

# Lecture 25: Deep neural networks continued

Professor Ilias Bilonis

## Advanced regularization techniques

# Advanced techniques

- **Dropout.**  
*randomly deactivates neurons, adds marginalization power*
- **Multitask learning.**  
*trains different components simultaneously*
- **Ensemble methods.**  
*build many different models & use all of them to make predictions and then average them*
- **Adversarial training.**  
*use complicated transformations that still leave the output invariant*
- **Bayesian approaches.**  
*open topic of current research efforts*

