

# OEAW AI SUMMER SCHOOL

## Neural Networks: Practical Hints



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# Neural Networks: Practical Hints

- Use training-, validation-, and test set
  - Train for large number of epochs/updates and compute validation score/loss every  $n$  updates
  - Save 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)