REDES NEURAIS E DEEP LEARNING

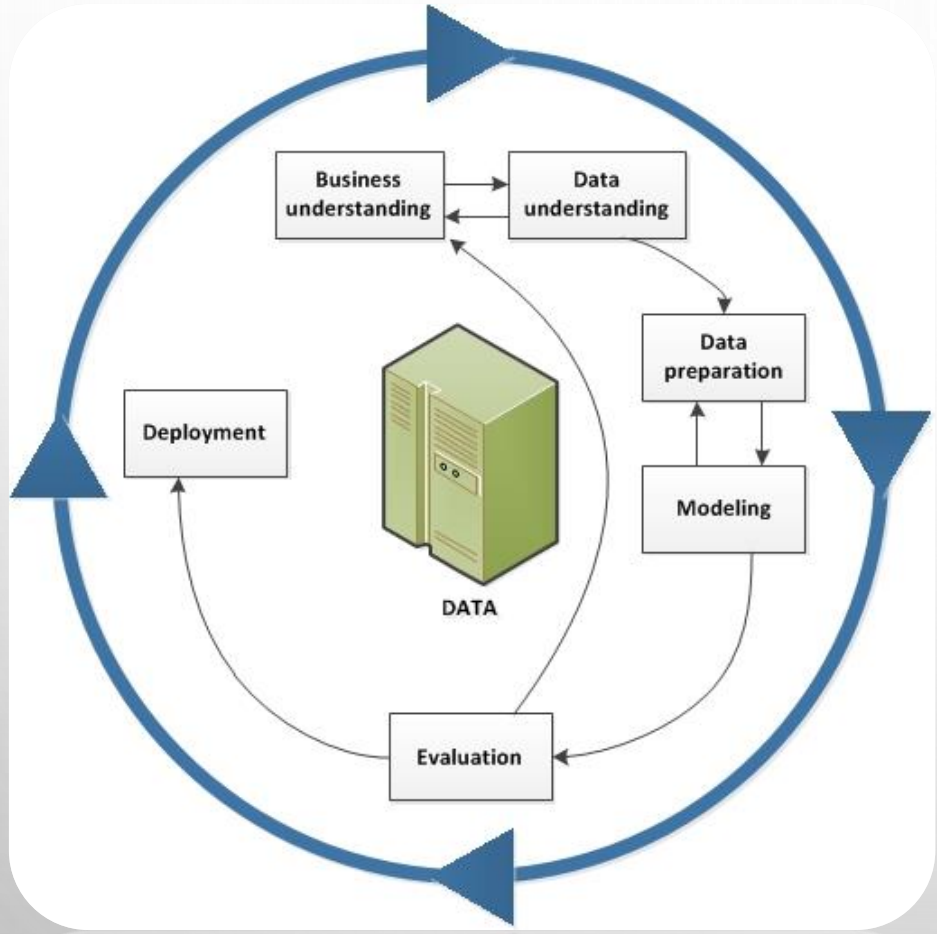
SÉRIES TEMPORAIS

DIEGO RODRIGUES DSC

INFNET

Bloco	Matéria	Calendário	Avaliação
Treinamento Clássico	Introdução	06/10	
	Classificação	08, *13	
	Regressão	27, *29	
	Agrupamento	03/11, *05	
	Séries Temporais	10, *12	<Modelo Clássico>
Redes Profundas	Deep Feed Forward	17, *19	
	Visão Computacional	24, *26	
	Autoencoders	01/12, *03	<Modelo Profundo>
Treinamento Moderno	Transfer Learning	08, *10	
	Sequências	15, *17	<Modelo Avançado>
	Modelos Generativos	<COMBINAR>	

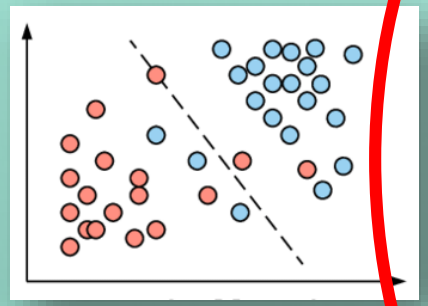
PARTE 1 : TEORIA



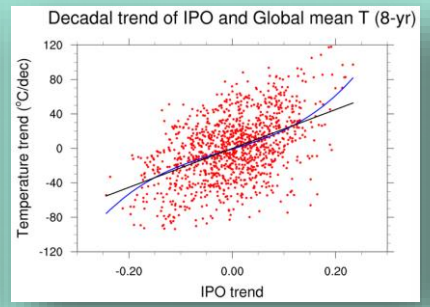
CROSS INDUSTRY PROCESS FOR DATA MINING (CRISP-DM)

