

## 13. Networks

### Last time

- Neurons as classifiers
- Neural networks
- Stochastic gradient descent

### Goals for today

- Connectivity: Networks / graphs
- Shortest path
- Random walks

# Modelling connectivity

- Real-world systems often depend on **connectivity**:
  - Travel: Massachusetts road network; world airports
  - Social network: Alumni of MIT and their friendships (or not)
  - Network of interacting genes turning one another on and off
- Model as **networks** / **graphs**

## Networks generalize themes of course

- Dynamics of genetic networks
- Contact network: trace people / animals using GPS as they move
- How does an epidemic spread via plane travel
- Random walk on network: effects of altered gene
- How long until two of them meet?

## What is a network?