
PSI2672 - Grupo IV

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Caio Gragnani

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Integrantes do grupo:

Caio:



Yeny:



Agenda

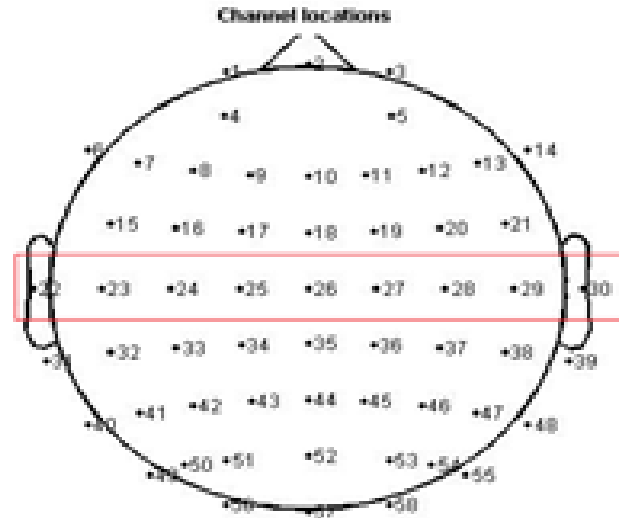
1) Reconhecimento da intenção de movimento da mão direita e esquerda

- ❖ Pré-processamento e dados empíricos
- ❖ Estrutura da rede modelada
- ❖ Resultados (Treino e teste)

2) Regressor: Estimador de Valor de Troca de Ações

- ❖ Dados e pré-processamento
- ❖ Estrutura da rede
- ❖ Resultados (Treino, teste e métrica de erro: mae ponderado)

Reconhecimento da intenção de movimento da mão direita e esquerda



58 of 58 electrode locations shown

Pré-processamento e dados empíricos

Grandezas de entrada: 18 dados empíricos reais

1. Filtragem
 - Potência entre os 50 e 300 ms nos canais 23, 24, 25, 27, 28, 29.
2. Remoção da linha de base
 - Potência entre os 8 e 13 Hz nos canais 23, 24, 25, 27, 28, 29.
3. ICA
 - Entropía nos canais 23, 24, 25, 27, 28, 29.

