AIBridge

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Who We are

A Little Bit about Myself

- Ph.D., Dept. of EE, Purdue University
- Professor, CS, UC Davis, 2003-
- MSRA, 2012- 2014

- Computer networks
- Machine learning **algorithm development**
- ML **applications** in food systems, human and animal health

Tell me about yourself

- Program
- Specialty
- ML background
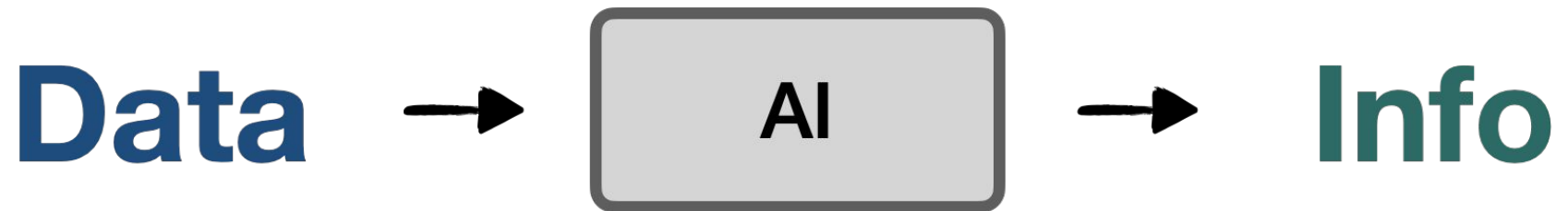- What is your goal here?

AIBridge

- Bridge the gap between AI and [your choice]

- First camp at UC Davis in June 2022

- Acquire basics: Python, basic ML algorithms, toolbox usage

- Enable further learning

- Enable easier communications and collaborations

- Sponsor: AIFS - NSF/USDA AI Institute

for Next Generation Food Systems

WHAT IS AI/ML?

AI vs. ML

What can AI do

Data → AI → Info

Machine Learning

- Arthur Samuel (1959). Machine Learning: Field of study that gives computers the ability to learn without being explicitly programmed.

- Tom Mitchell (1998) Well-posed Learning Problem: A computer program is said to learn from experience E with respect to some task T and some performance measure P, if its performance on T, as measured by P, improves with experience E.
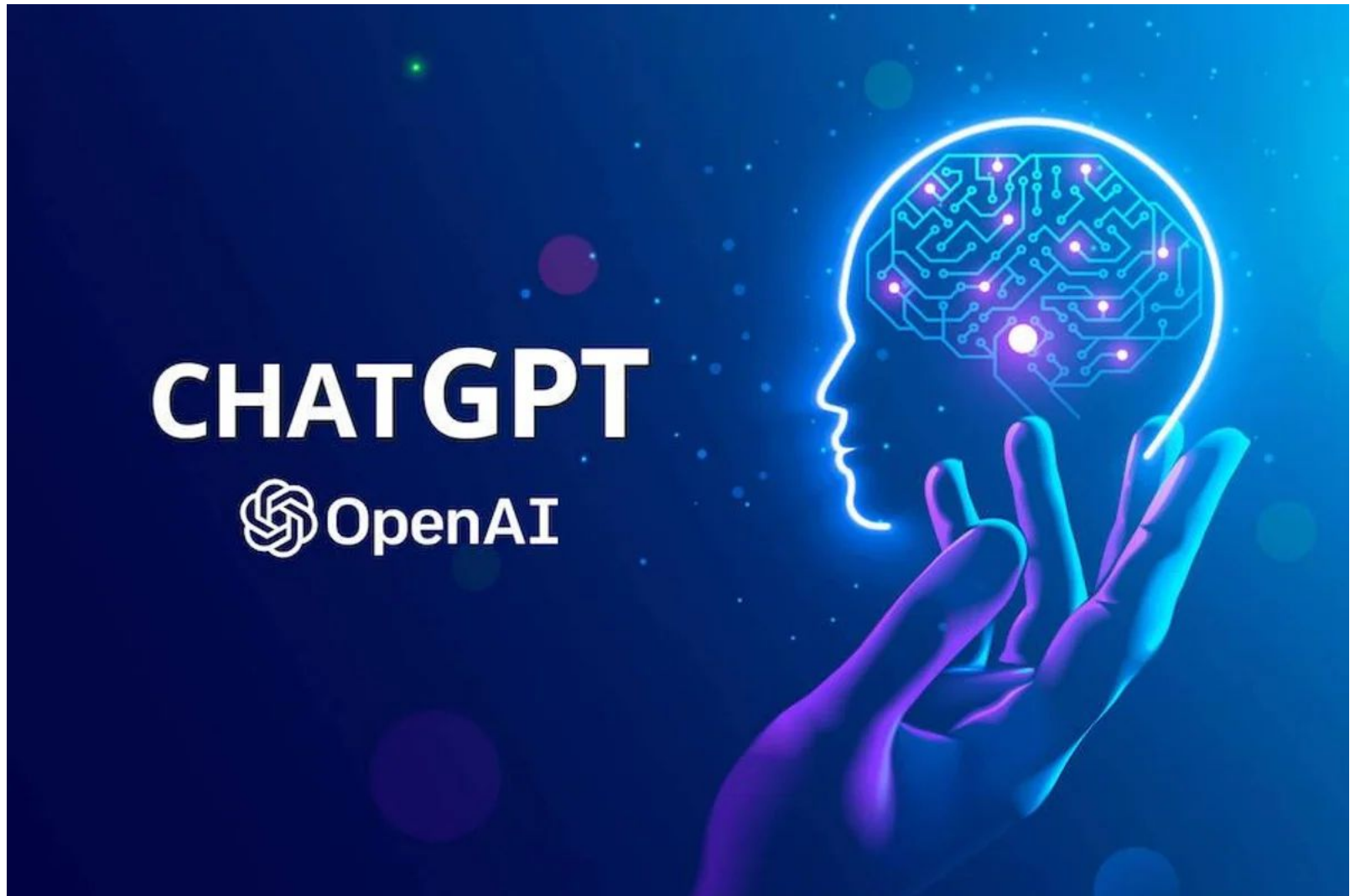
A High-Level View

