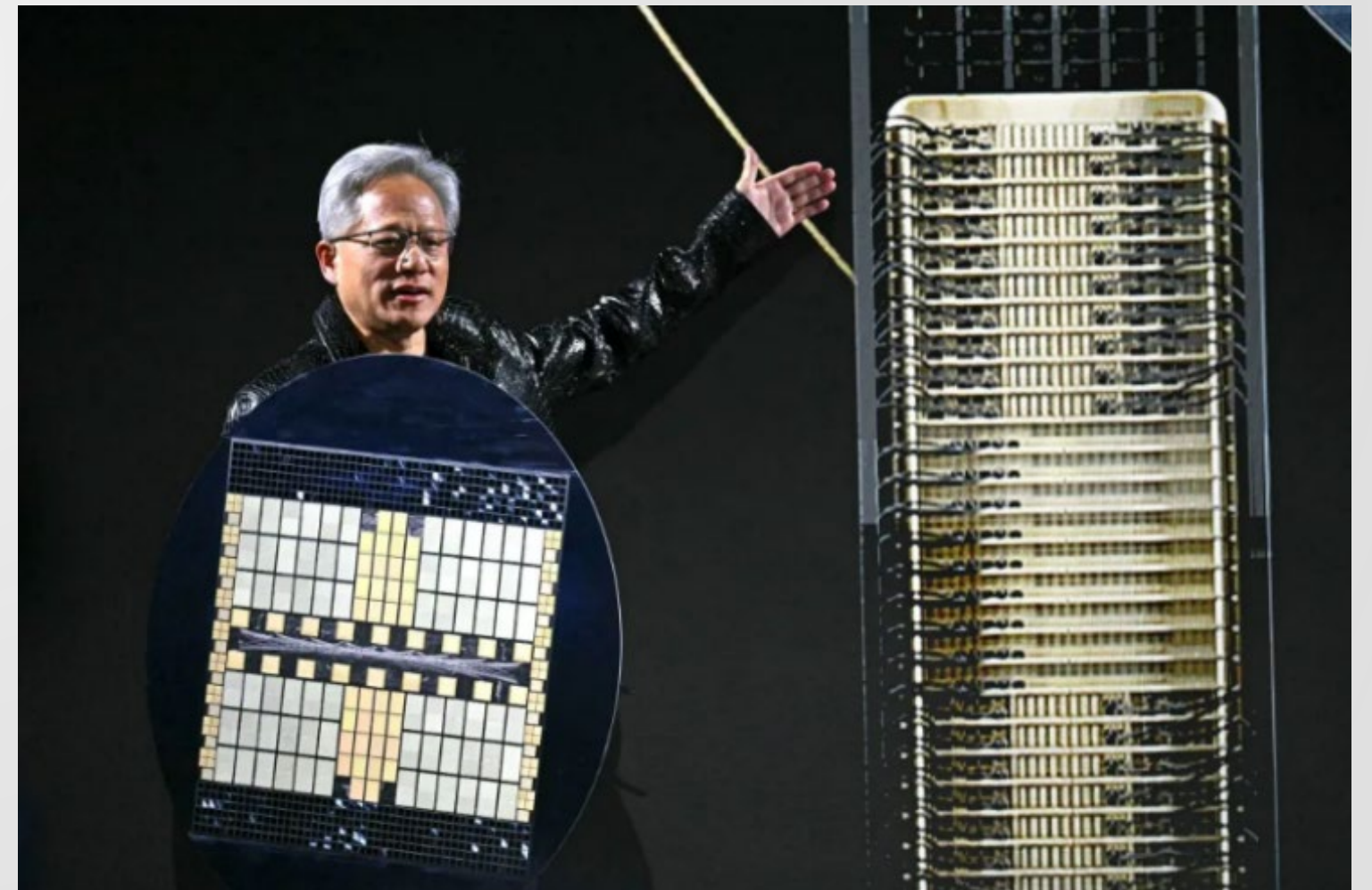