BUSINESS UNDERSTANDING

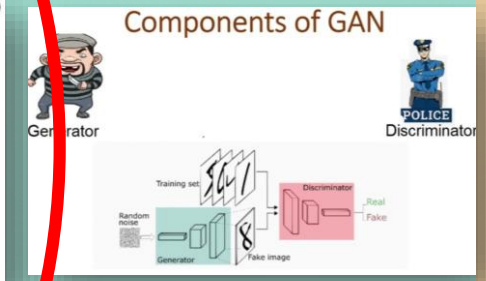
APRENDIZADO SUPERVISIONADO



CLASSIFICAÇÃO

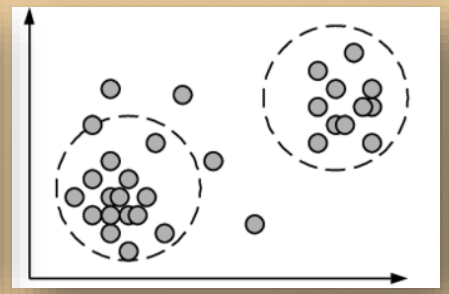


REGRESSÃO



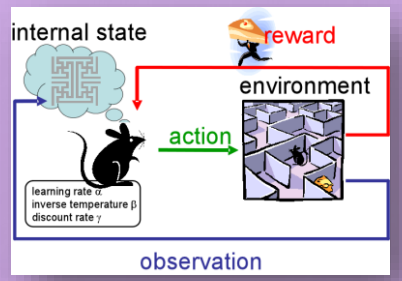
