



Hyrje në shkencën e të dhënave

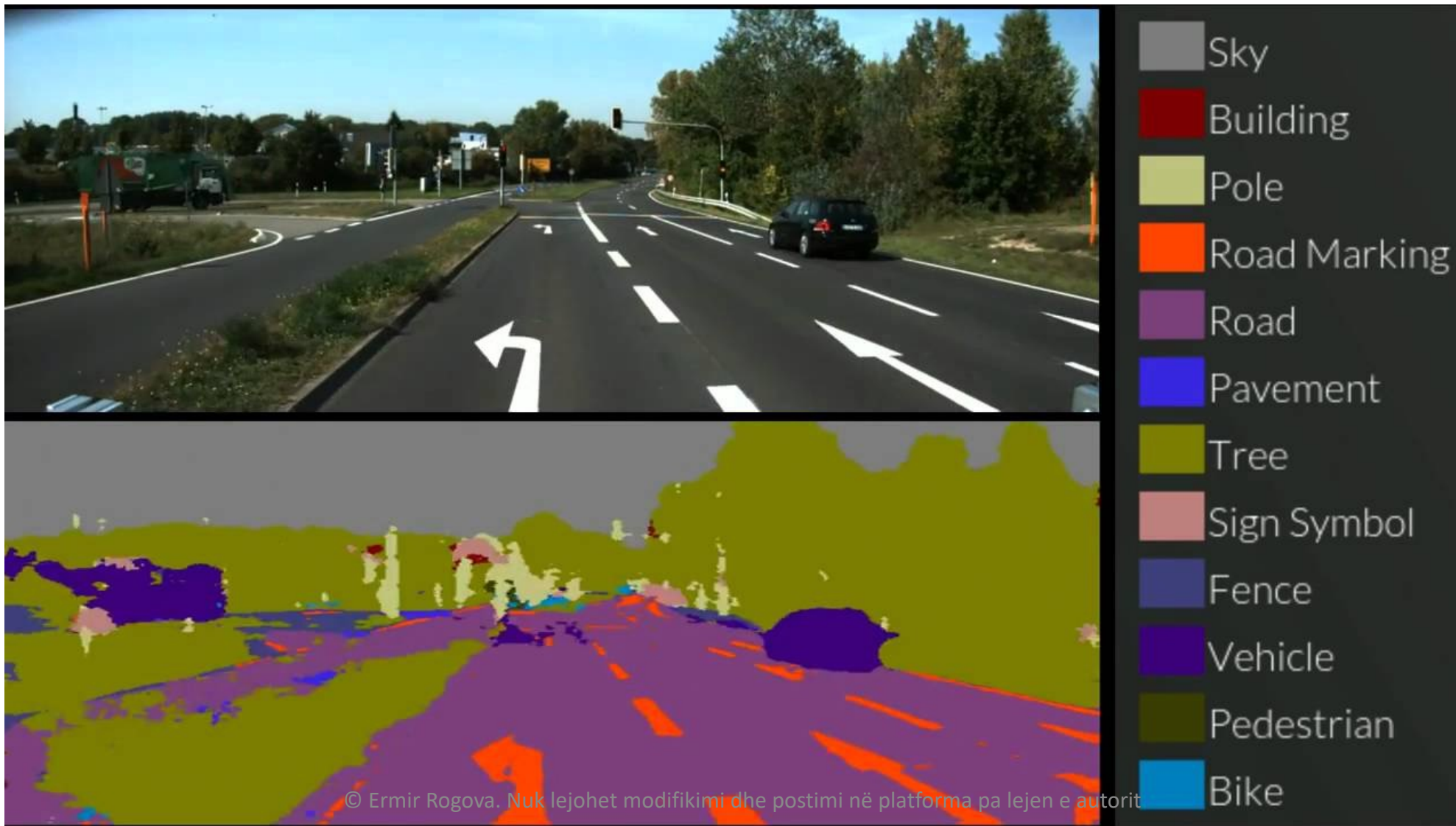
Pjesa 8 – Hyrje në Machine Learning dhe Regresioni

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What is machine learning?

