Aprendizado de Máquina

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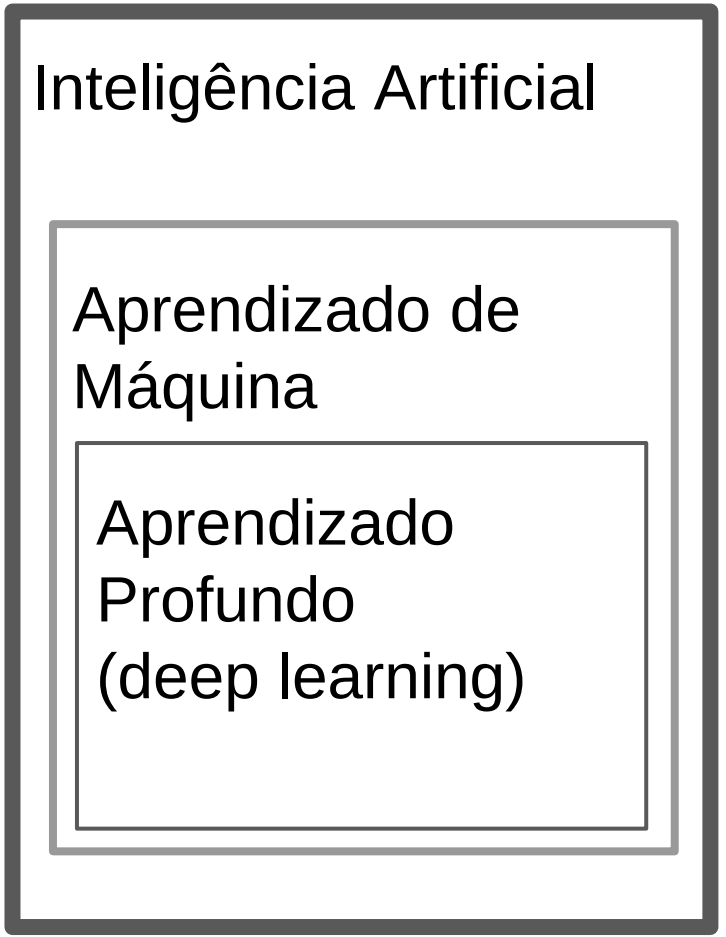
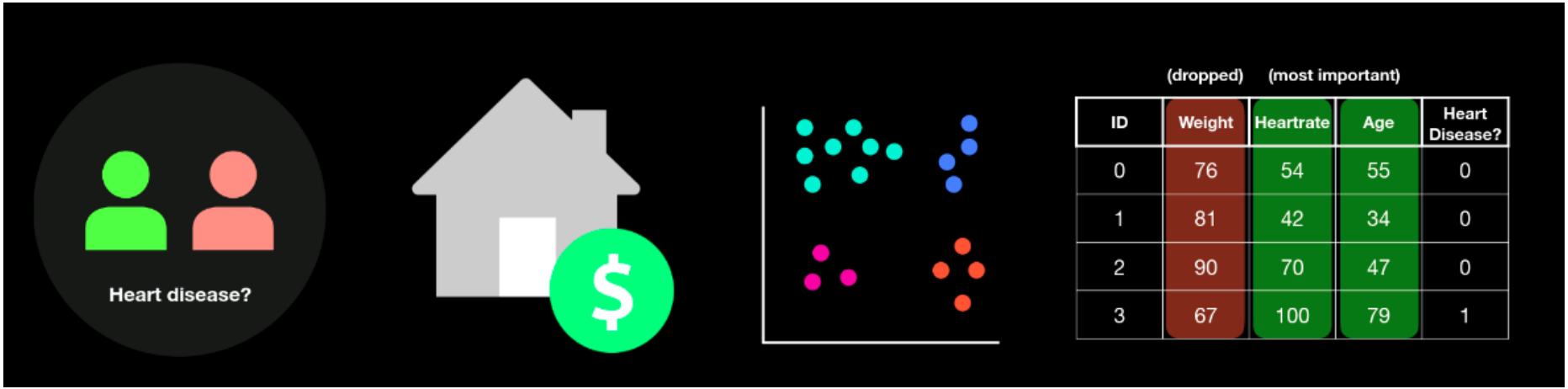
Campus - Muriaé

Inteligência Artificial no Dia a Dia

- Direção Autônoma de Veículos
- Reconhecimento de Voz e Tradução
- Classificação e Busca de Informação
  - texto, imagens, filmes,....
- Jogos
  - Xadrez, GO
- Redes Sociais (twitter, facebook, Instagram)