GENERATIVO

APRENDIZADO NÃO-SUPERVISIONADO



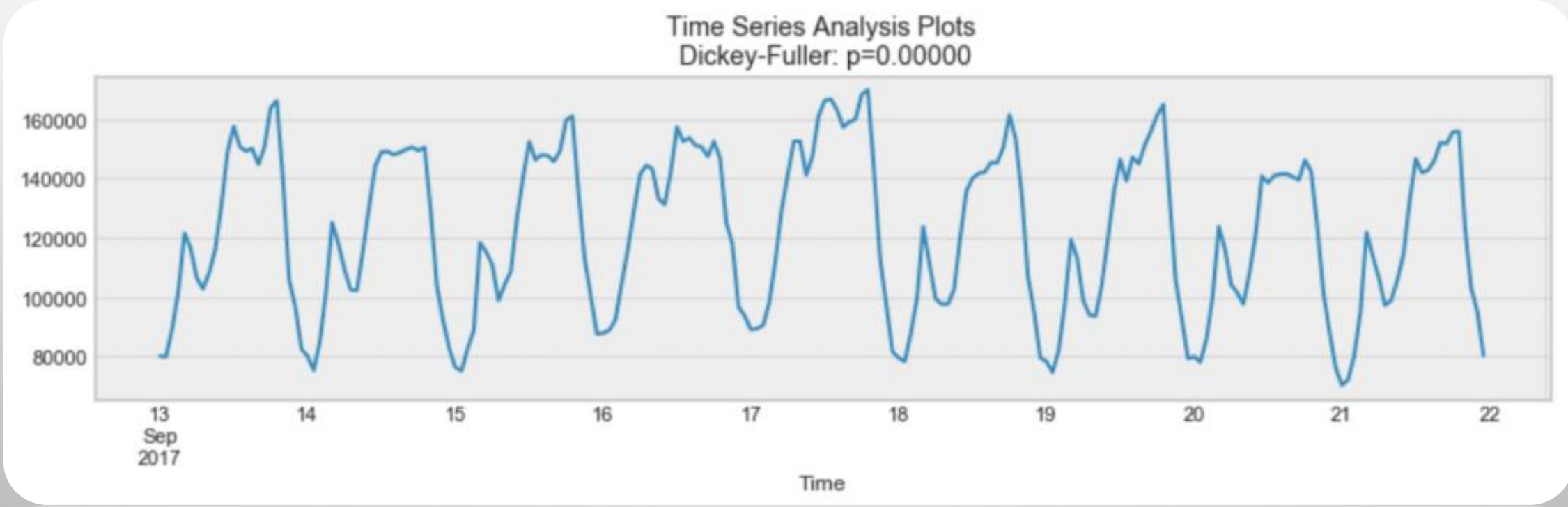
AGRUPAMENTO

APRENDIZADO POR REFORÇO



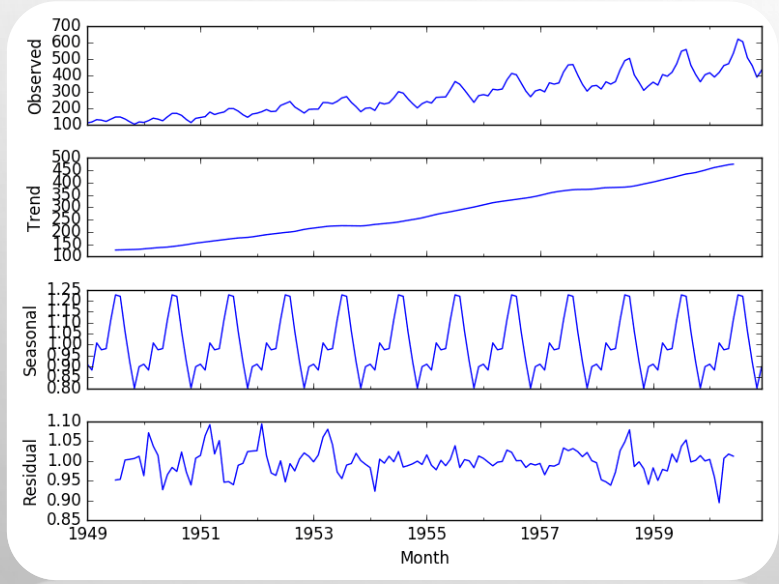
REFORÇO

SÉRIES TEMPORAIS

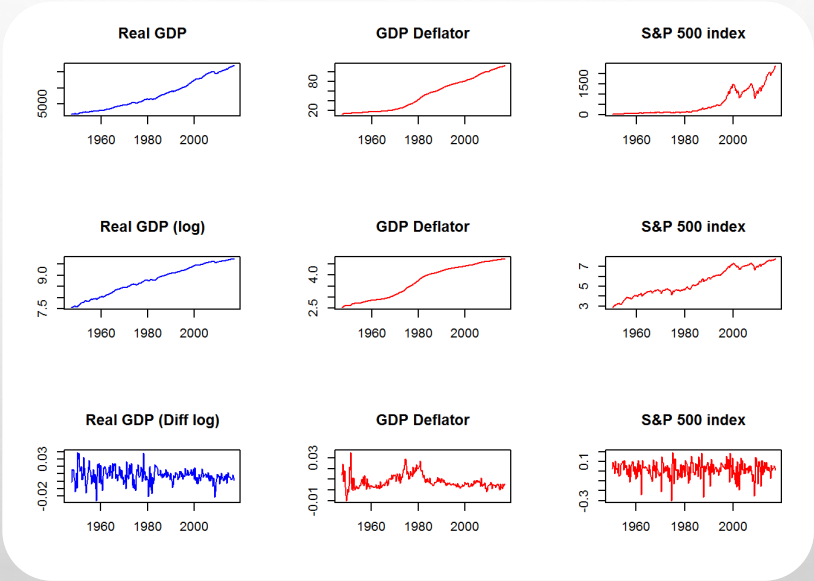