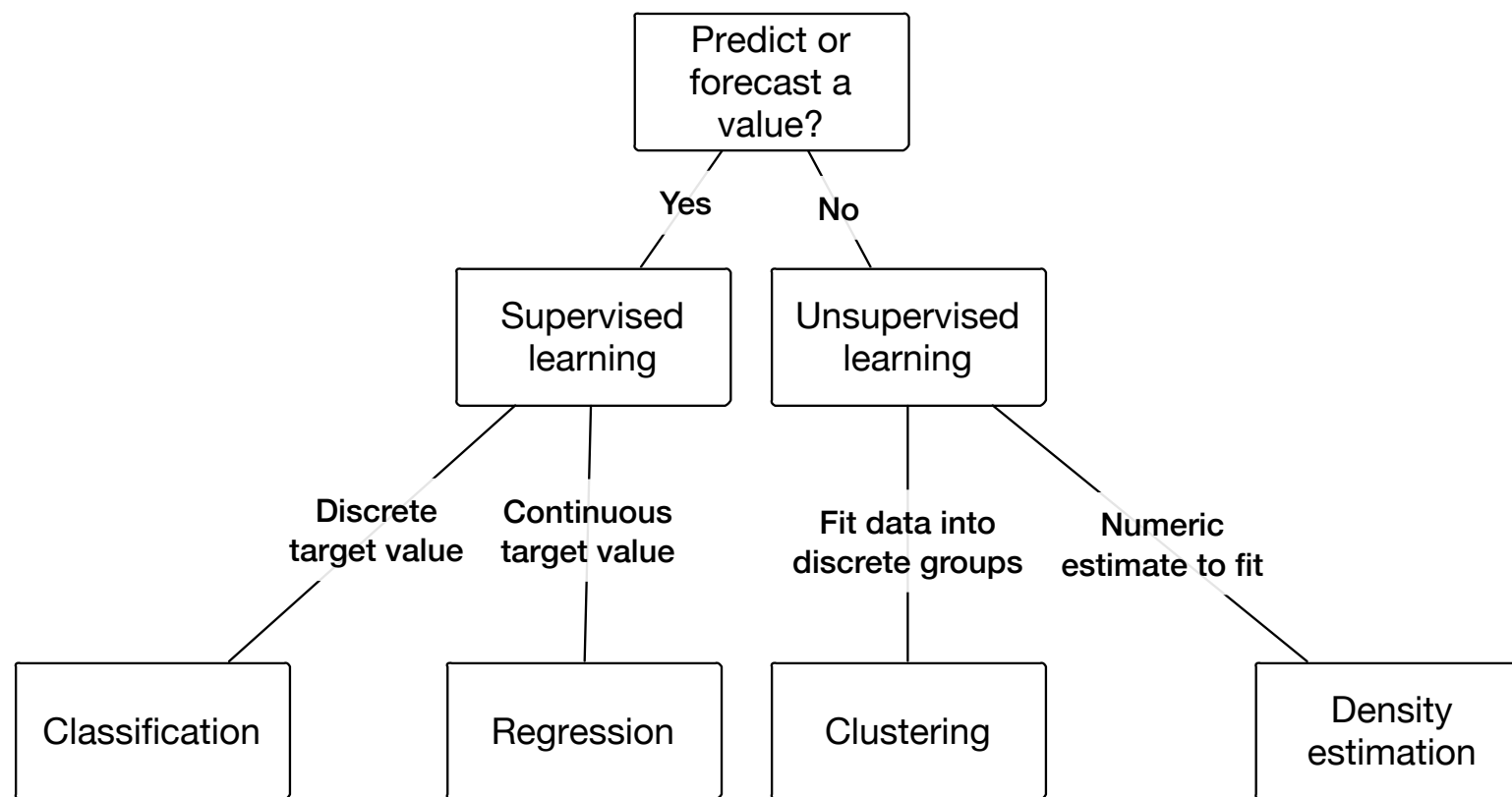
- Tom Mitchell: “A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P if its performance at tasks in T , as measured by P , improves with experience E .”
- Things learn when they change their behavior in a way that makes them perform better in the future.

