

99% de acurácia... tá, mas e aí?

By Rodrigo C. Moraes



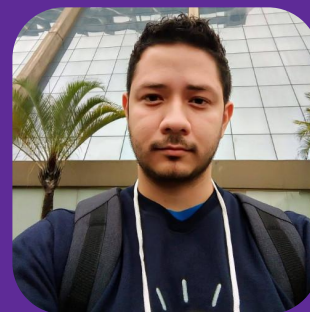
<https://github.com/rodrigocmoraes>



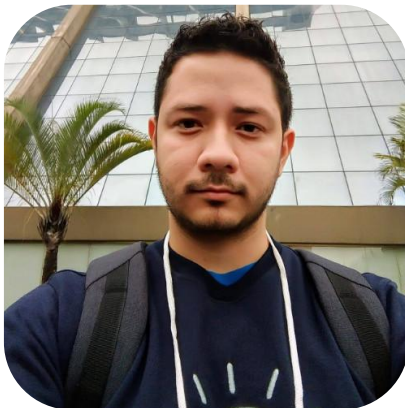
rdcmdev@gmail.com

kaggle

<https://www.kaggle.com/rdcmdev>



Quem sou eu?



Engenheiro de Machine Learning

Graduando em Engenharia de
Computação

Ex Maratonista de Programação

...

Como validar um modelo de Machine Learning?

Programação do Minicurso

1. Apresentação

2. Código/Hands-on

Acesso ao material do minicurso

<https://github.com/RodrigoCMoraes/pydata2019>

RodrigoCMoraes / pydata2019

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This repository contains notebook and code source for community be able to reproduce content from "99% de Acurácia... tah mas e ai?"

Manage topics

5 commits 1 branch 0 releases 2 contributors

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RodrigoCMoraes Merge pull request #1 from wdsrocha/master Latest commit 9f578ce 3 hours ago

