

# Deploying AI

## Introduction to AI Systems

```
$ echo "Data Science Institute"
```

# Introduction

# Agenda

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- What is an AI System?
- Use cases and planning an AI application
- The AI engineering Stack

## Main Points

# What is an AI System?

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- Foundation models
  - Language models
  - Self-supervision
  - From language models to foundation models
- From foundation models to AI engineering

# What Makes AI Different?

- Scale: a maximalist approach
- Foundation models are becoming capable of more tasks
  - More applications
  - More teams leverage AI's capabilities
- Foundation models require more data, compute resources, and specialized talent
  - Model as a service

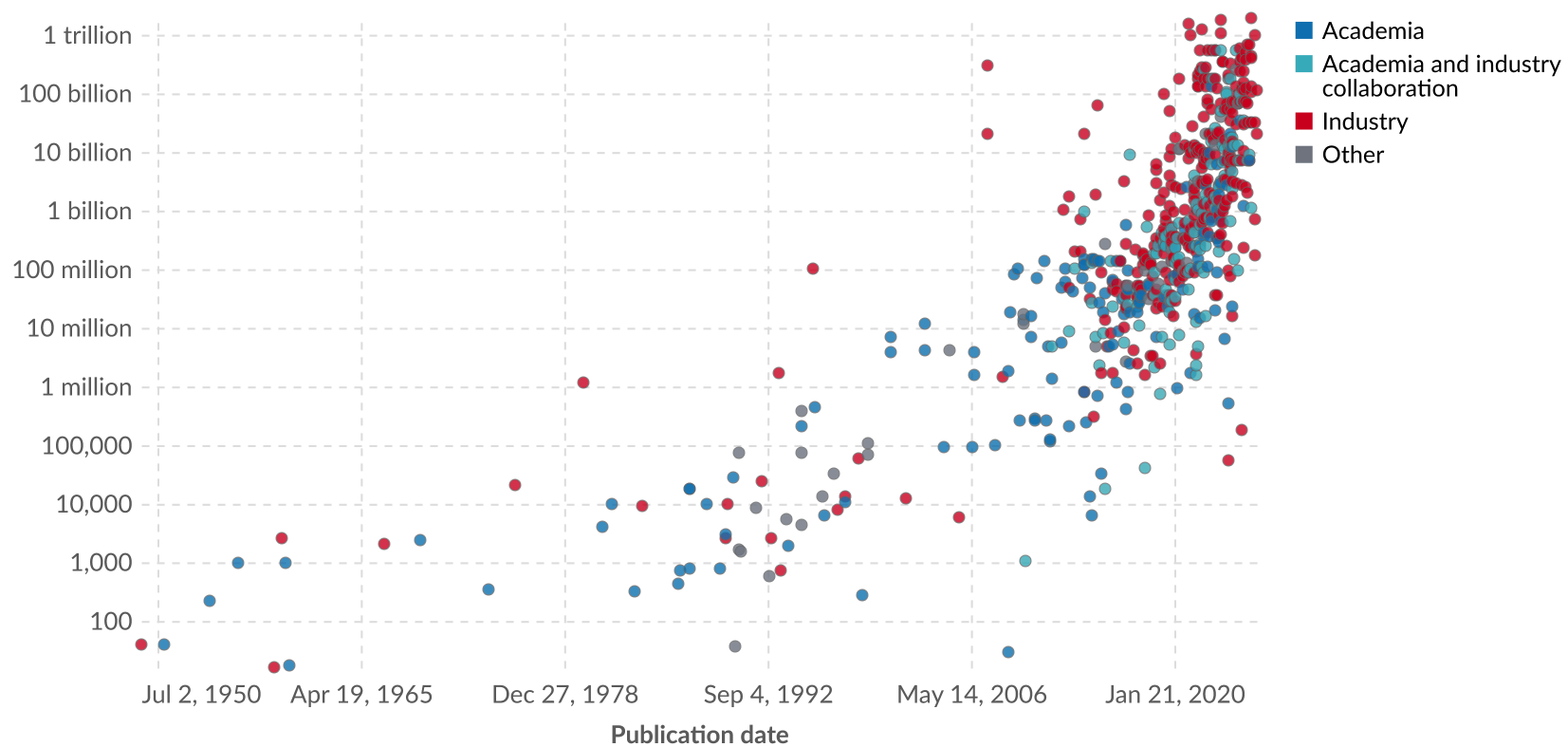


# Parameters in notable artificial intelligence systems



Parameters are variables in an AI system whose values are adjusted during training to establish how input data gets transformed into the desired output; for example, the connection weights in an artificial neural network.