Example machine learning in action



Outline of core ML problems

Machine Learning Outline



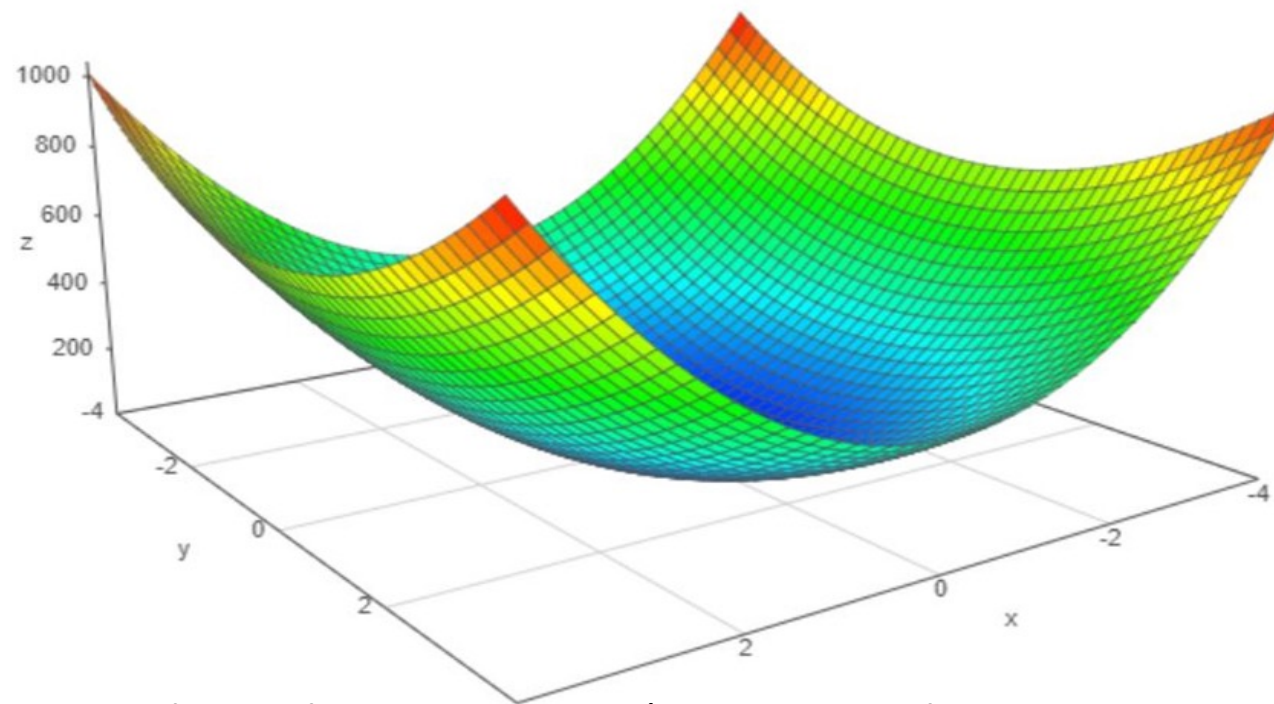
Data mining

- Understanding the nature of the data to gain insight into the problem that generated the data set in the first place.
- Can be performed by a human expert on a specific data set, often with a clear end goal in mind.

Regression

- A process for modeling the relationship between variables of interest
- Gradient descent is a general approach in machine learning that could be used for solving linear regression

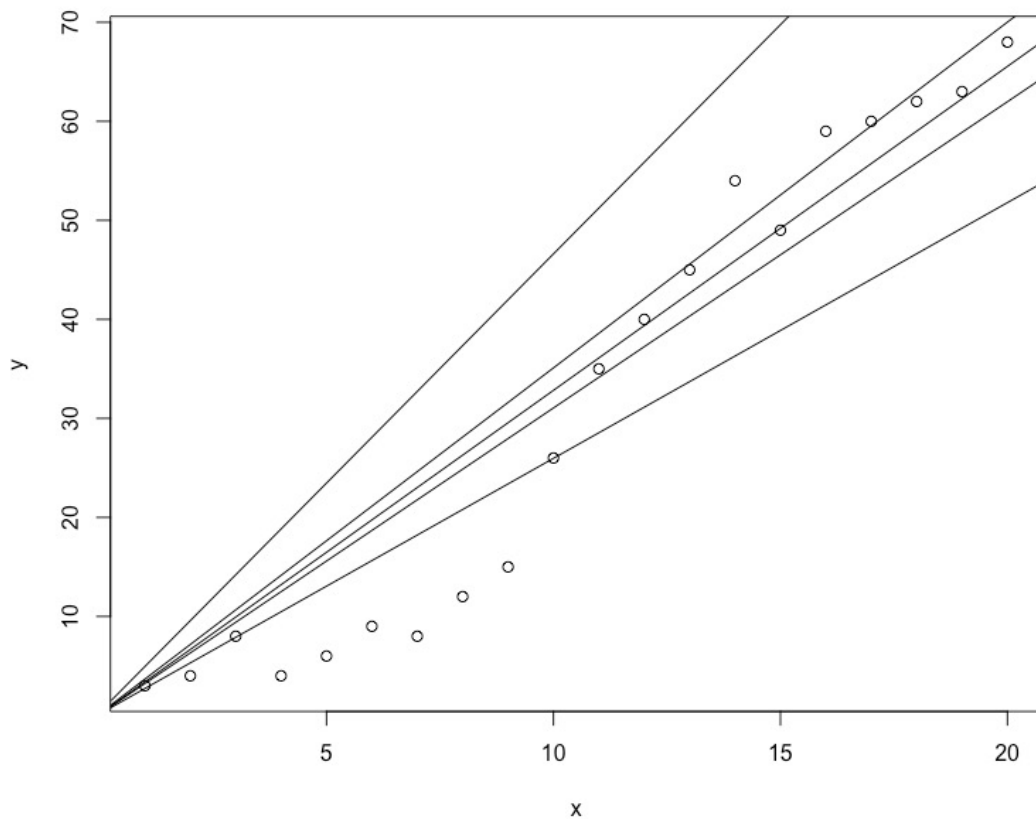
Linear regression using gradient descent