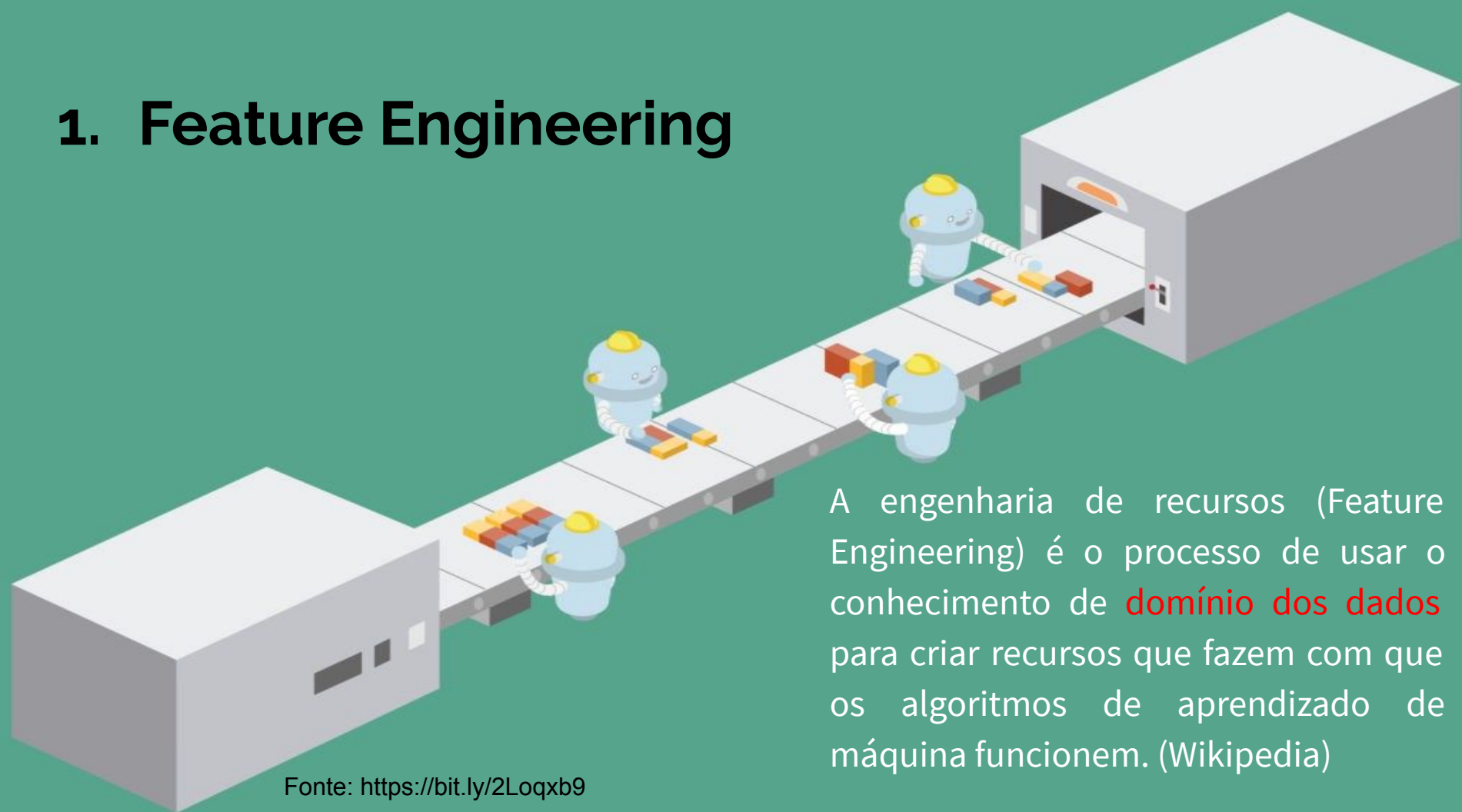
| | | |
|----------------|--|--------------|
| Pipfile | chore: create repository | 23 hours ago |
| Pipfile.lock | chore: create repository | 23 hours ago |
| README.md | docs: change jupyter-notebook command | 6 hours ago |
| adult.csv | chore: create repository | 23 hours ago |
| install.sh | refactor: merge scripts and synchronize README | 6 hours ago |
| notebook.ipynb | chore: run all notebook | 23 hours ago |

<https://github.com/RodrigoCMoraes/pydata2019>

Conceitos

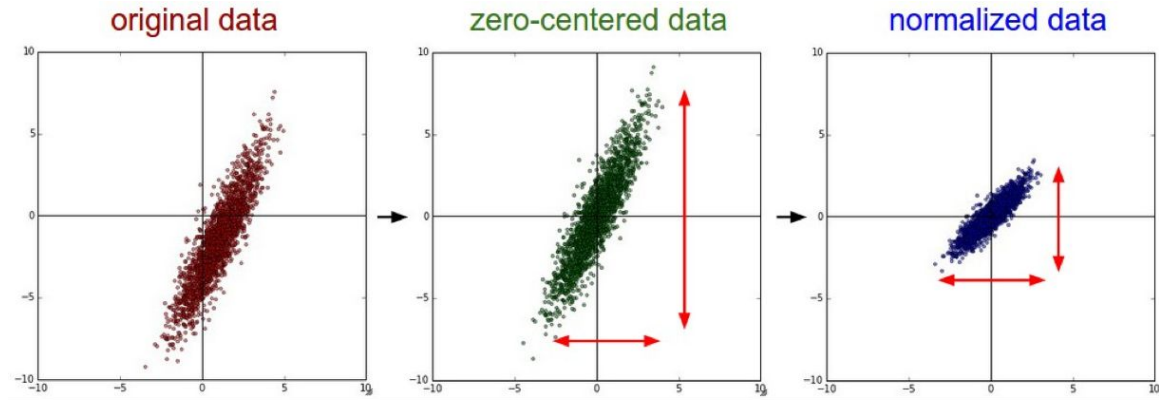
1. Feature Engineering
 2. Split do Dataset
 3. PCA
 4. Métricas de validação
 5. Modelo
 6. Overview
-