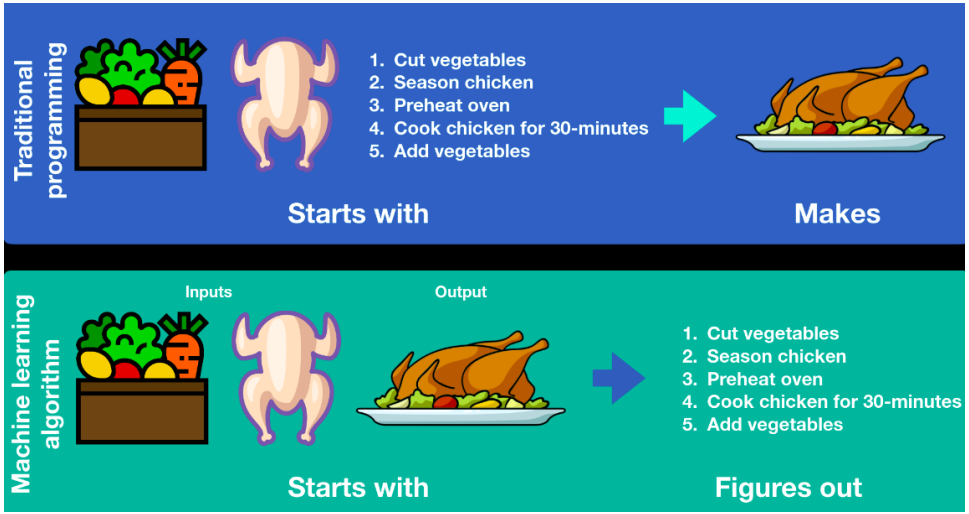


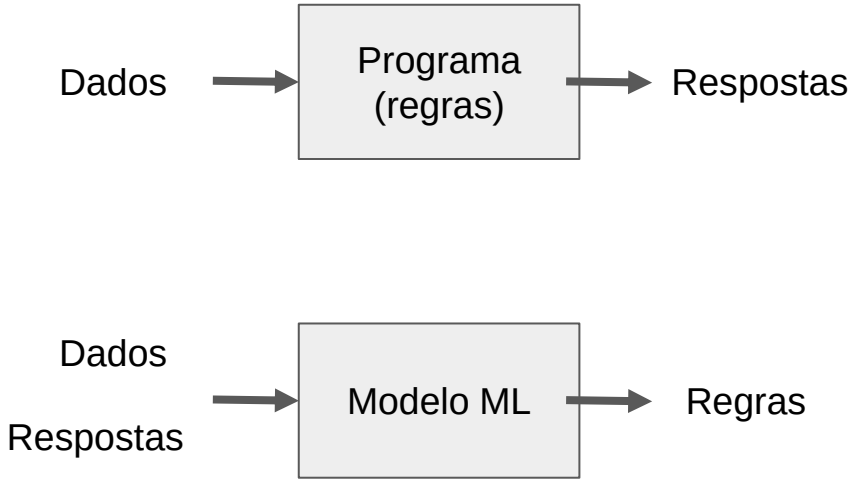
Onde Usar ?



Classificação Regressão Agrupamento Redução de Dimensionalidade

[Introducing the 2020 Machine Learning Roadmap (still valid for 2021) - Daniel Bourke]


Traditional programming
1. Cut vegetables
2. Season chicken
3. Preheat oven
4. Cook chicken for 30-minutes
5. Add vegetables
Starts with
Makes
Machine learning algorithm
Inputs
Output
1. Cut vegetables
2. Season chicken
3. Preheat oven
4. Cook chicken for 30-minutes
5. Add vegetables
Starts with
Figures out


Dados
Programa (regras)
Respostas
Dados
Respostas
Modelo ML
Regras

Proposta Disciplina

1. Orientado a Exemplos
2. Introduzir gradativamente as técnicas de Aprendizado e Programação
    a. Google Colab
    b. Python, R e bibliotecas
    c. scikit-learn, caret
3. Seminários
4. Trabalhos em Grupo para uso das ferramentas

Ementa

- Aprendizado de Máquina
- Uso da Programação
- Aprendizado Supervisionado e Não Supervisionado
- Ferramentas
- Dados Estruturados e Não Estruturados
- Visualização de Dados

Aprendizado Supervisionado e Não Supervisionado

- Agrupamentos
  - Algoritmo K-means
- Classificação e Predição
  - Técnicas: Random Forest, Árvores de Decisão,...
  - Validação

