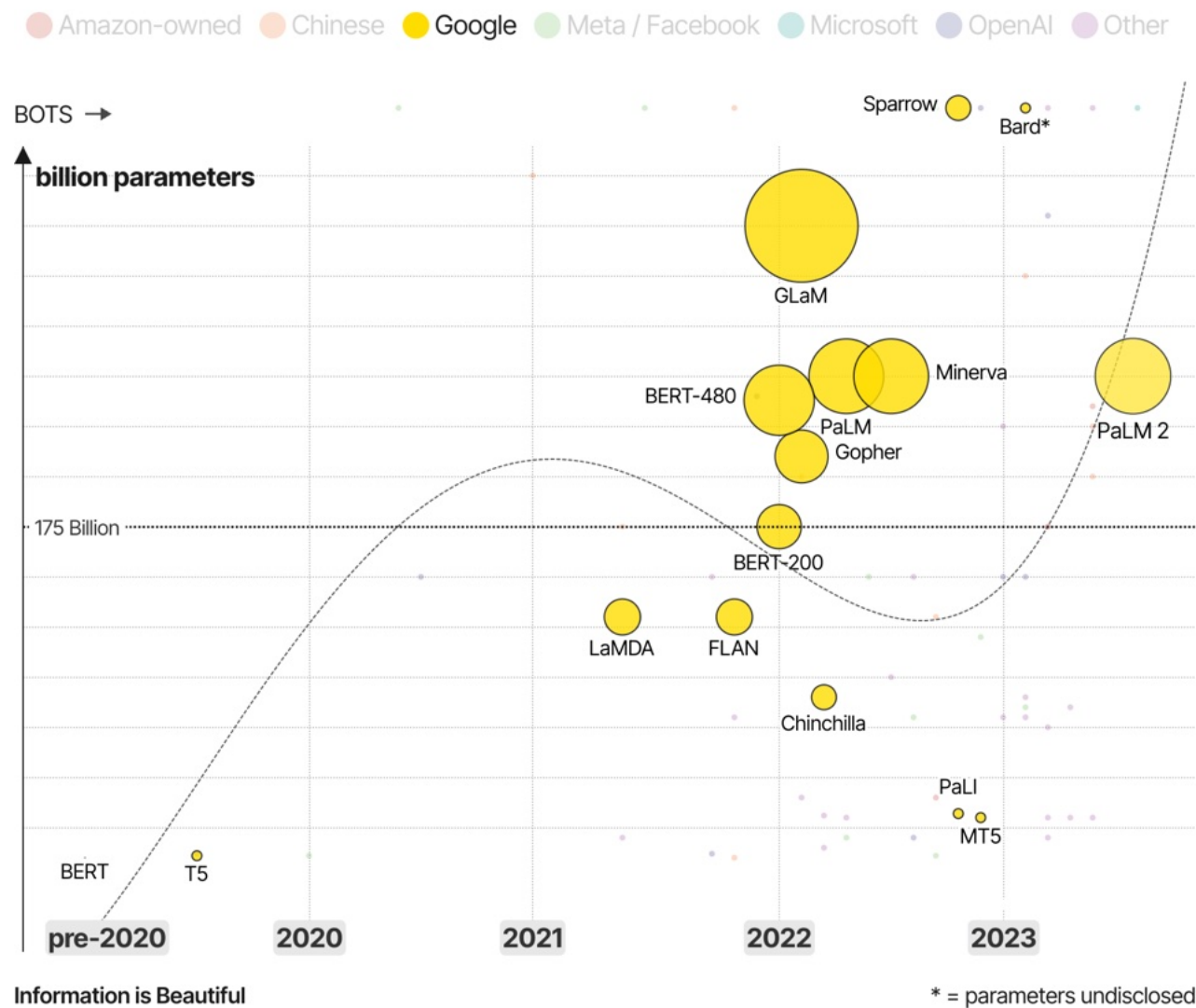
Contexto da Disciplina (cont.)