Com Matlab

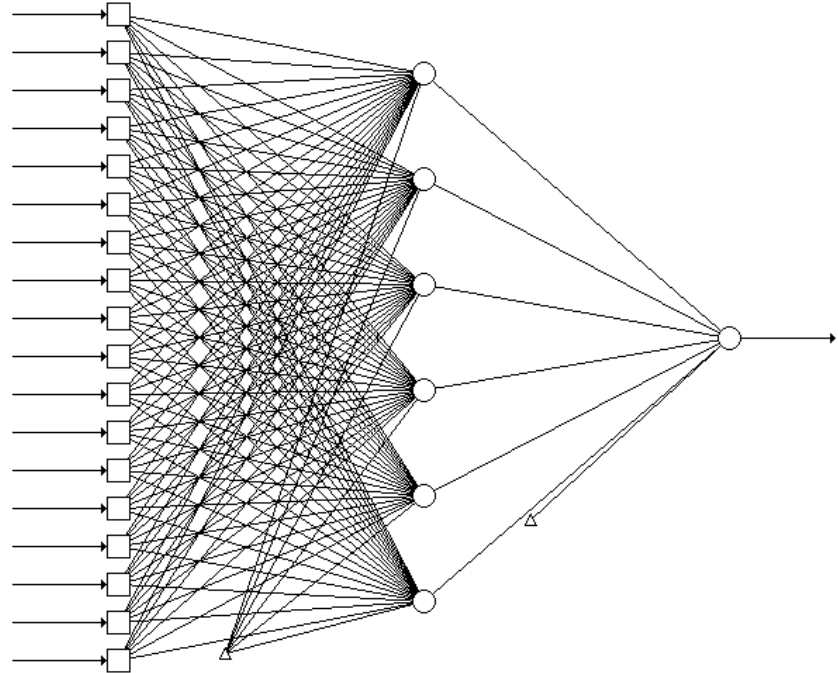
Grandezas de saída: enteros

Estrutura

Dois camadas

- Camada escondida: 6 nós
- Camada de saída: 1 nó

Dados normalizados

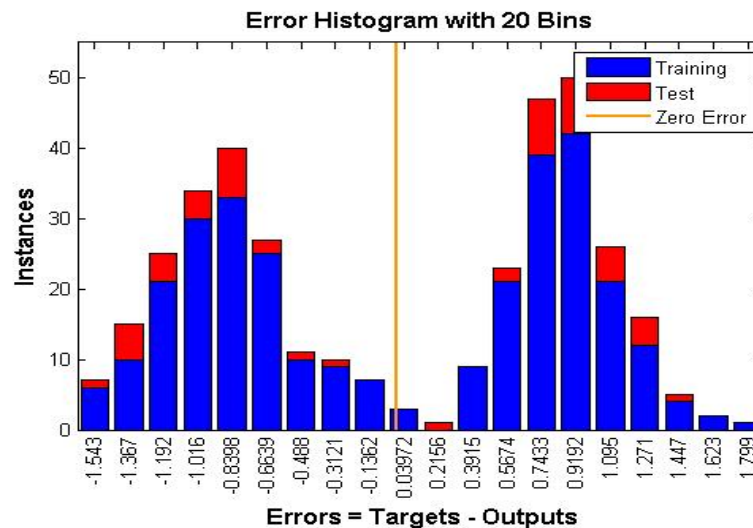
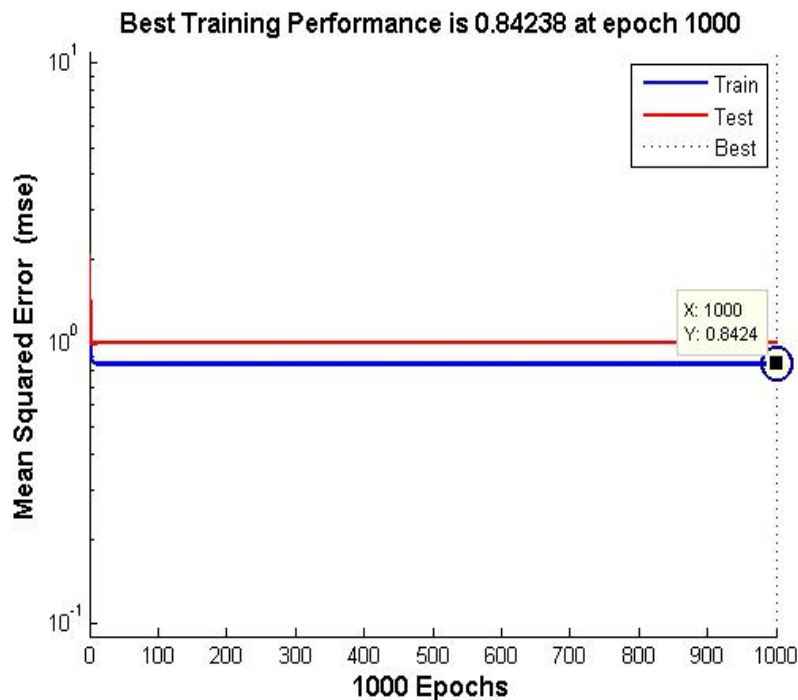