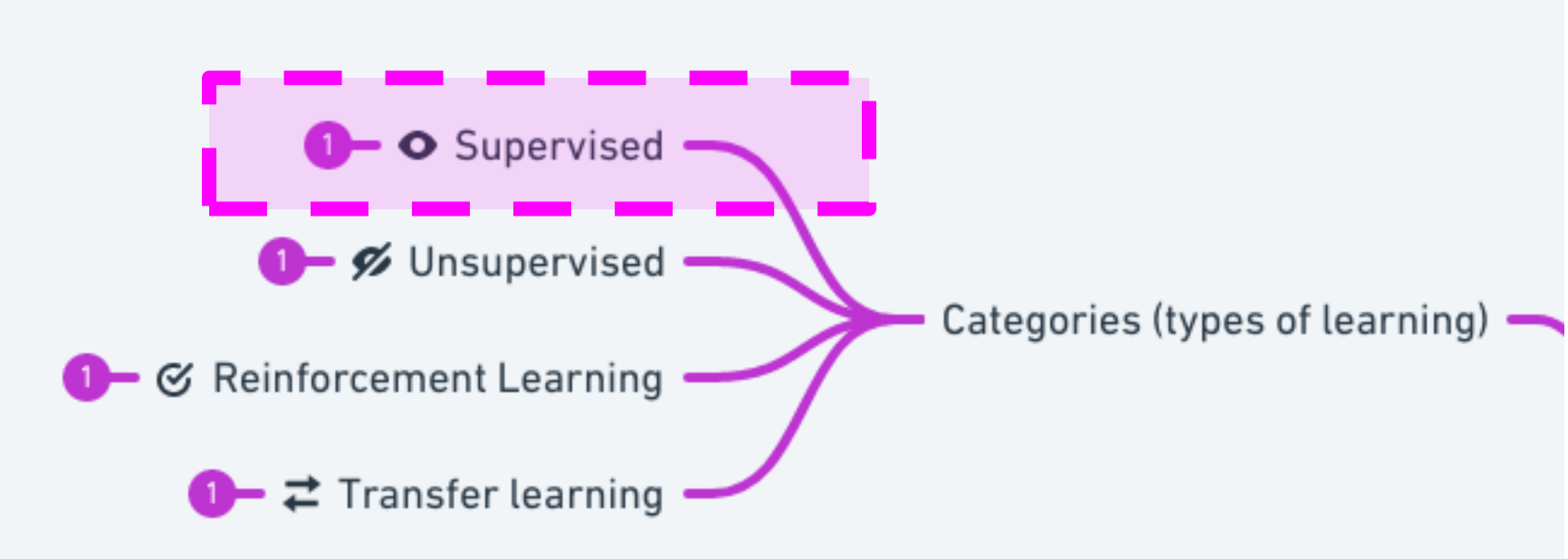
Avaliação

- Avaliações práticas
- Laboratórios online
  - Exemplo de uso de uma técnica
  - Realizar adaptações
- Trabalhos em Grupo

Disciplina

- Aprendizado de Máquina
  - 4 Créditos
  - Terça 18:30-20:10
  - Quarta 18:30-20:10

Categorias



[Introducing the Machine Learning Roadmap - Daniel Bourke]

Supervised Learning with numbers

$ 400,000

$100,000

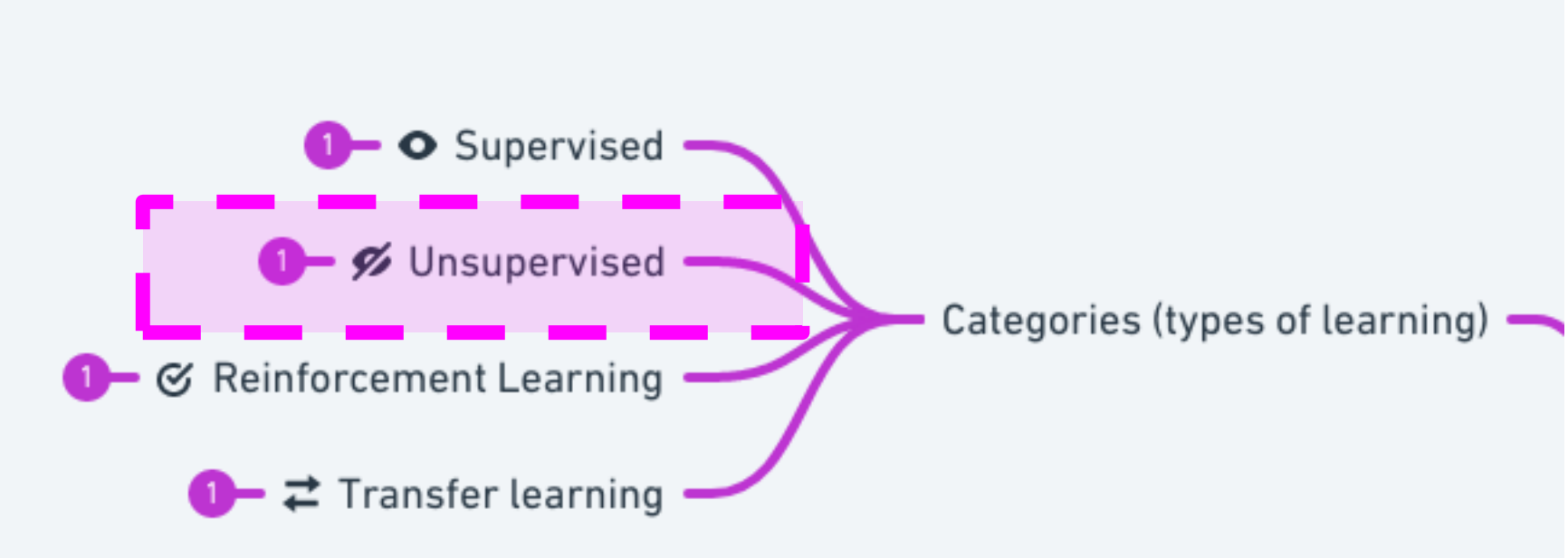
$300,000

10,000 House Size + Price = model

Price ?