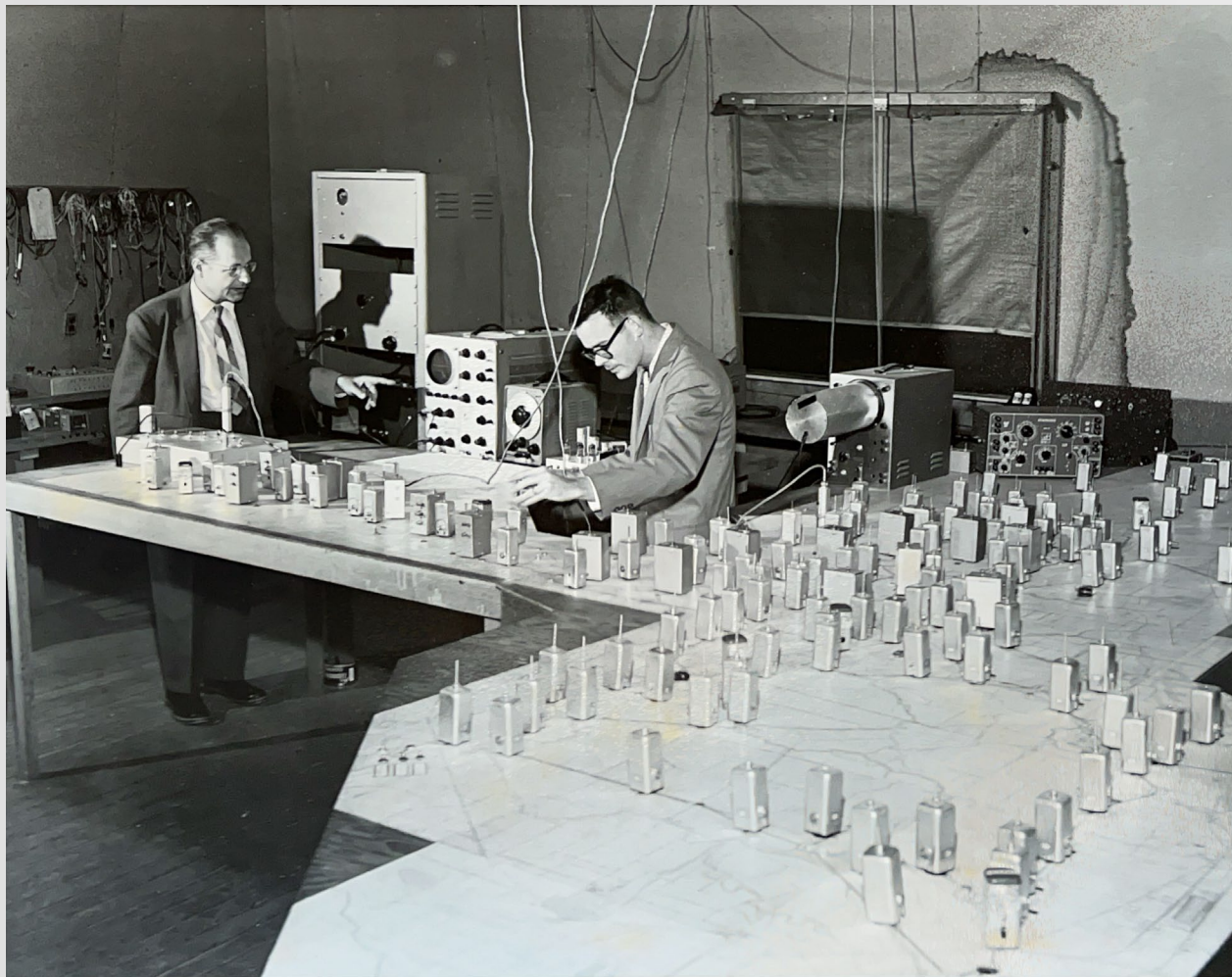


