

Lecture “Pattern Recognition and Neural Networks”

WS 2010/11

Type	Schedule / Room	Start	Instructor
V4/3	(für Diplom, Master SSE und Master MI/ für Bachelor) Mo-Fr 10 ⁰⁰ –11 ³⁰ 6124 Mo-Fr 14 ⁰⁰ –15 ³⁰ 6124	24.02.2011 End 16.03.2011	Prof. Dr.–Ing. H. Ney, Dr.rer.nat. R. Schlüter
Ü2		in SS 2011	Wiesler, Lehnen

Content:

The lecture gives an introduction into statistical pattern recognition and discusses also artificial neural networks and their relation to statistical classifiers. Main topics are:

- statistical basics
- training and learning
- model-free approaches
- artificial neural networks and discriminative training
- error integrals: properties and estimation
- mixture densities and cluster analysis
- EM algorithm and hidden markov models
- feature extractions and linear transformations

Assignment:

Applied Computer Science or Field of Specialization.

Requirements:

knowledge on probability calculus / statistics

Language of instruction:

Deutsch/English

References:

- R. O. Duda, P. E. Hart, D. G. Stork: “Pattern Classification” 2nd ed., J. Wiley & Sons, New York, NY, 2001.
- K. Fukunaga: “Introduction to Statistical Pattern Recognition”, Academic Press, San Diego, CA, 1990.
- B. D. Ripley: “Pattern Recognition and Neural Networks”, Cambridge University Press, Cambridge, UK, 1996.
- C. M. Bishop: “Neural Networks for Pattern Recognition”, Oxford University Press, Oxford, UK, 1995.
- H. A. Bourlard, N. Morgan: “Connectionist Speech Recognition”, Kluwer Academic Publishers, Boston, MA, 1994.