Deep Learning Software
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Security and Fairness of Deep Learning
Today

• Homework 1 is out; due February 5
• Setup with Anaconda and Jupyter Notebook
• Deep learning software
  • Numpy
  • TensorFlow
  • Keras
Anaconda

• A package management system for Python
• Allows you to create virtual environments, each with its own set of packages

conda install <package>
Jupyter Notebook

- A web application where you can code interactively, keep track of output, plot figures, and write markdown and LaTeX
- Allows for remote interaction when you are working on the cloud
- You will be using it for HW1
Demo - Setup
Deep Learning Software

- Caffe
- Chainer
- DL4J
- KERAS
- Microsoft CNTK
- MatConvNet
- MINERVA
- MXNet
- Purine
- TensorFlow
- Theano
- Torch
Why Do We Use Deep Learning Software?

• No need to reinvent the wheel
  • A lot of work has gone into making DL software highly optimized
Today

• NumPy
  • Not only for deep learning
  • General purpose Python library for efficiently working with vectors, matrices, tensors

• TensorFlow
  • Deep learning library

• Keras
  • High-level deep learning framework for building and training neural networks
  • Built on top of other libraries, e.g., TensorFlow
Demo - NumPy
Demo - TensorFlow
Demo - Keras