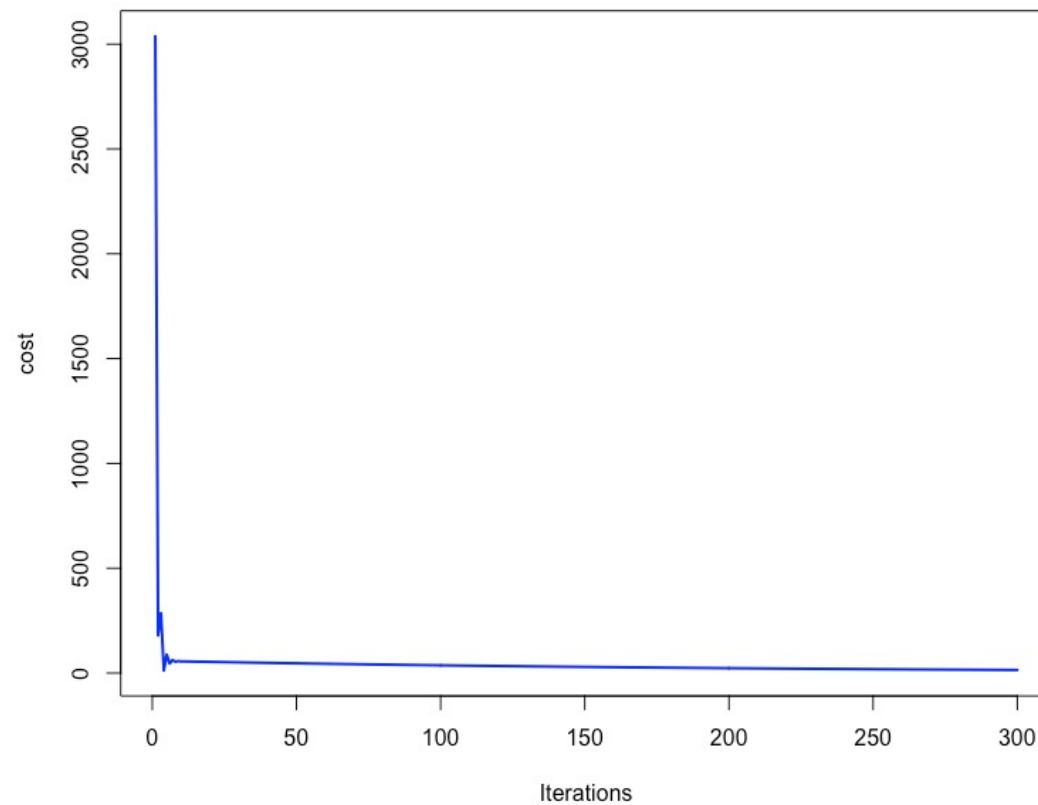
Error surface for various lines created using linear regression (x represents slope, y represents intercept and z is the error value).

Linear regression using gradient descent

Gradient descent



Cost function



Summary

- Machine learning: field that explores the use of algorithms that can learn from the data and use that knowledge to make predictions on the data it has not seen before.
- Supervised learning: branch of machine learning that includes problems where a model could be built using the data and true labels or values.
- Unsupervised learning: branch of machine learning that includes problems where we do not have true labels for the data to train with. Instead, the goal is to somehow organize the data in some meaningful clusters or densities.

Temat e javës së nëntë

- Supervised Learning
- Logistic Regression
- Softmax Regression
- Classification with kNN
- Decision Tree
- Random Forest
- Naïve Bayes
- Support Vector Machine(SVM)



Pyetje???