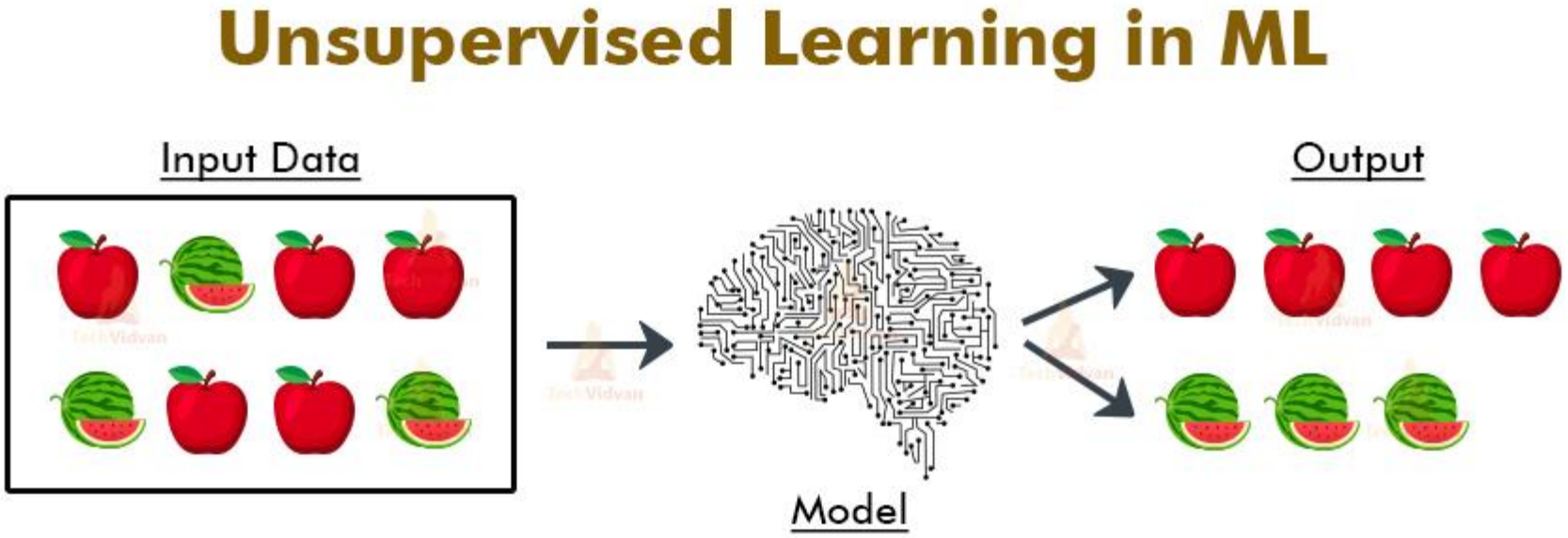
[Introducing the Machine Learning Roadmap - Daniel Bourke]