1. Feature Engineering



A engenharia de recursos (Feature Engineering) é o processo de usar o conhecimento de **domínio dos dados** para criar recursos que fazem com que os algoritmos de aprendizado de máquina funcionem. (Wikipedia)

1. Feature Engineering - Reorganizing



Fonte: <https://bit.ly/2Y7NYXY>

1. Feature Engineering - Polynomial Features

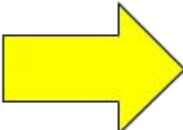
Examples

```
>>> X = np.arange(6).reshape(3, 2)
>>> X
array([[0, 1],
       [2, 3],
       [4, 5]])
>>> poly = PolynomialFeatures(2)
>>> poly.fit_transform(X)
array([[ 1.,  0.,  1.,  0.,  0.,  1.],
       [ 1.,  2.,  3.,  4.,  6.,  9.],
       [ 1.,  4.,  5., 16., 20., 25.]])
```

Fonte: <https://bit.ly/2Y1Hx8w>

1. Feature Engineering - Encoding

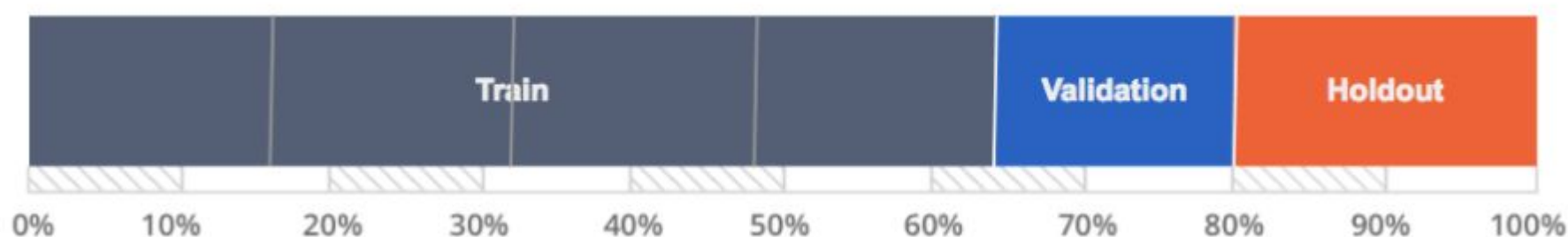
| Color | |
|--------|--|
| Red | |
| Red | |
| Yellow | |
| Green | |
| Yellow | |



| Red | Yellow | Green |
|-----|--------|-------|
| 1 | 0 | 0 |
| 1 | 0 | 0 |
| 0 | 1 | 0 |
| 0 | 0 | 1 |
| | | |