ABORDAGENS

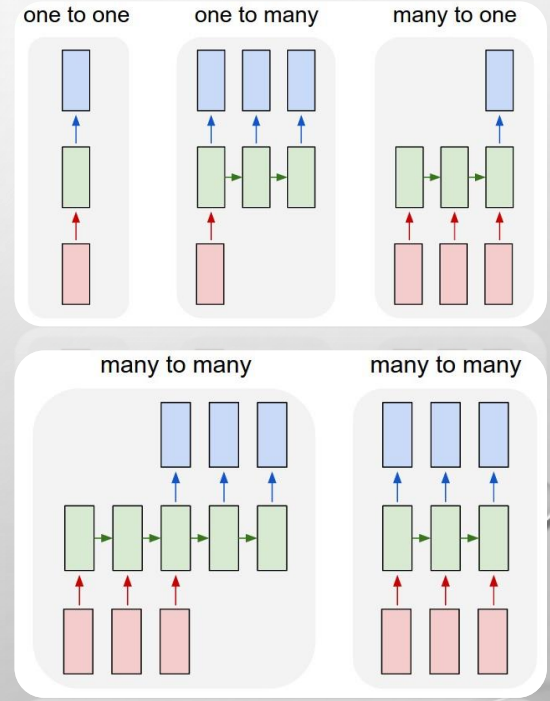
Decomposição



Regressão auto-vetor



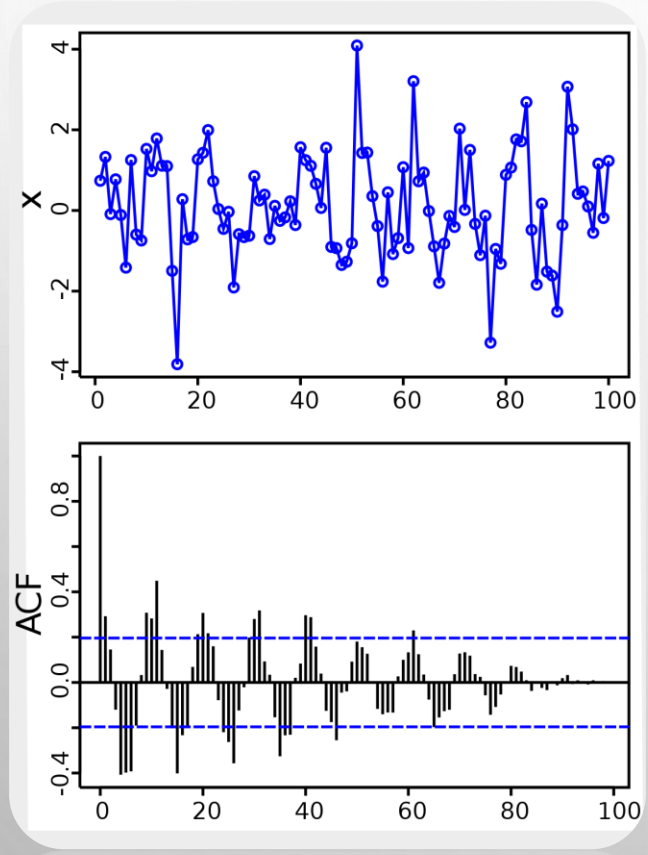
Rede Neural Recorrente



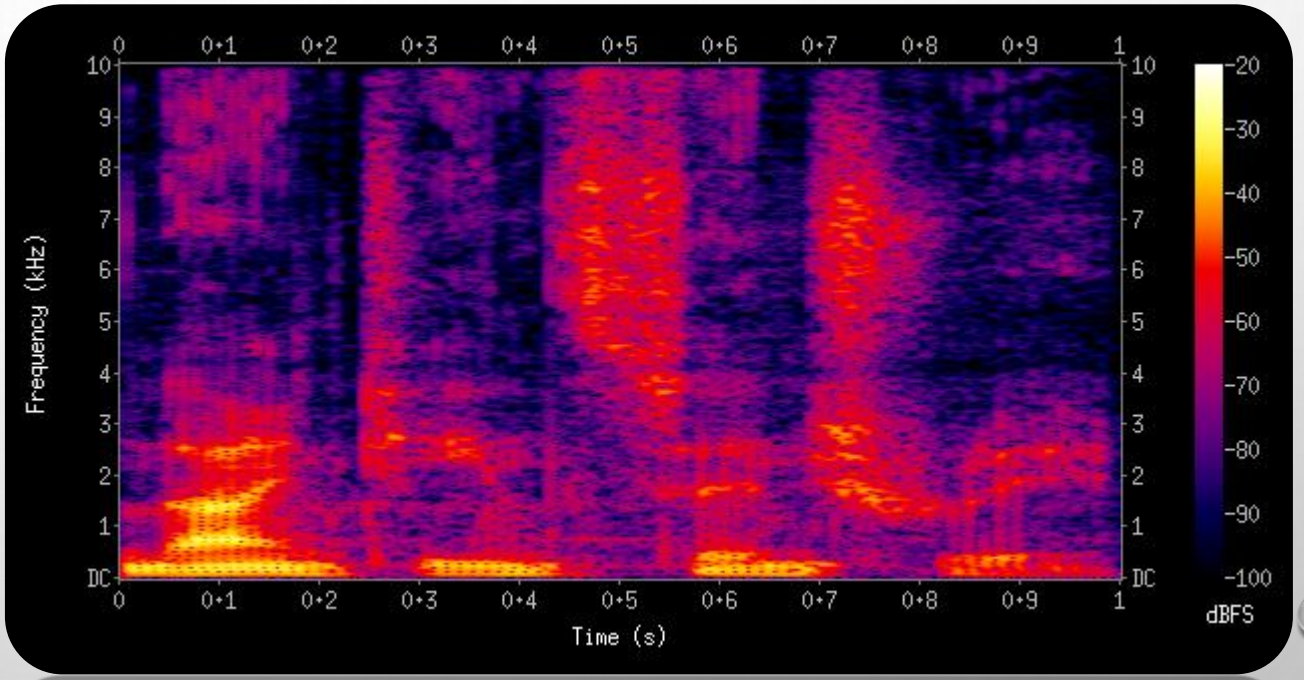