Categories

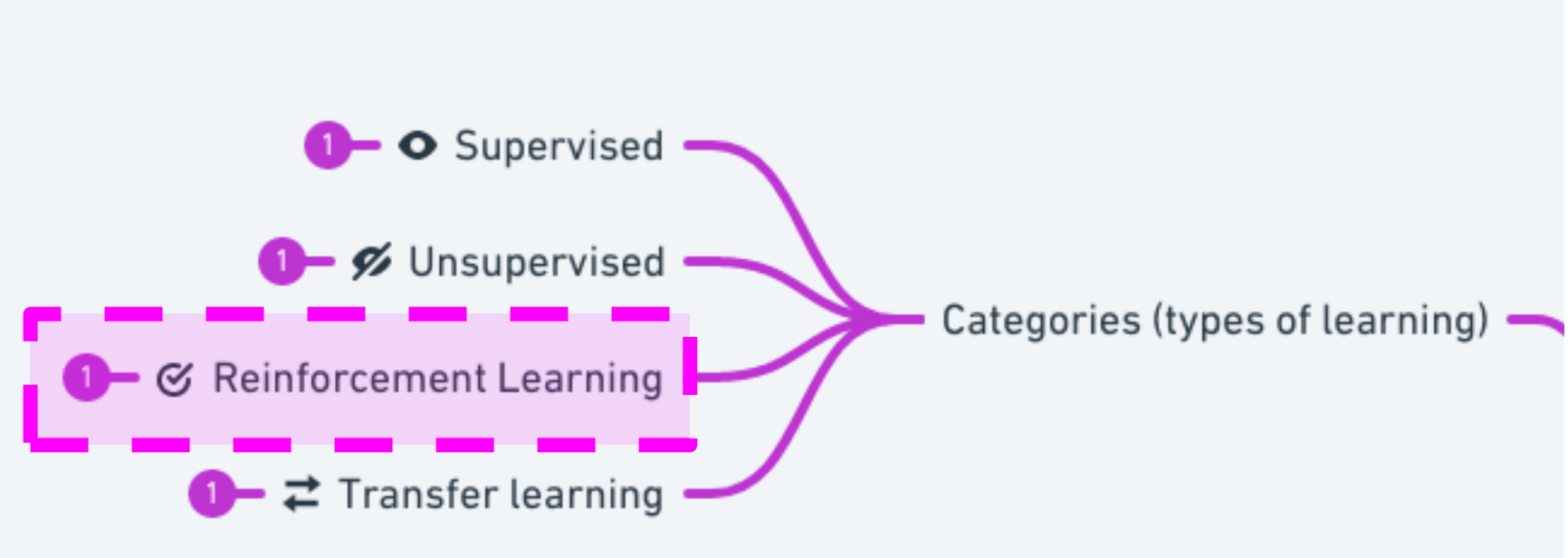


[Introducing the Machine Learning Roadmap - Daniel Bourke]

Unsupervised Learning



Categories



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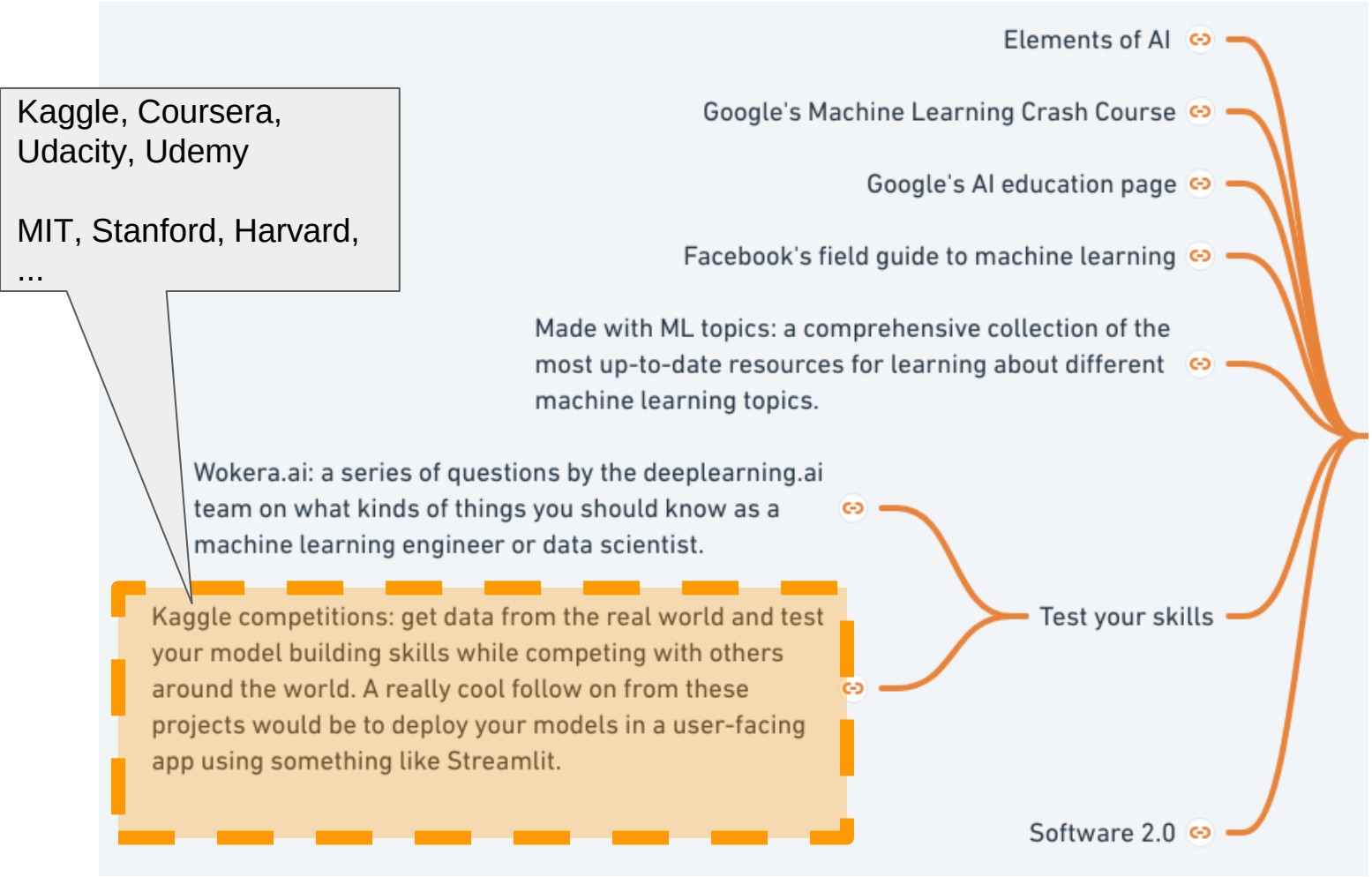

