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# Data-driven Systems Engineering

Progettazione dei Sistemi Data-Driven

# Data-driven Systems Engineering

Progettazione dei Sistemi Data-Driven



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## Summary

### About the Professor

Sylvio Barbon Junior

01



### About the Course

Data-driven  
Systems Engineering

02



### Course Goals

Main objectives and capacity to be  
developed

03



04

### Final Project Examples

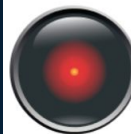
Random examples of final  
projects



05

### Requirements

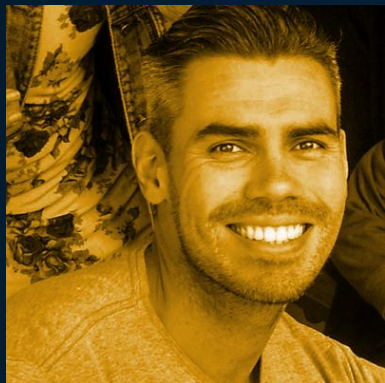
Main expected background from  
the students



MACHINE  
LEARNING  
LAB



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**Sylvio Barbon  
Junior**

# About the Professor

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- **Teaching:**
  - 2012-2021 - Professor at the University of Londrina (Brazil)
  - 2021 - Professor at the University of Trieste
- **Research:**
  - Pattern Recognition and Machine Learning
  - Meta-Learning
  - Stream Mining
  - Process Mining

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## About the Course

**Course:**

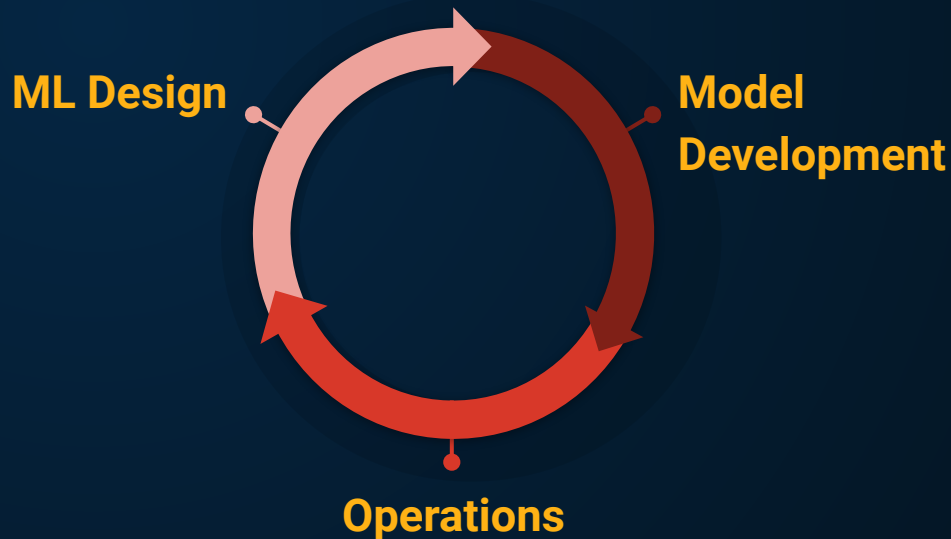
Data-driven Systems Engineering (Progettazione dei Sistemi Data-Driven)

**Period:**

Second Semester

**Credits: 9**

**Duration: 72**



## About the Course

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### Python

- . Python Setup
- . Python Basics
- . Python Object Oriented
- . Python Libraries
- . Python for Machine Learning



### Software Engineering

- . What and Why focus on S. Eng?
- . People and Rules
- . Feature and Concepts
- . Agile Methodology
- . Monitoring and Governance



### Machine Learning

- . Data Representation
- . Problem Representation
- . Machine Learning Models
- . ML Design patterns
- . MLOps