DATA PREPARATION & UNDERSTANDING

ANÁLISE EXPLORATÓRIA

Auto-correlação

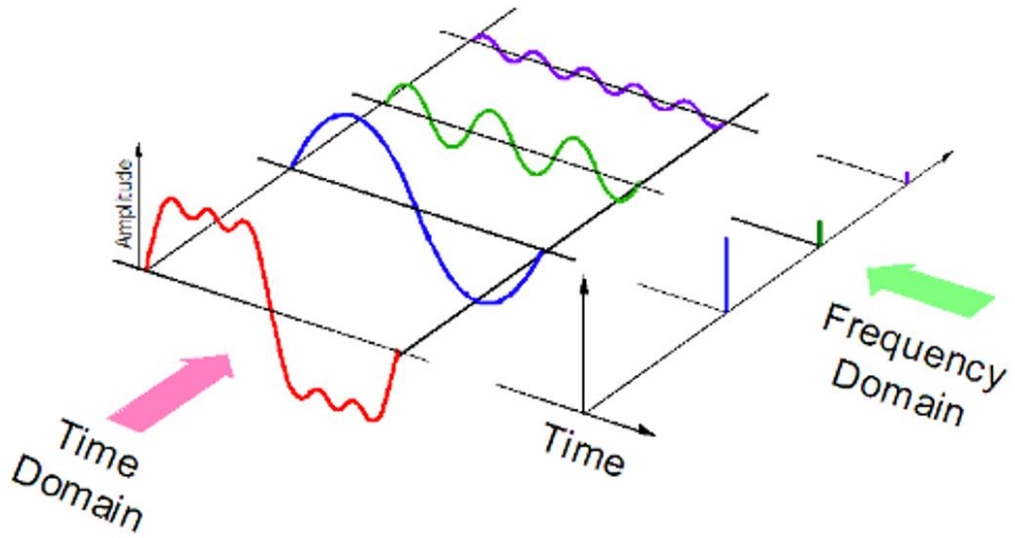


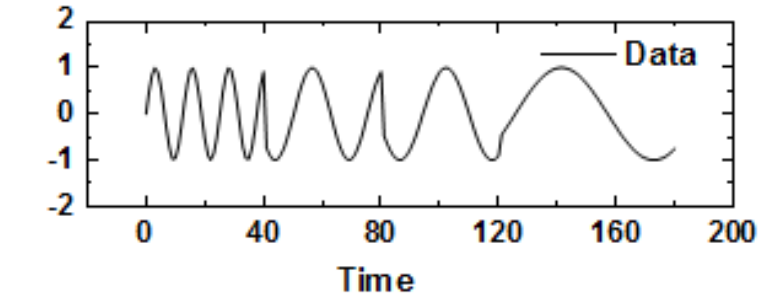
Espectograma

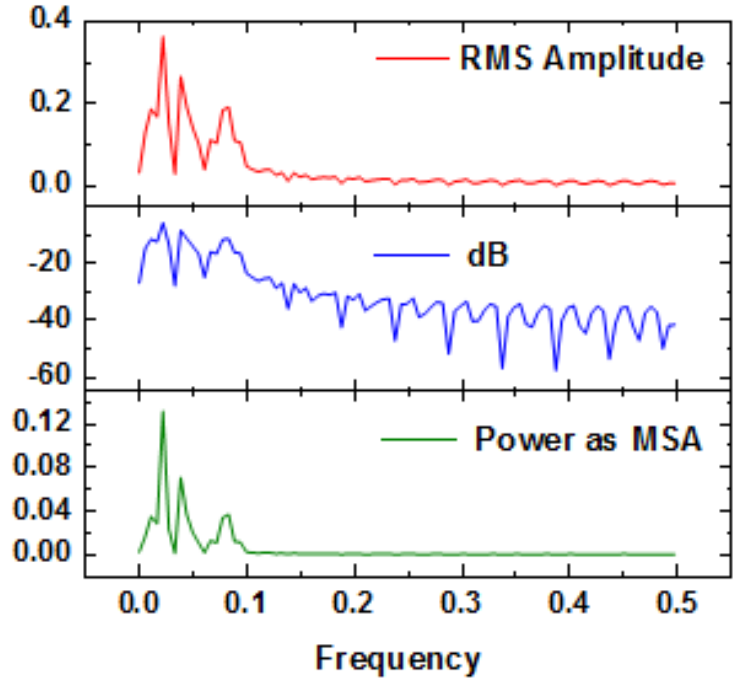