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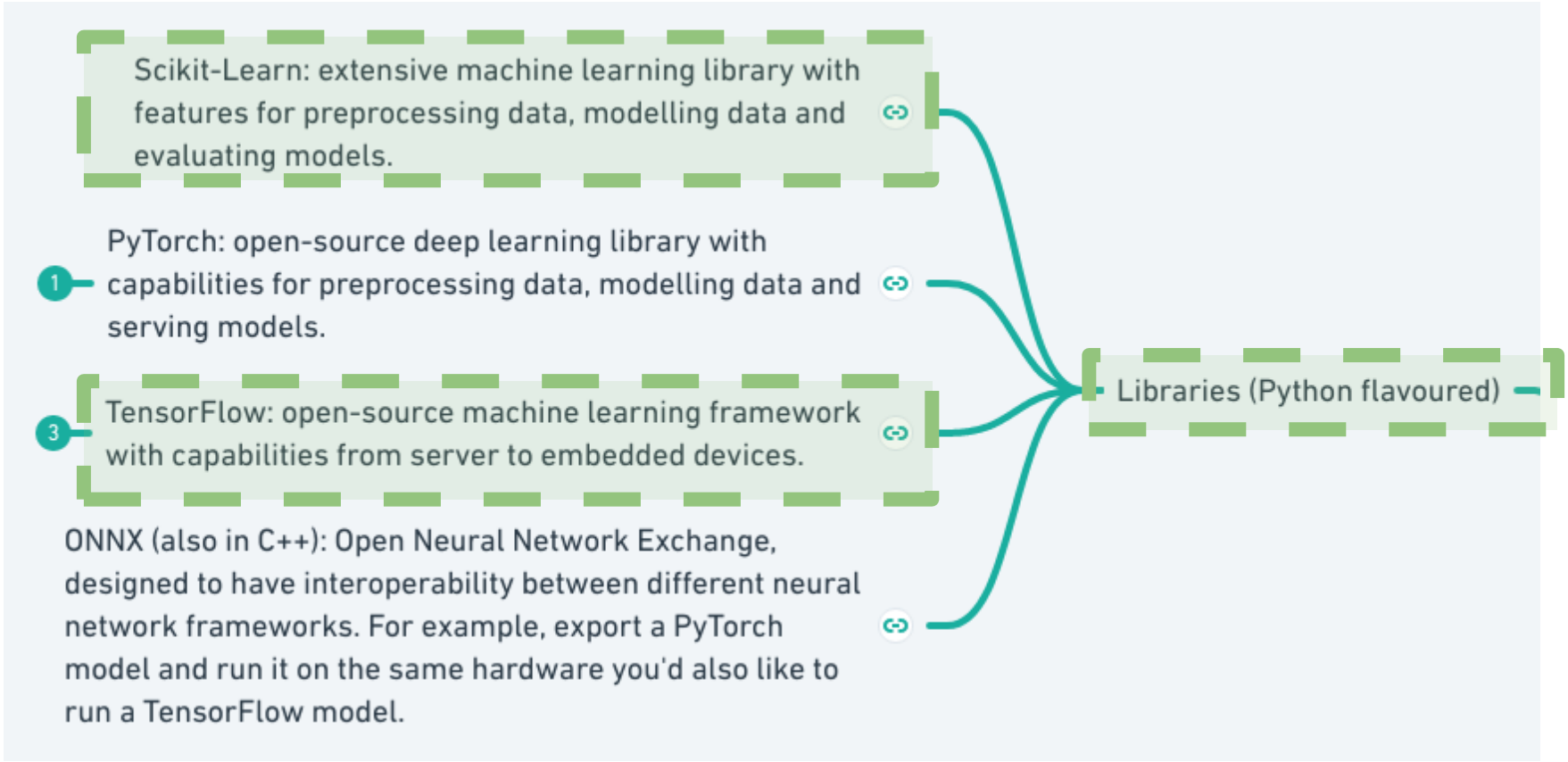