Resultados

Validação cruzada de 10

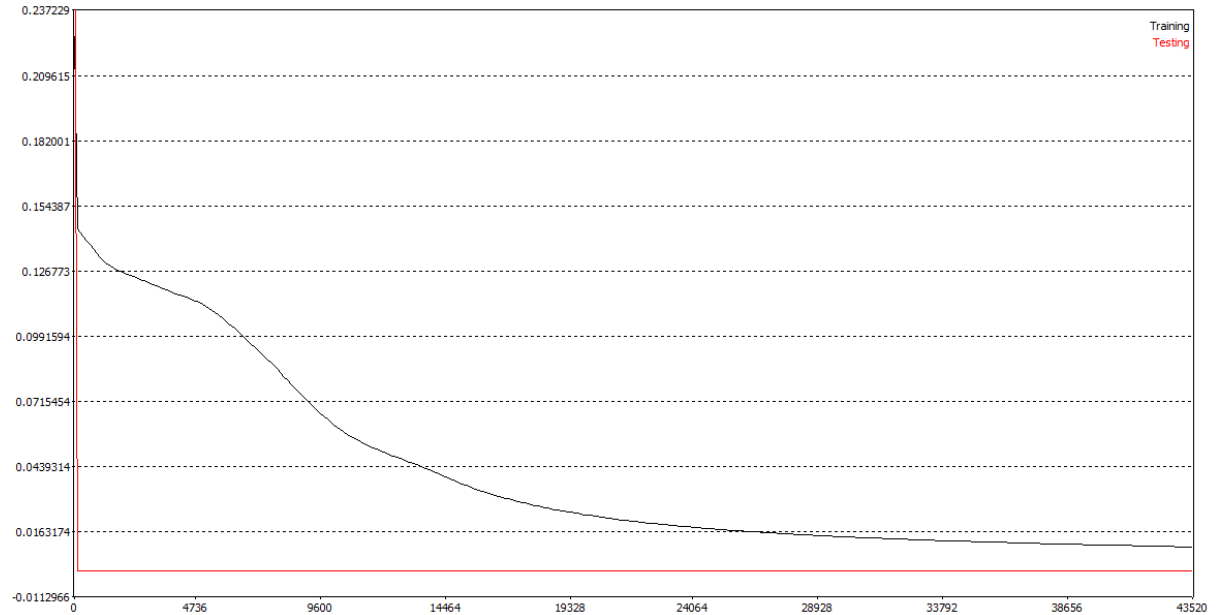
Melhor: 0.9089

70% treino, 15% teste, 15% validação



Treino: 0,009973
mrs

Teste:0,4826 mrs



Regressor: Estimador de Valor de Troca de Ações

Drivers:

focar nos “loops de refinamento”

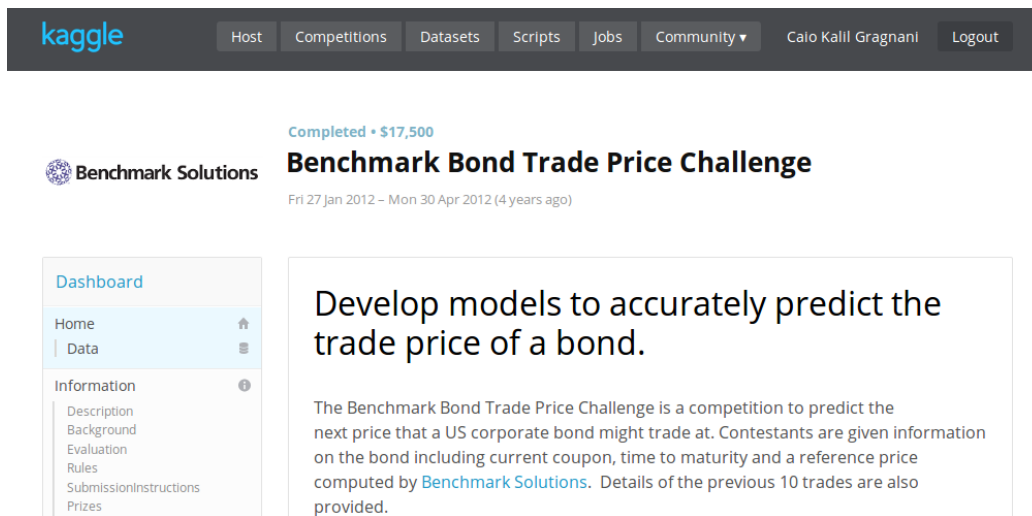
dados significativos (reais)

resultados comparáveis

desafio

Dataset:

[Benchmark Solutions](#) - [kaggle](#)



The screenshot shows the Kaggle interface for the 'Benchmark Bond Trade Price Challenge'. At the top, the Kaggle logo is on the left, and navigation links for 'Host', 'Competitions', 'Datasets', 'Scripts', 'Jobs', 'Community', and a user profile 'Caio Kalil Gragnani' with a 'Logout' button are on the right. The challenge title 'Benchmark Bond Trade Price Challenge' is prominently displayed, with a status of 'Completed • \$17,500' and a date range of 'Fri 27 Jan 2012 – Mon 30 Apr 2012 (4 years ago)'. A sidebar on the left contains a 'Dashboard' menu with options for 'Home', 'Data', and 'Information' (which is expanded to show 'Description', 'Background', 'Evaluation', 'Rules', 'SubmissionInstructions', and 'Prizes'). The main content area features the challenge description: 'Develop models to accurately predict the trade price of a bond.' and a paragraph explaining that the challenge is a competition to predict the next price of a US corporate bond, with contestants receiving information on coupon, maturity, and reference price.