Number of parameters



Data source: Epoch (2025)

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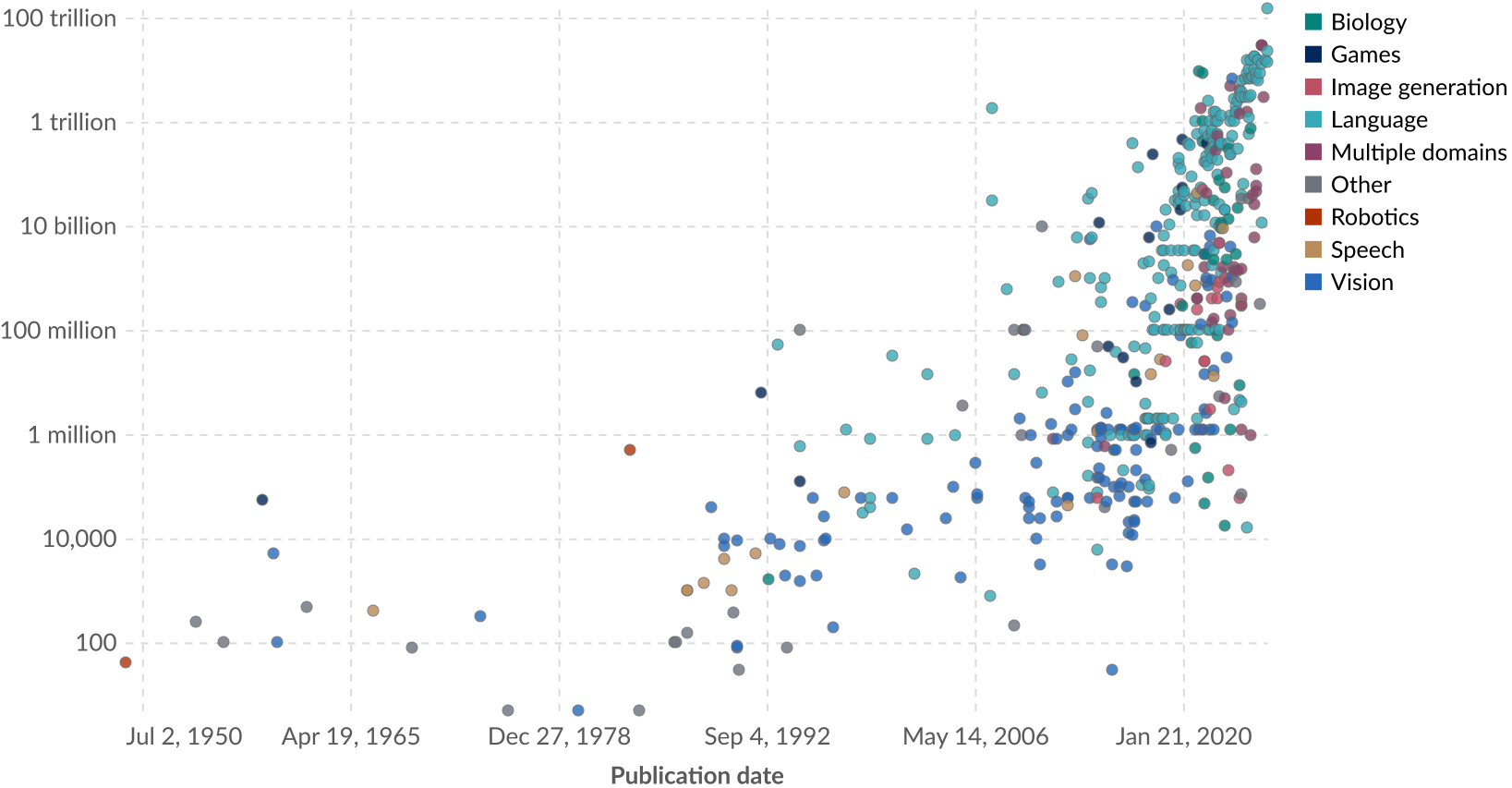
**Note:** Parameters are estimated based on published results in the AI literature and come with some uncertainty. The authors expect the estimates to be correct within a factor of 10.

# Datapoints used to train notable artificial intelligence systems



Each domain has a specific data point unit; for example, for vision it is images, for language it is words, and for games it is timesteps. This means systems can only be compared directly within the same domain.

Training datapoints



Data source: Epoch (2025)

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# Foundation model use cases

- Coding
- Image and Video Production
- Writing
- Education
- Conversational Bots
- Information Aggregation
- Data Organization
- Workflow Automation

# Planning an AI application

- Use Case Evaluation
- Setting Expectations
- Milestone Planning
- Maintenance

# The AI engineering Stack

- Three layers of the AI Stack
- AI Engineering vs ML Engineering
- AI Engineering vs Full-Stack Engineering

# References

## References

- Huyen, Chip. Designing machine learning systems. O'Reilly Media, Inc., 2022