Université Paris Cité

Machine learning for NLP 2

ECTS
6 crédits

Présentation

DESCRIPTION

SL5BE021

The course provides the fundamental concepts of supervised classification via deep learning methods, with typical examples in NLP.

1. General concepts for supervised classification

   * methodology
   * evaluation metrics

2. A first classifier : k-NN

3. Linear and log-linear models

   * linear separability
   * prediction with a (log-)linear classifier
   * perceptron learning algorithm
   * kernel methods
   * logistic regression

4. Extension to Multi-layer perceptrons

   * non linearity
   * fully connected feed-forward neural network
   * universal approximation theorem

5. Learning as loss minimization

   * usual loss functions
   * stochastic gradient descent
   * backpropagation algorithm

6. vectorial representations

   * word embeddings as dense features
   * word embeddings learning

Lab sessions will illustrate the course, introducing in particular:

   * tensor manipulation in numpy / pytorch
   * sklearn and pytorch libraries

Bibliography

   * Hal Daumé III : An introduction to Machine Learning, http://ciml.info/
   * "Neural Network Methods in Natural Language Processing", 2016, Morgan & Claypool
       * preliminary version available here : A primer on neural network models for natural language processing (http://u.cs.biu.ac.il/~yogo/nnlp.pdf)
   * Goodfellow, Bengio & Courville "Deep Learning", MIT Press, 2016   http://www.deeplearningbook.org/

Pour en savoir plus, rendez-vous sur > u-paris.fr/choisir-sa-formation