

# Machine Learning / Artificial Neural Networks: Data Driven Statistical Model Approximation

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(\*) Thanks to Dr. Cem Benar

THE IMPACT OF ARTIFICIAL INTELLIGENCE IN TODAY'S SOCIETY

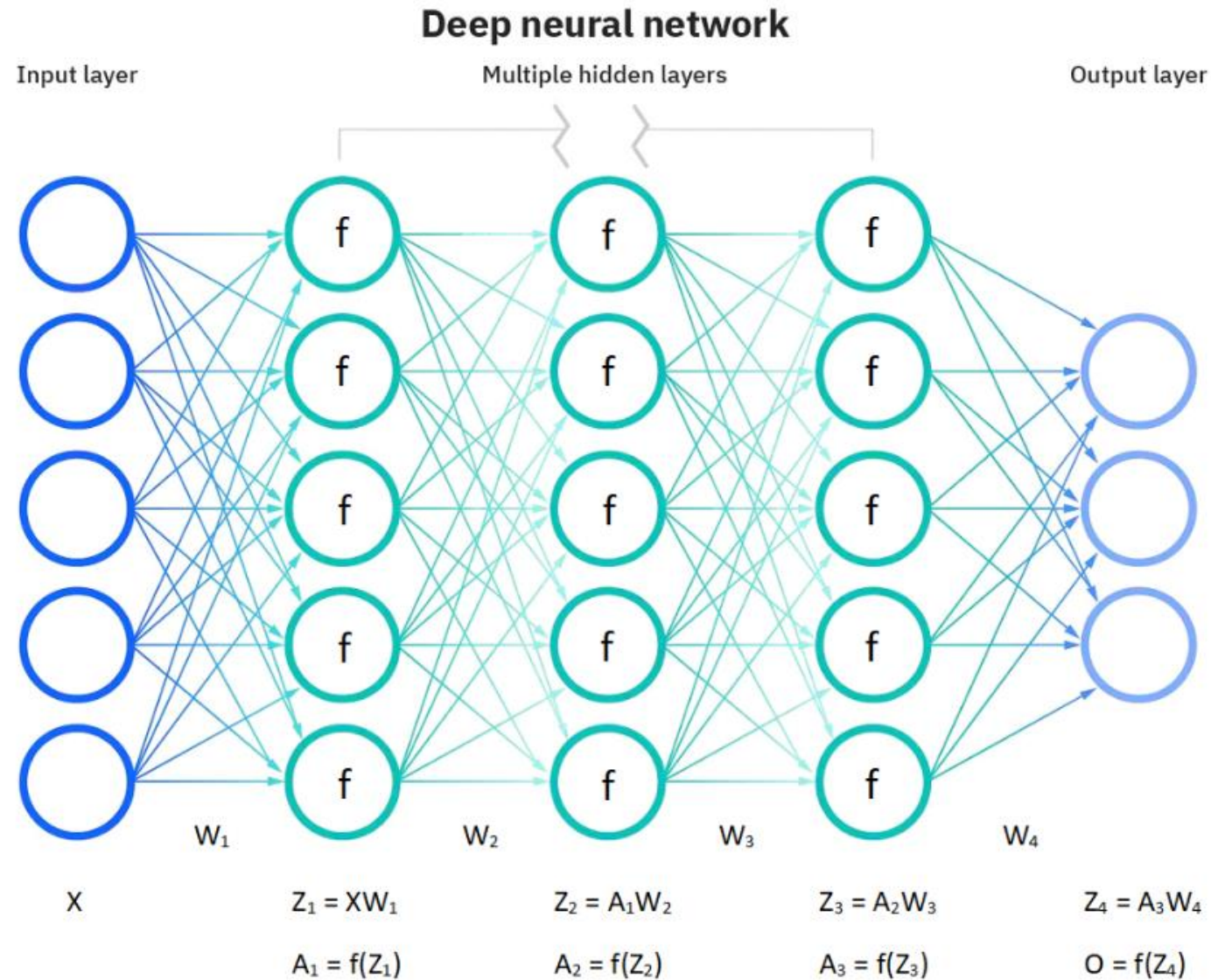
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# Deep Neural Network



