



**Open your mind. LUT.**

Lappeenranta **University of Technology**

LUT Machine Vision and Pattern Recognition

2018-09-07

BM40A0701 Pattern Recognition

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### Exercise 2: Introduction to Pattern Recognition

1. Supervised *vs.* unsupervised learning (1 point): Explain the difference between supervised and unsupervised learning. Give example applications for both approaches and describe how the learning approach is used in each case.
2. Computing the variance (1 point): Program a Matlab function for computing the variance of a vector (result: scalar) or matrix (result: a row vector containing the variances of each column). Do not directly use any Matlab function such as `var()` for the purpose.
3. Pattern recognition applications (1 point): List at least five applications of pattern recognition. What kind of quantitative measurements could be used to collect relevant information in each of the applications? Which would be useful features for characterising the target(s)? What kind of methods could be used to solve each recognition task, and how the methods should be selected?