FEATURE EXTRACTION

Transformada de Fourier







MODELING

SÉRIES TEMPORAIS

$$y_t = T_t + C_t + S_t + I_t,$$

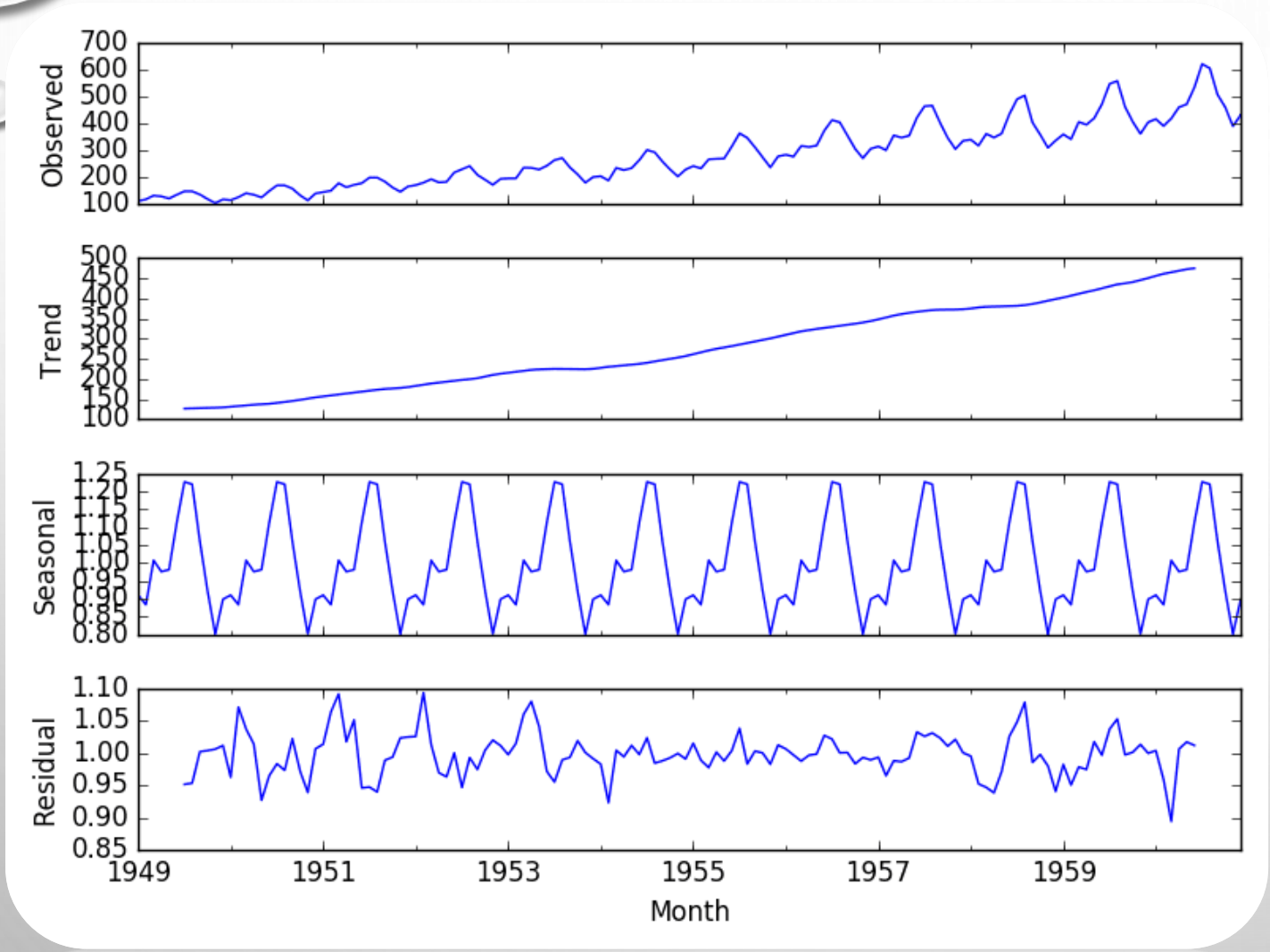
$$y_t = T_t \times C_t \times S_t \times I_t.$$