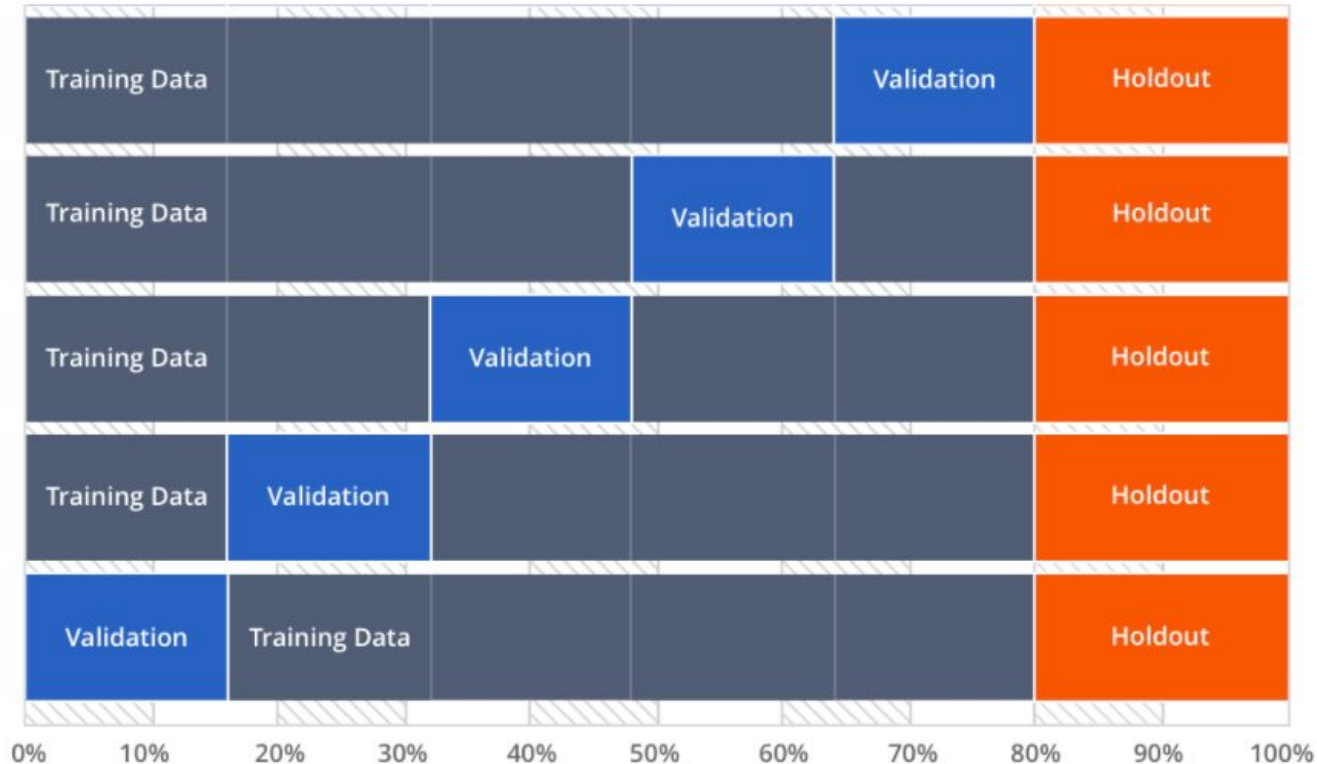
Fonte: <https://bit.ly/2V0D443>

2. Split do Dataset: Holdout



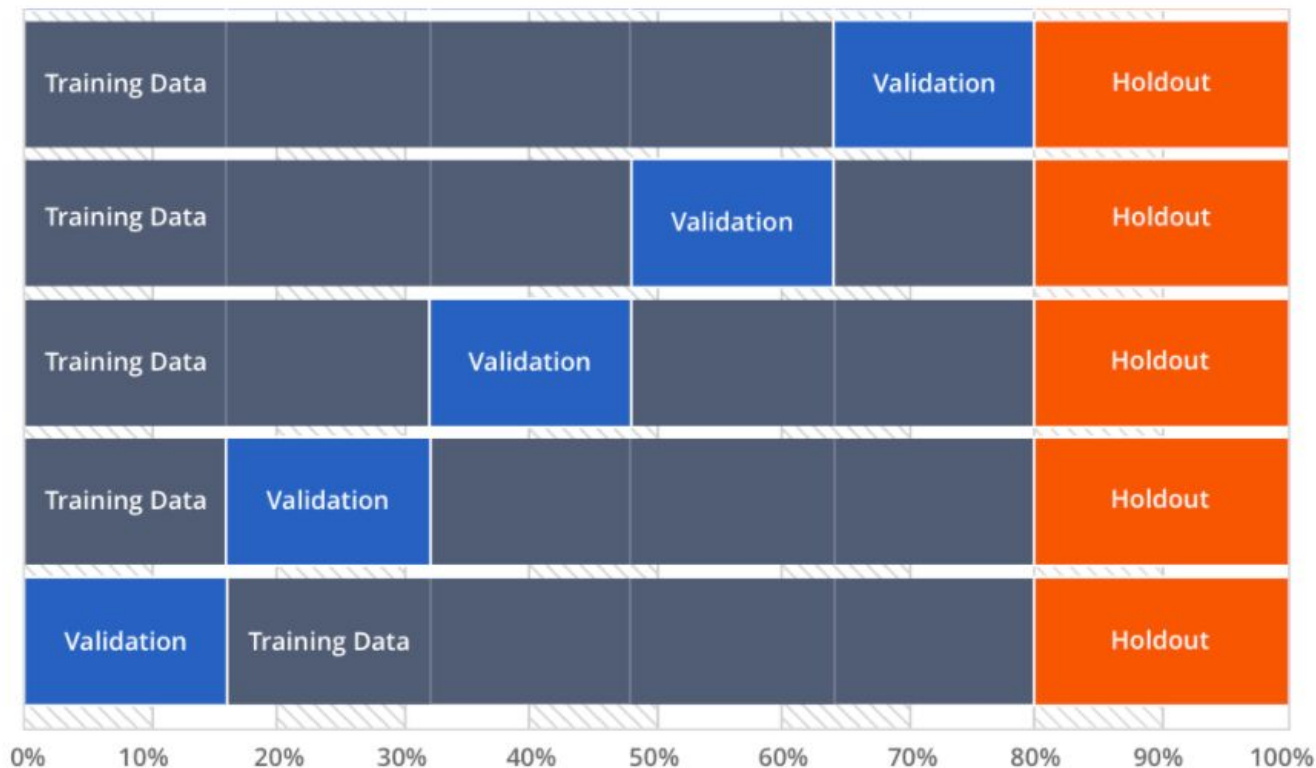
Fonte: <https://bit.ly/2JnwjHJ>

2. Split do Dataset: K-Fold+Validação Cruzada



