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)		Prof. Dr.–Ing. H. Ney, Dr.rer.nat. R. Schlüter
	Mo 10^{00}–11^{30} AH 6	19.10.	
	Mi 9^{30}–11^{00} AH 5		
Ü2	Mi 12^{15}–13^{45} 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.