# Essentials

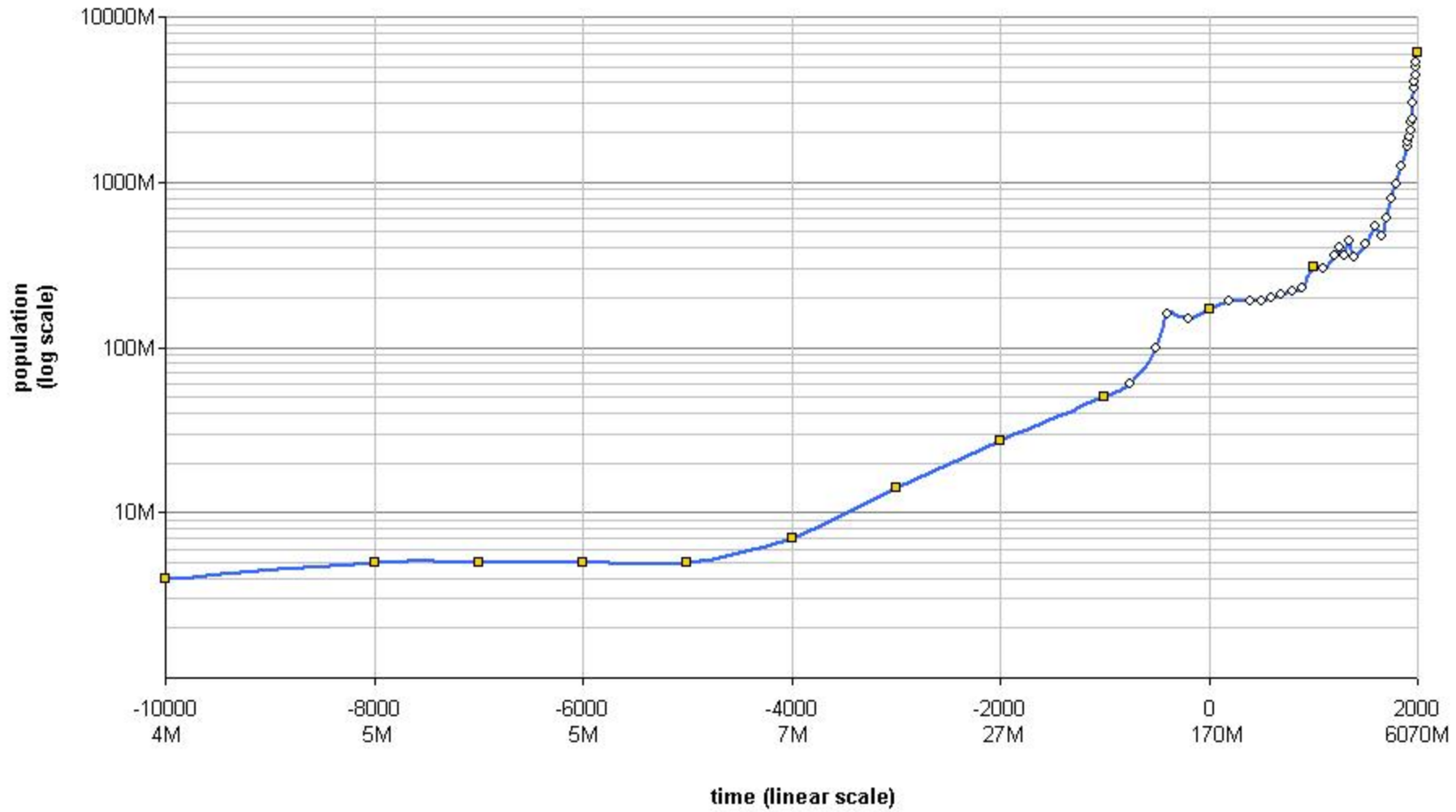
- Underdetermined system optimization problem
- Performance robustness is a concern
- Explainability of system performance is an active research area
- Data (input statistics) driven model approximation method

# Grading ChatGPT: A Personal Experience

- ChatGPT asked to solve 4 final exam problems of an Engineering Statistics course
- 3 out of 4 solved correctly at first try
- The hardest problem solved interactively
- Prompt Engineering developing as an emerging profession (\*)
- Prompt Engineering: The practice of designing inputs for AI tools that will produce optimal outputs

(\*) What is prompt engineering? McKinsey Report, 2024.



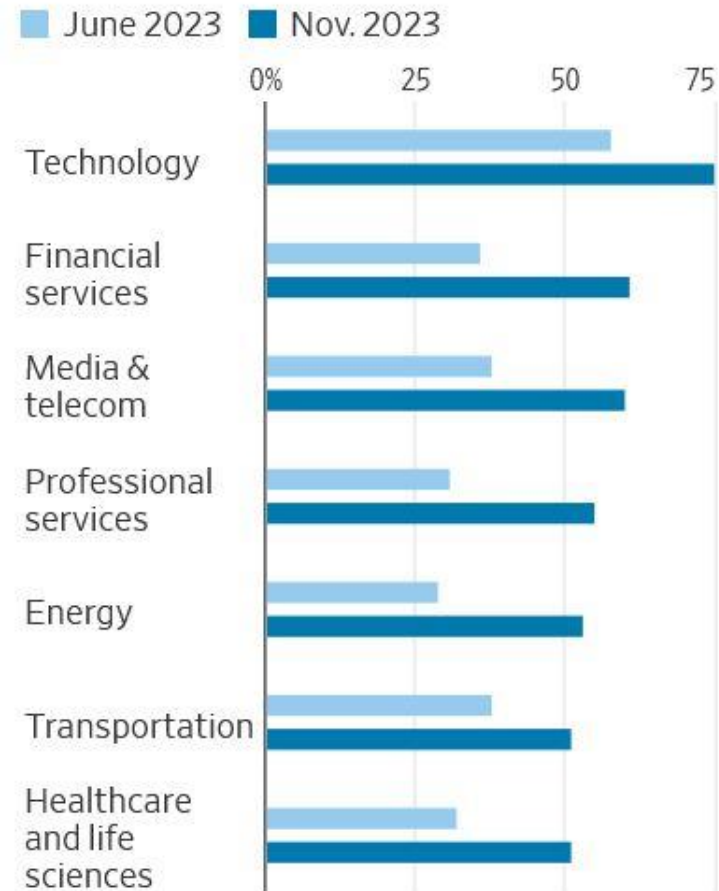


AI Is Starting to Threaten White-Collar Jobs. Few Industries Are Immune. WSJ, Feb 12, 2024.  
 (Leaders say the fast-evolving technology means many jobs might never return)



# Use of Generative AI

Share of employees who use generative AI at least once a week, by industry



Source: Oliver Wyman Forum surveys, most recent includes 15,277 participants from 16 countries conducted Oct.-Nov. 2023



# Some Remarks

- Scientific discoveries and human development will continue
- Professions are living things, they evolve and disappear in time
- Redundancy is natural although Nature loves efficiency
- Humans progressed to the level to automatically exploit redundancy to improve efficiency
- What we see is just the beginning of a new era with high ambiguity and unprecedented potentials for better lives
- The most critical step is to educate and train people and organizations with required skills to utilize these tools for inclusive growth, fairness and peaceful humanity