- Três maiores fornecedores de serviços de processamento de nuvem comandam 66% do mercado global.
- A Amazon, o Microsoft e o Google geraram bilhões em receitas por meio da sua infraestrutura de nuvem.
- Aumento na demanda de processamento (exemplo, IA) para os fornecedores de serviços de nuvem.

The Pareto frontier (yellow region) represents the most efficient models that achieve the highest benchmark performance for a given amount of compute (FLOPs).

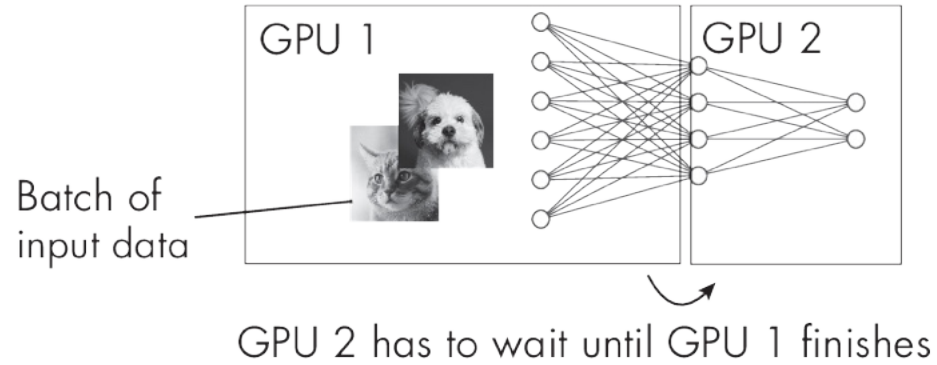


This is an annotated figure from the OLMo 2 paper, <https://arxiv.org/abs/2501.00656>.

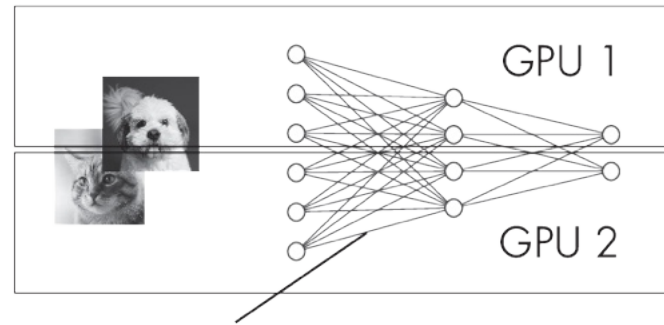


<https://informationisbeautiful.net/visualizations/the-rise-of-generative-ai-large-language-models-llms-like-chatgpt/>.

Model parallelism

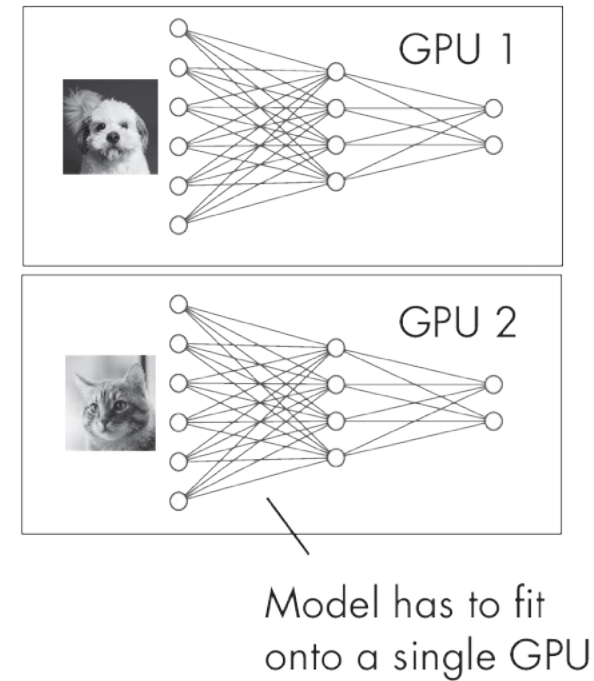


Tensor parallelism



Weights are shared across GPUs

Data parallelism



Model, data, and tensor parallelism: <https://sebastianraschka.com/books/ml-q-and-ai-chapters/ch07/>.

Dúvidas e Discussão