Tt : média / média móvel

Ct: Fourier Passa Baixas / Média Móvel

St: Fourier Passa Altas / Picos Remanescentes

Ii: auto-regressão / rede neural



DECOMPOSIÇÃO

REGRESSÃO AUTO-VETOR

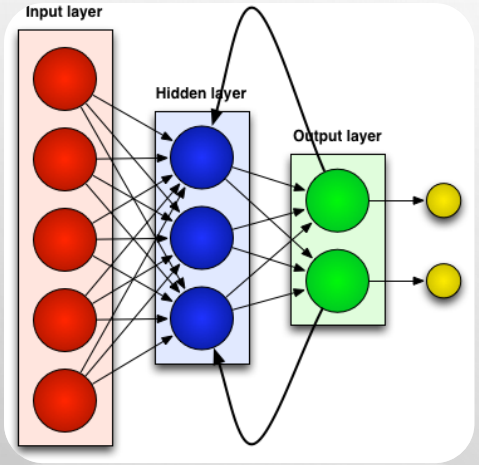
Univariada

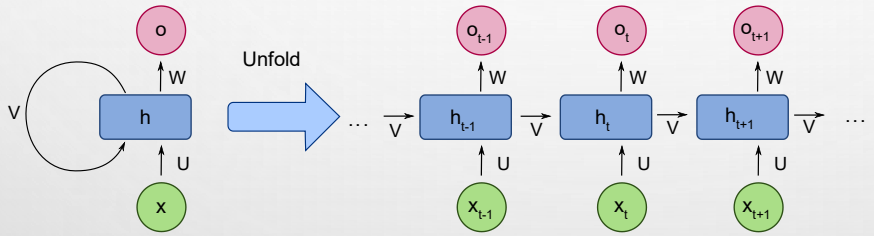
$$X_t = c + \sum_{i=1}^{p} \varphi_i X_{t-i} + \varepsilon_t$$

