Neural Networks: Practical Hints

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- Use training-, validation-, and test set
  - ☐ Train for large number of epochs/updates and compute validation score/loss every n updates
  - ☐ Safe model with the best validation score, use it as final model
  - ☐ Hyperparameter-selection via validation score
  - ☐ Evaluate final model on test set to get the risk estimate
- First try to overfit on training data, then apply regularization to reduce overfitting and improve generalization
- Plot training loss, validation score (every n updates), and regularization loss to visualize overfitting
- Deeper networks (3+ layers) need batchnorm or selu units
- Use data augmentation (input noise, dropout)
- Encode inputs in a way suitable for network (normalize, encode large value ranges in intervals as different input features)