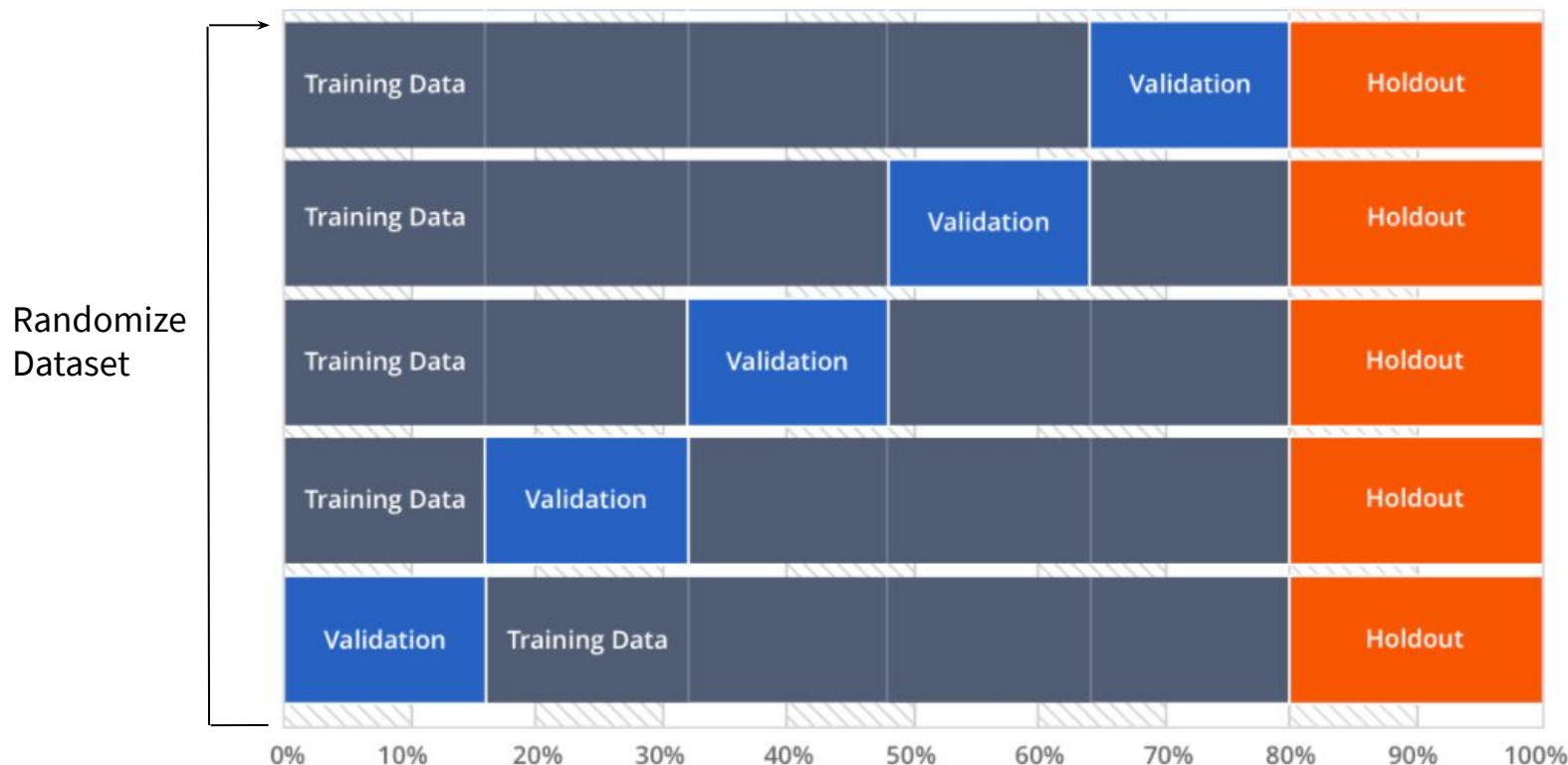
Fonte: <https://bit.ly/2JnwjHJ>

2. Split do Dataset: K-Fold+Validação Cruzada



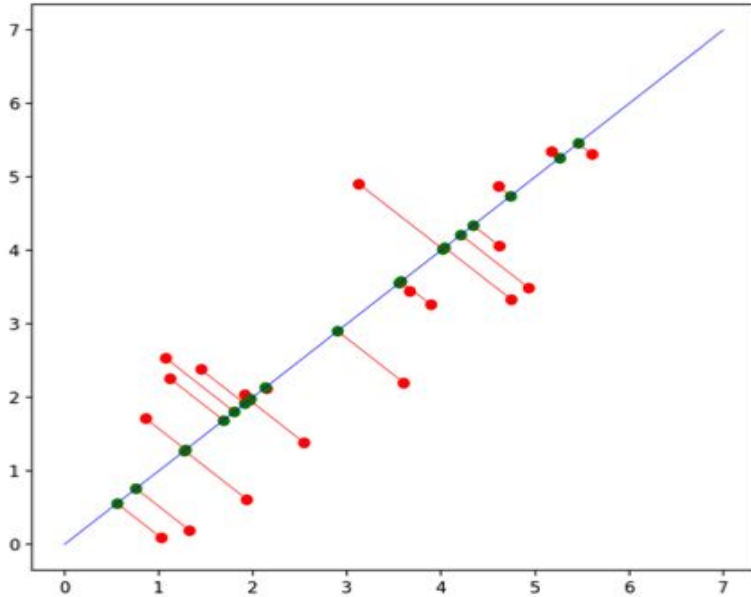
Fonte: <https://bit.ly/2JnwjHJ>

2. Split do Dataset: RSKF+Validação Cruzada

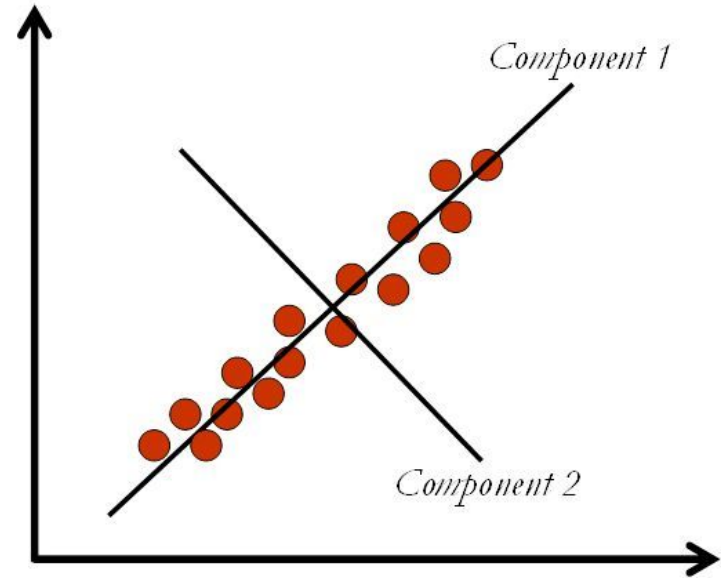