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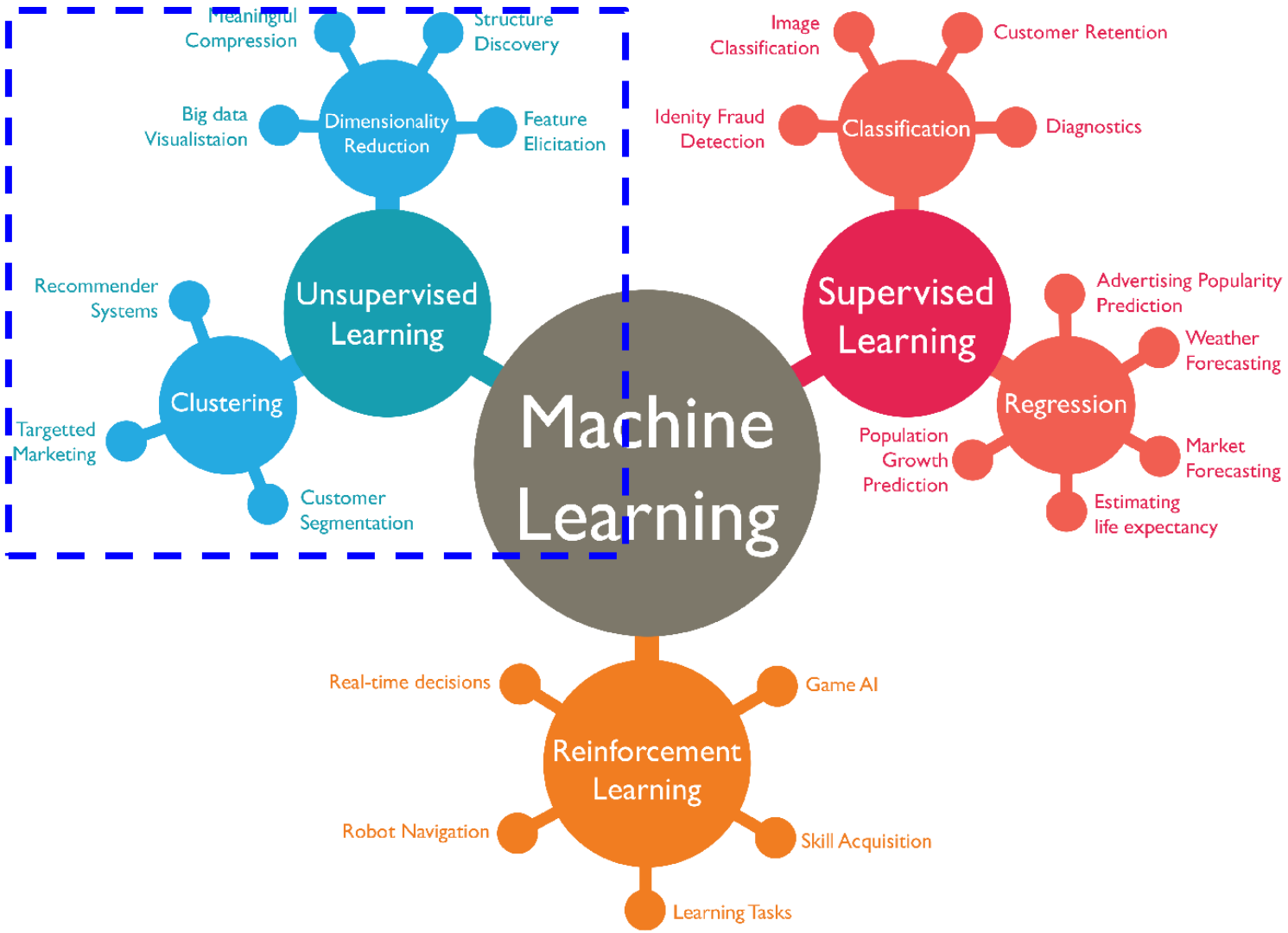
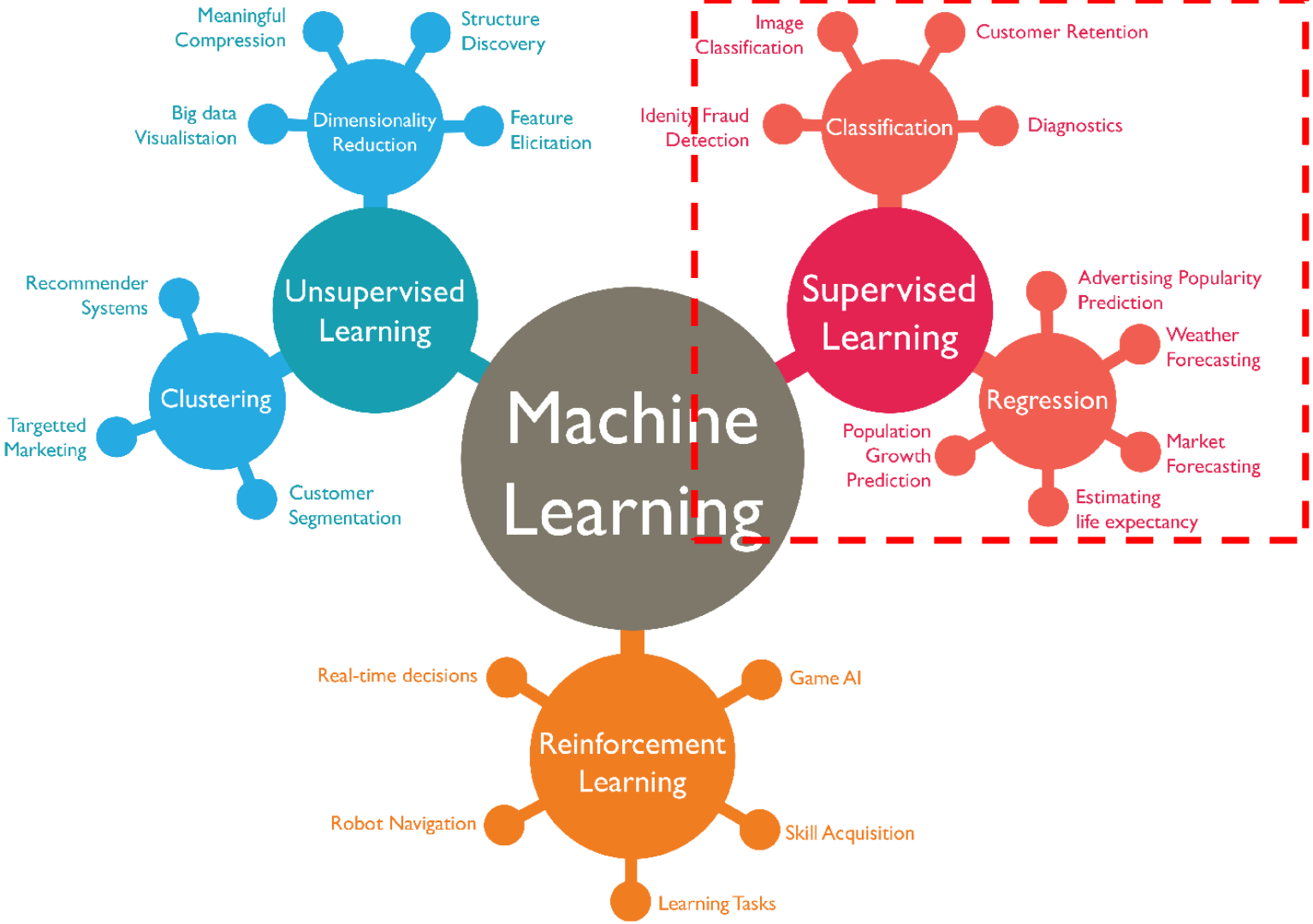

