

# Machine Learning & Deep Learning

Summary

# Machine Learning

# Main Topics

- Learning Algorithms
  - Task / Performance / Experience / Generalization
- Models and Capacity
  - Regularization / Validation / Hyperparameters
- Supervised & Unsupervised Learning
  - Regression / PCA
- Machine Learning in Practice
  - Methodology / Manifold Learning / Challenges

# Deep Learning

# Main Topics

- Deep Learning Methods
  - Representation Learning / Multiple Levels / Composition
- Neural Networks (MLPs)
  - Neurons / Networks / Layers (width & depth)
- Supervised Learning
  - Optimization / Gradient Descent / Back Propagation / Learning Rate, etc
- Methodology
  - Training / Validation / Testing
- Representation and Structure
  - Manifold Learning / Embeddings / Sequences / Encoder+Decoder / Recurrent NN