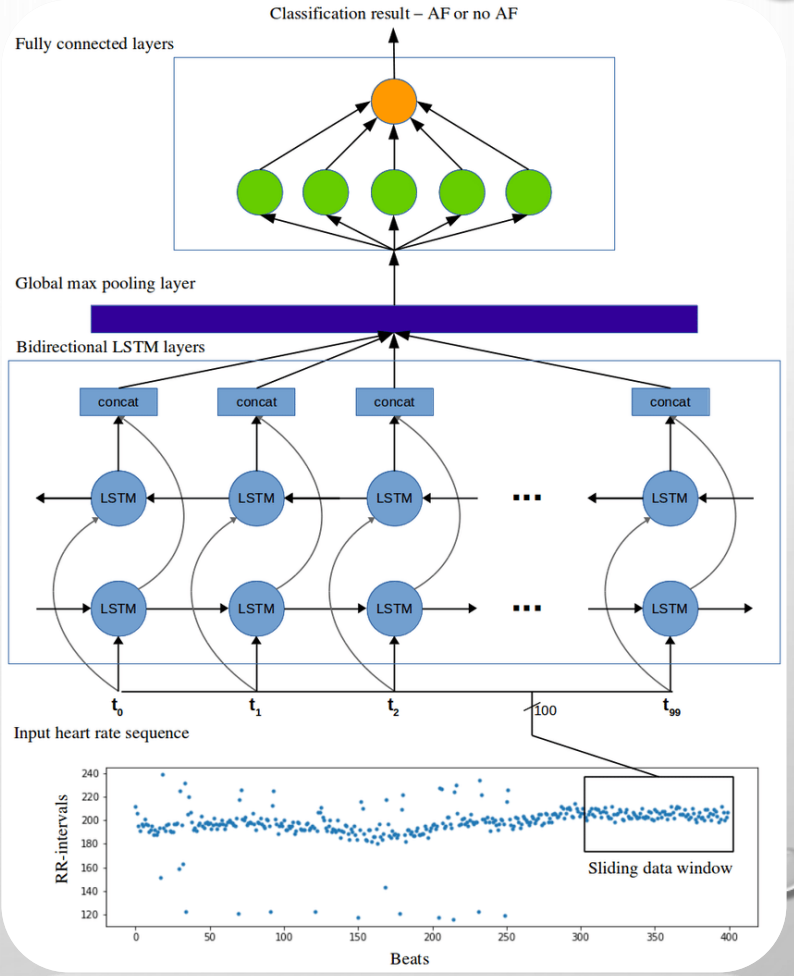
Multivariada

$$y_t = c + A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + e_t,$$

REDE NEURAL RECORRENTE

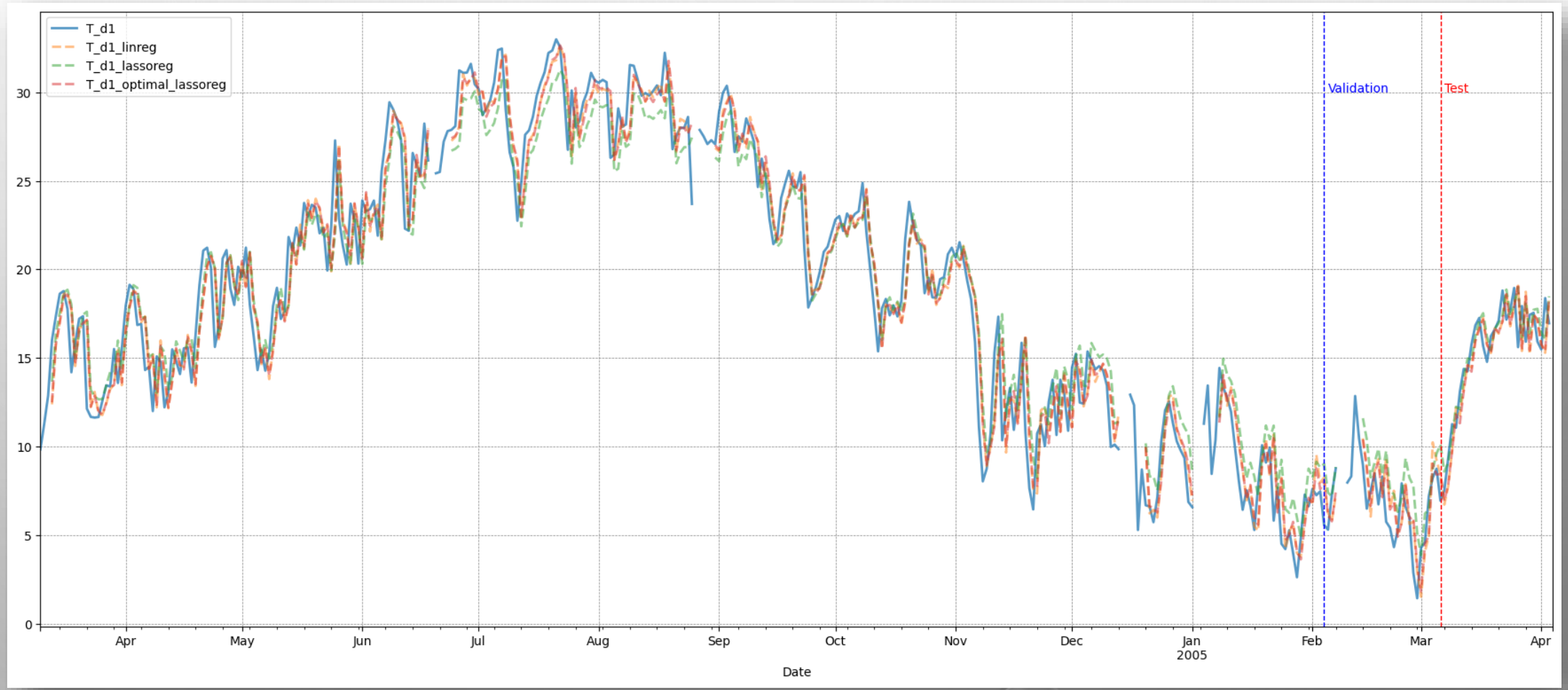






VALIDATION

SPLIT TREINO TESTE VALIDAÇÃO



PARTE 2 : PRÁTICA

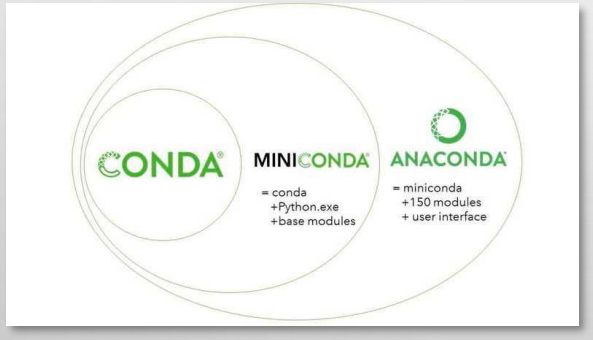
AMBIENTE PYTHON

5. Visualização

6. Machine Learning

4. Variáveis Aleatórias

1. Editor de Código



2. Gestor de Ambiente

3. Ambiente Python do Projeto

3. Notebook Dinâmico

PROBLEMA DE NEGÓCIO

AirQuality Temperature

MODELAGEM

- **REDE NEURAL COM LAGS (AUTO-REGRESSÃO)**
  - 2 LAGS -> DIA SEGUINTE
  - 1 CAMADA OCULTA TANH
  - TREINAMENTO: (T/V/T)
    - MSE

PRÓXIMA AULA: AIR QUALITY REGRESSÃO REDE NEURAL