Machine Learning
Unsupervised Learning
Dimensionality Reduction
Meaningful Compression
Structure Discovery
Big data Visualistaion
Feature Elicitation
Clustering
Recommender Systems
Targetted Marketing
Customer Segmentation
Supervised Learning
Classification
Image Classification
Customer Retention
Idenity Fraud Detection
Diagnostics
Regression
Advertising Popularity Prediction
Weather Forecasting
Population Growth Prediction
Market Forecasting
Estimating life expectancy
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks

Original


Machine Learning
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Meaningful Compression
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Weather Forecasting
Population Growth Prediction
Market Forecasting
Estimating life expectancy
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks

Original

Uso do Google Colab - “livro vivo”

Texto (links para aprofundar)

Exemplos que podem ser modificados

Exercícios com pequenas modificações

Trabalhos práticos

kaggle

Search

Sign

- Home
- Compete
- Data
- Code
- Communities
- Courses
- More

Courses

Python

Learn the most important language for data science.

Intro to Machine Learning

Learn the core ideas in machine learning, and build your first models.

Intermediate Machine Learning

Learn to handle missing values, non-numeric values, data leakage and more. Your models will be more accurate and useful.

Data Visualization

Make great data visualizations. A great way to see the power of coding!

Pandas

Intro to Deep Learning

Use TensorFlow and Keras to build and train neural networks for structured data.

Computer Vision

Create image classifiers with TensorFlow and Keras, and explore convolutional neural networks.

Data Cleaning

Master efficient workflows for cleaning real-world, messy data.

Geospatial Analysis

Create interactive maps, and discover patterns in geospatial data.

Machine Learning Explainability

Extract human-understandable insights from any machine learning model.

Aprendizado de Máquina

- APRENDIZADO DE MÁQUINA NÃO SUPERVISIONADO
  - Agrupamento e K-means
- APRENDIZADO DE MÁQUINA SUPERVISIONADO
  - Problemas de Classificação
  - Problemas de Regressão
  - Árvores de decisão e Random Forests, Máquinas de Suporte de Vetores
  - Treinamento, Validação e Overfitting

Mais informações ?

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