

# Lecture “Pattern Recognition and Neural Networks”

## WS 2009/10

Type	Schedule / Room	Start	Instructor
V4/3	( für Diplom, Master SSE und Master MI/ für Bachelor) Mo 10 <sup>00</sup> –11 <sup>30</sup> AH 6 Mi 9 <sup>30</sup> –11 <sup>00</sup> AH 5	19.10.	Prof. Dr.–Ing. H. Ney, Dr.rer.nat. R. Schlüter
Ü2	Mi 12 <sup>15</sup> –13 <sup>45</sup> AH 6	21.10.	

### 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.