Hacettepe University
Department of Electrical and Electronics Engineering

ELE 785- Neural Networks
Spring Semester 2024

Instructors : Dr. Atila Yilmaz
Lectures : Monday 13:40-16:30
Textbooks : Haykin, S., "Neural Networks, A Comprehensive Foundation", Prentice Hall,
or "Neural Networks And Learning Machines", Pearson

CONTENTS

1) Introduction to Neural Networks

2) Fundamental Concepts – Neuron Models
Mc Culloch Pitts Model
Rosenblatt's Perceptron
Learning Paradigms

3) Regression and Optimization – Least Square Estimation
Recursive Least Square Estimation
Derivative Based Optimization

4) Single Layer Perceptrons

5) Multilayer Perceptrons

6) Self Organizing Systems – Hebbian Lerning
Kohonen Map

7) Dynamic Networks - Time Delay Neural Networks
Recurrent Neural Networks

8) Radial Basis Networks

References

1) Yu Hen Hu, Jenq Neng Huang, Handbook of Neural Network Signal Processing, CRC Press, 2002.
2) Jang, J.S.R., Sun T.S., Mizutani, E., "Neuro-Fuzzy and Soft Computing", Prentice Hall, 1997
3) Lau C., edt., " Neural Networks, Theoretical Foundations and Analysis", IEEE Press, 1992.
4) Freeman J.A., "Neural Networks Algorithms, Applications, and Programming Techniques", Addison Wesley, 1991.
5) Cichocki A., Unbehauen R. "Neural Networks for Optimization and Signal Processing", Wiley,1993.
6) Shalkoff, R.J., "Artificial neural Networks", Mc Graw Hill, 1997.
7) Haykin. S., " Adaptive Filter Theory", Prentice Hall, 1996.