Fonte:
<https://bit.ly/2JnwjHJ>

3. PCA - Principal Component Analysis



Fonte: <https://bit.ly/2J0PVSi>



Fonte: <https://bit.ly/2Y5ytj1>

4. Métricas de Validação

$$\text{Acurácia} = \frac{tp + tn}{tp + tn + fp + fn}$$

$$\text{Precisão} = \frac{tp}{tp + fp}$$

$$\text{Revocação} = \frac{tp}{tp + fn}$$

$$F = 2 \cdot \frac{\text{precis} \cdot \text{revoc}}{\text{precis} + \text{revoc}}$$

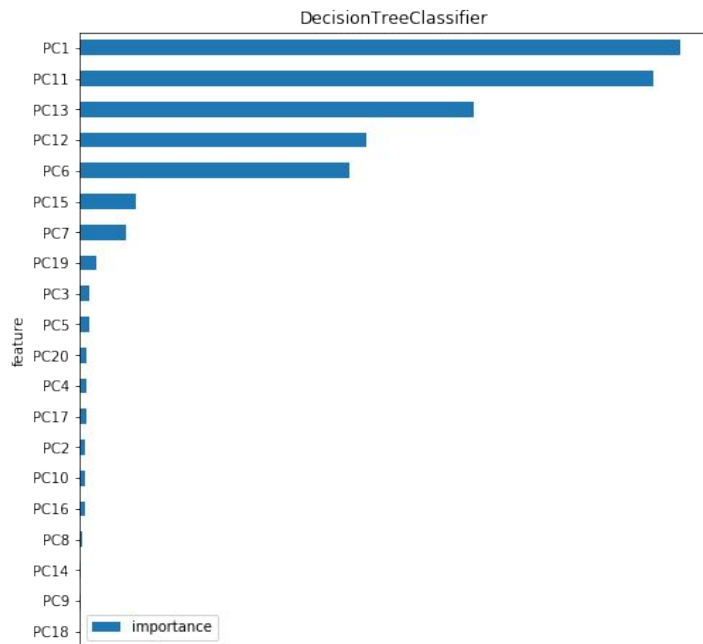
True Positive (TP)

True Negative (TF)

