# Introduction

1. Classification algorithms

* Most classification algorithms:
  + Minimize the error rate 🡪 % of incorrect predictions of classes
  + Seek to maximize accuracy
  + Assume that all misclassification errors cost equally

1. The cost in real-world applications

* The cost of misclassifying observations of different classes is not the same
* Misclassification a sick person as healthy is more costly than otherwise
* The patient is at risk if not treated early / properly
* Misclassifying a fraud claim costs more than wrongly classifying a legitimate claim as fraudulent

1. Cost sensitive learning

* CSL is a type of learning that takes (misclassification) costs into account
* Goal: minimize the total misclassification cost
* CSL treats different misclassification differently

1. Cost matrix

* : cost of assigning an observation of class to class
* and : cost of correct classification, usually 0
* and : cost of FN and FP, respectively, usually 1

A screenshot of a computer

AI-generated content may be incorrect.

* Standard ML models use a 0-1 loss function, which assigns a cost of 0 to a correctly classified observation and cost 1 to an incorrectly classified one
* CSL applies different costs to different classification errors

A screenshot of a graph

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