# Welcome

Machine Learning in Water and Environmental Modeling Workshop  
May 2, 2025

Nicky Sandhu

Manager, DWR Modeling Support Office/Delta Modeling Section



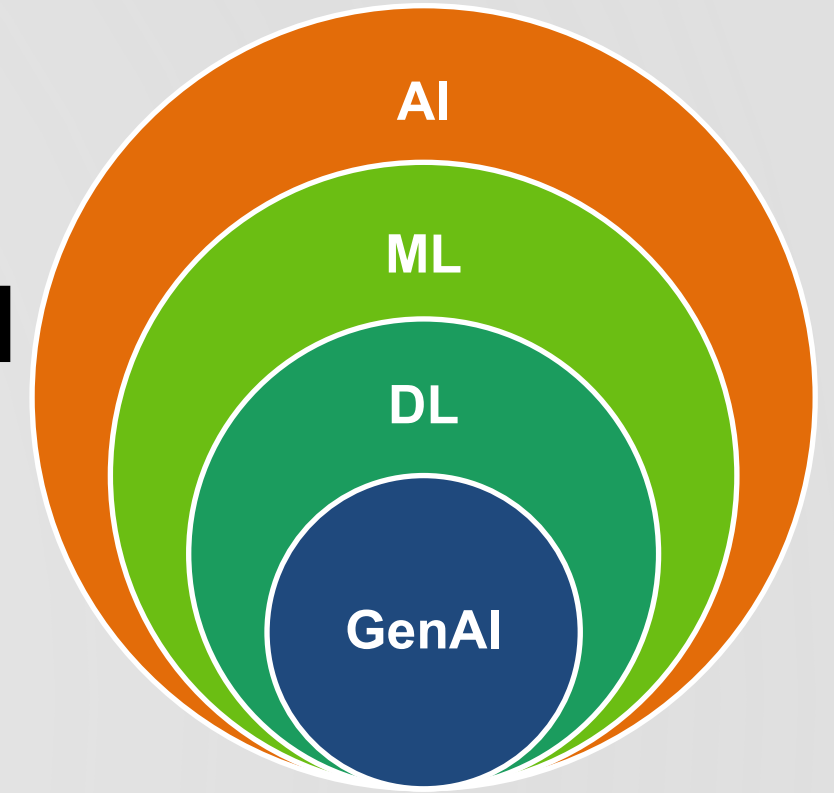
CALIFORNIA DEPARTMENT OF  
WATER RESOURCES

# What is Machine Learning?

Machine learning (ML) is **an application of artificial intelligence (AI)** that enables systems to **learn** and improve from data **without being explicitly programmed**

## Machine Learning for Water Resources Management

- Trained on field observations or model data
- Runs in a few seconds
- Can be used to explore a wide variety of conditions
- ML has potential for a wide variety of water resources applications



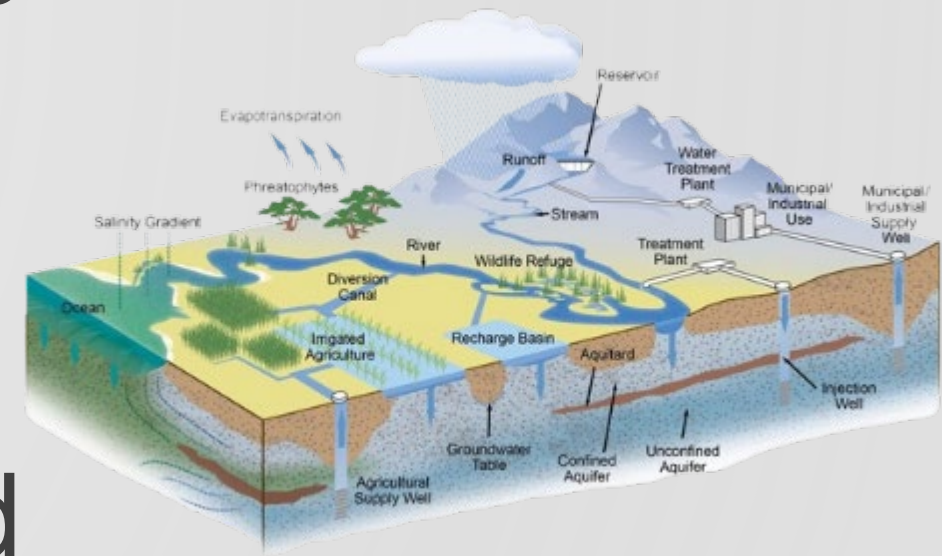
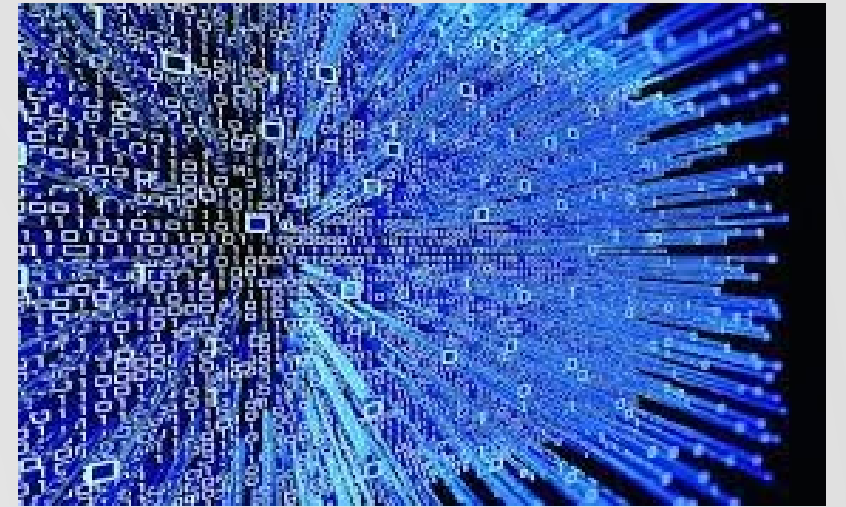
DL: Deep Learning  
GenAI: Generative AI





# What can ML help with?

- Leverage large amounts of data
  - Identify patterns and make predictions
- Leverage conceptual models
  - By constraining the machine learning models
  - By emulating slower physical models
- Augment scientific models
  - By detecting the patterns that are unresolved
  - By computing orders of magnitudes faster



# A community of ML users

## ➤ Focused on water and environmental issues

- Collaboration
- Sharing
- Partnerships
- Regular Engagement



Image created by ChatGPT