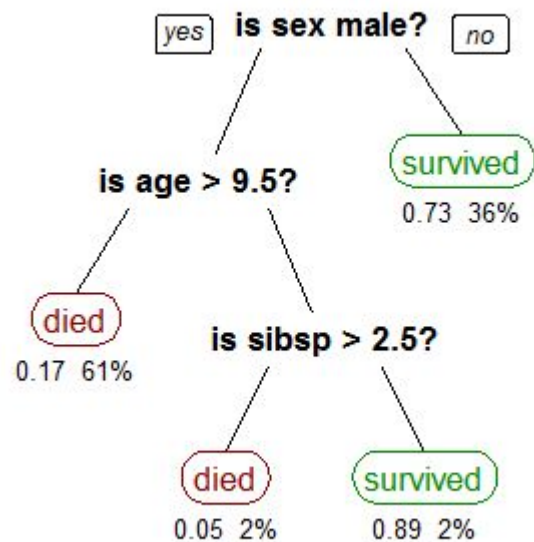
False Positive (FP)

False Negative (FN)

5. Modelo

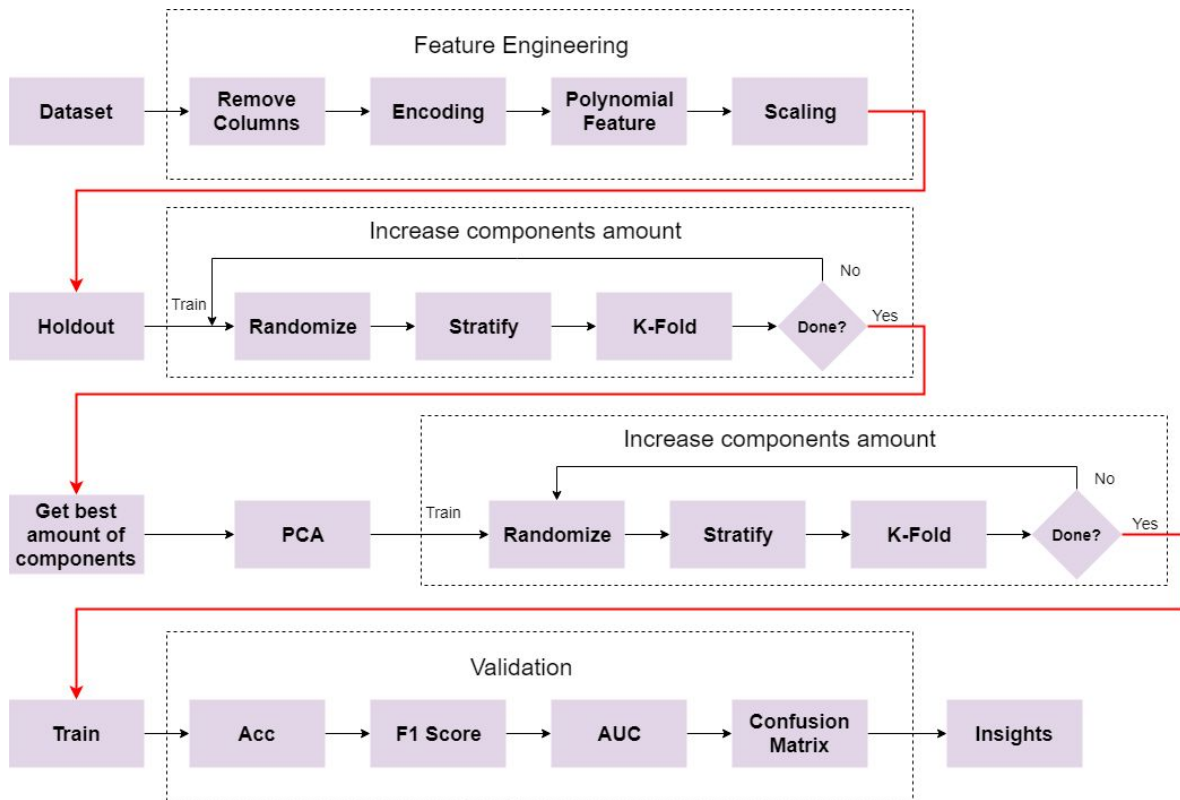


Fonte: Própria



Fonte: <https://bit.ly/2jnSH5w>

5. Overview



Bora codar?

[Notebook](#)