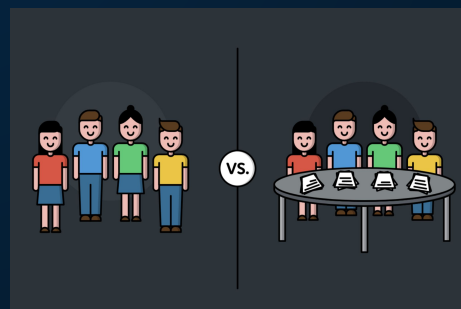
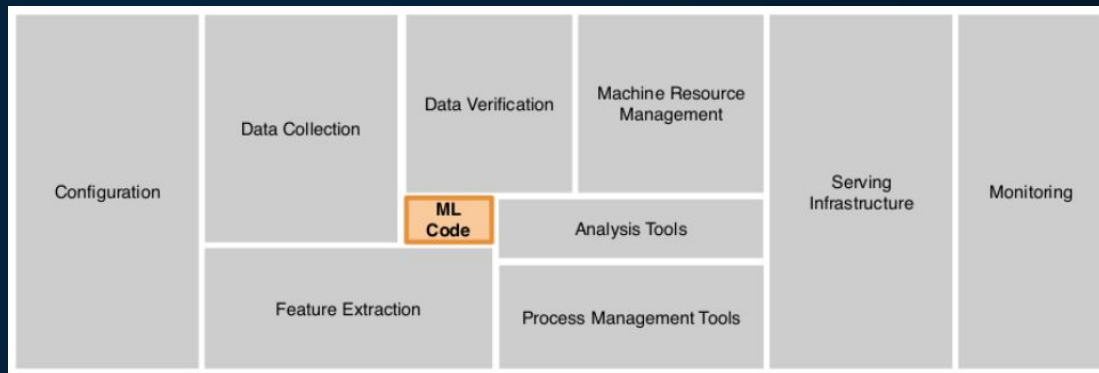
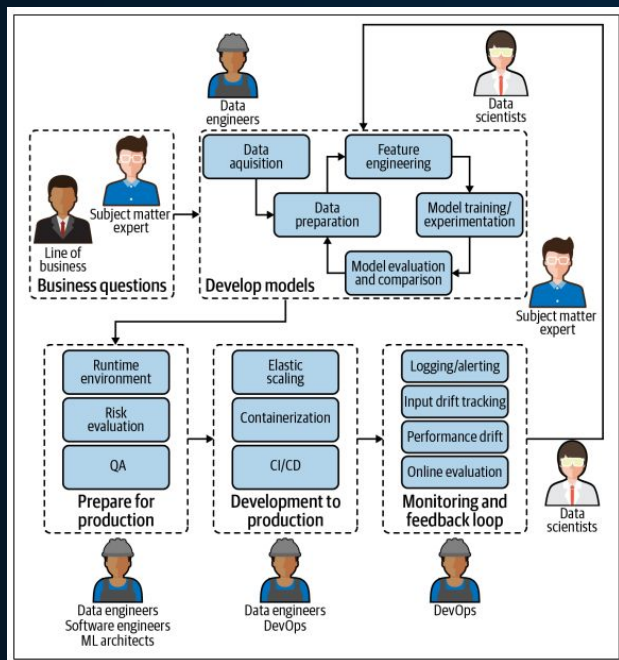
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## About the Course





## Course Goals

- Know the principles and techniques of the **design** and **implementation** of an **Information System**;
- Acquire the ability to design an information system, use independently the **techniques and tools** learned;
- **Represent** and display the knowledge learned using **Machine Learning principles**;
- **Interpret** and independently learn **the evolution of methodologies** and apply new techniques and design tools;

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## Final project Examples

- NBA Salary predictor

The screenshot shows a web application titled "NBA Salary Predictor". It features a sidebar on the left with a navigation menu containing "MainPage", "Contacts", and "Description". The main content area has the NBA logo at the top, followed by the title "Salary Predictor" and the subtitle "User Input". Below this is a form with three input fields for "Player Name", "Player Surname", and "Salary asked". Underneath these fields is a row of 20 checkboxes, each corresponding to a specific NBA statistic: AGE, WIN, LOS, MIN, FGM, FGA, 3PM, 3PA, FTM, FTA, DRE, DRE, AST, TOV, STL, BLK, PF, +/-, and DUR. The checkboxes for WIN, LOS, and DRE are currently checked. A "Submit" button is located at the bottom right of the form. The entire interface is set against a white background with a light blue sidebar.



## Final project Examples

### EmployeePrediction

Hello! With this tool you will be able to see if you or an employee working for your company will leave in 2 years or less.

Just take our quiz and let the magic begin!

Begin!



- Employee Prediction Project:

## Final project Examples

- Steam game recommender

Start Result

### SteamGamePicker

Choose up to 10 games that you like and then we'll give you our recommendation!

Select a game!

Half-Life Deathmatch: Source

Submit game!

Clear selections

Submit preferences

Your games list:



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## Requirements

- Knowledge of **basic computer science elements**
- Basic knowledge of **data processing** techniques
- Basic techniques for building **databases**
- Use of **elementary IT tools** such as text manager and **spreadsheet**
- Knowledge of **machine learning**

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**For any case, get in  
touch!**

[sylvio.barbonjunior@units.it](mailto:sylvio.barbonjunior@units.it)