- Labeled data
- Direct feedback
- Predict outcome/future

Supervised

Learning

Unsupervised

Reinforcement

- No labels
- No feedback
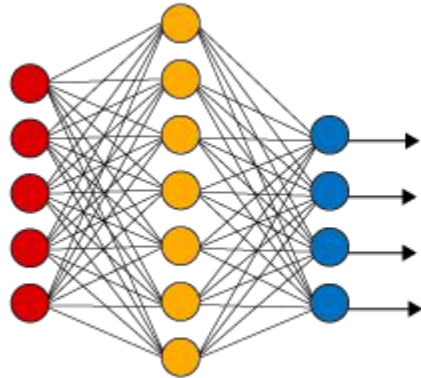- "Find hidden structure"

- Decision process
- Reward system
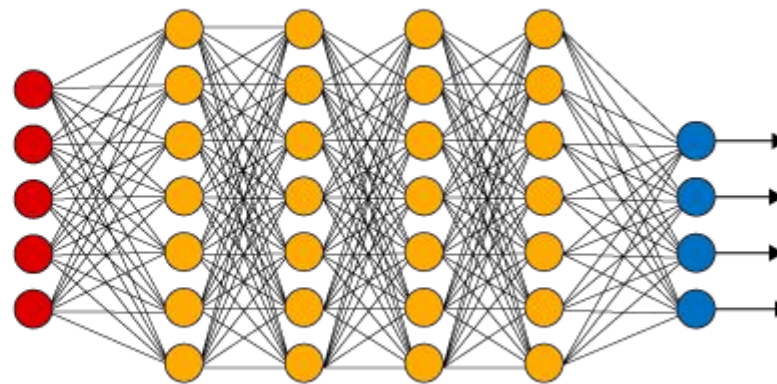- Learn series of actions

Deep Learning

Deep Learning

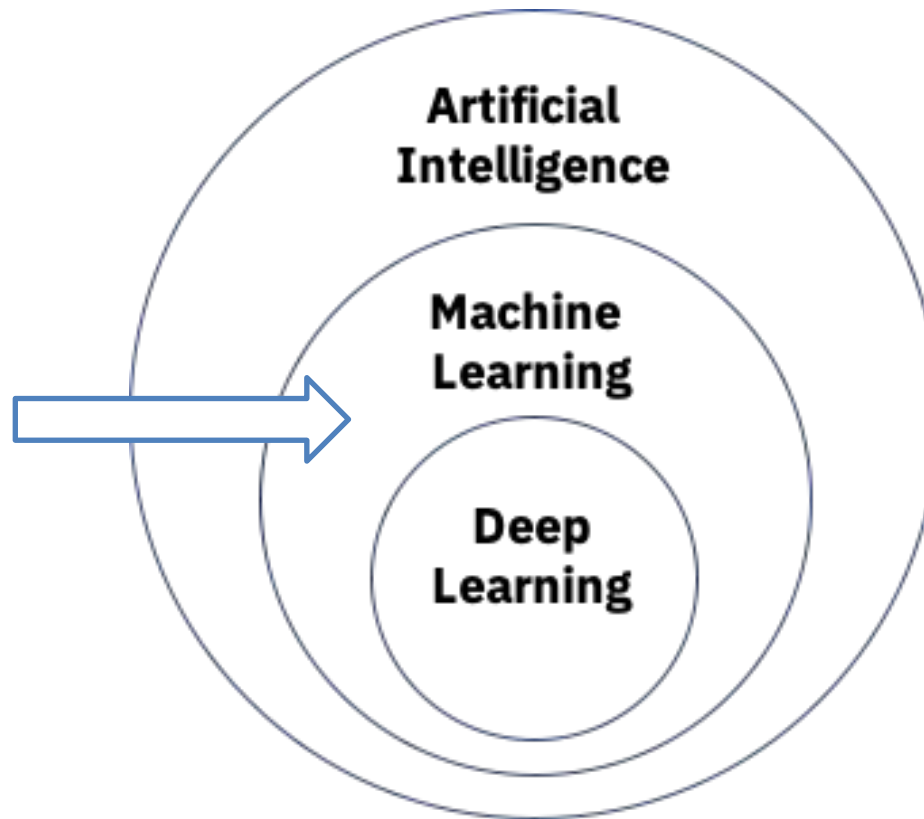Simple Neural Network • Deep Learning Neural Network — Input Layer, Hidden Layer, Output Layer

Our focus

Structure

- Lecture + lab
  - **Q + Lab** are the best part of this camp
- Learning by **doing**
  - Iris dataset
  - Wine dataset
- Feedback from you (pace, clarity, etc.)

- Goal: Go through the process of completing basic ML steps

Typical Practices in ML/Programming

- Find a sample
- Read through it
- Try it
- Modify it
- Google it

- Basic skills to do these and practice them

Schedule

- Python: 1.5 days
  - Focus on what we need to use the ScikitLearn toolbox
- ML: 2.5 days
  - Focus on intuitions
  - Usage of ScikitLearn toolbox

Best Practices

- Ask questions
- Type along during lectures
- Make good use of labs – we are here to help
- Provide feedback
- ChatGPT (with verification)

Resources

- AIBridge website: www.aibridge.us
- Python: https://www.w3schools.com/python/
- Sklearn user guide: https://scikit-learn.org/stable/user_guide.html
- Google