Dados

id: The row id.

bond_id: The unique id of a bond to aid in timeseries reconstruction. (This column is only present in the train data)

trade_price: The price at which the trade occurred. (This is the column to predict in the test data)

weight: The weight of the row for evaluation purposes. This is calculated as the square root of the time since the last trade and then scaled so the mean is 1.

current_coupon: The coupon of the bond at the time of the trade.

time_to_maturity: The number of years until the bond matures at the time of the trade.

is_callable: A binary value indicating whether or not the bond is callable by the issuer.

reporting_delay: The number of seconds after the trade occurred that it was reported.

trade_size: The notional amount of the trade.

Dados...

trade_type: 2=customer sell, 3=customer buy, 4=trade between dealers. We would expect customers to get worse prices on average than dealers.

curve_based_price: A fair price estimate based on implied hazard and funding curves of the issuer of the bond.

received_time_diff_last{1-10}: The time difference between the trade and that of the previous {1-10}.

trade_price_last{1-10}: The trade price of the last {1-10} trades.

trade_size_last{1-10}: The notional amount of the last {1-10} trades.

trade_type_last{1-10}: The trade type of the last {1-10} trades.

curve_based_price_last{1-10}: The curve based price of the last {1-10} trades.

Features Extracted > Pré-processamento

No total, temos **59** entradas. Roteiro para os ensaios:

FEATURE SCALING

NN STRUCTURE

TRAIN

TEST (métrica de erro: mse ponderado)

....compare!

FEATURE SCALING

> transformação linear dos dados para colocar todas as entradas na mesma escala.

>usualmente: $x_i \leftarrow \frac{x_i - \mu}{s}$ normalização (s é uma medida de dispersão)

>dois pré-processamentos: utilizamos o desvio padrão da amostra como s1 e o desvio padrão do tipo de ação como s2

NN STRUCTURE > na unha!

No matlab, implementamos:

função custo, gradiente, error back-propagation, random initialization, verificação numérica do gradiente, função erro teste

modificamos:

função com o loop de iterações

CRÉDITOS: aula 06 do curso [Machine Learning](#) do Andrew Ng na plataforma Coursera

NN STRUCTURE > treino

função de ativação sigmóide:

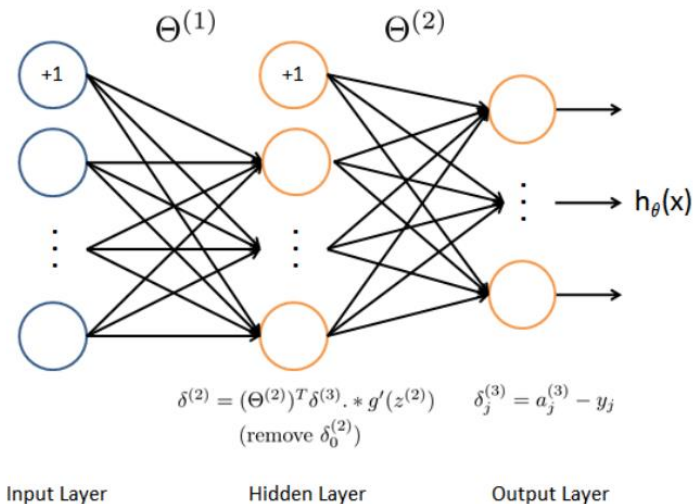
$$g'(z) = \frac{d}{dz}g(z) = g(z)(1 - g(z))$$

$$\text{sigmoid}(z) = g(z) = \frac{1}{1 + e^{-z}}$$

função custo e sua regularização:

$$J(\theta) = \frac{1}{m} \sum_{i=1}^m \sum_{k=1}^K \left[-y_k^{(i)} \log((h_{\theta}(x^{(i)}))_k) - (1 - y_k^{(i)}) \log(1 - (h_{\theta}(x^{(i)}))_k) \right]$$

$$J(\theta) = \frac{1}{m} \sum_{i=1}^m \sum_{k=1}^K \left[-y_k^{(i)} \log((h_{\theta}(x^{(i)}))_k) - (1 - y_k^{(i)}) \log(1 - (h_{\theta}(x^{(i)}))_k) \right] + \frac{\lambda}{2m} \left[\sum_{j=1}^{25} \sum_{k=1}^{400} (\Theta_{j,k}^{(1)})^2 + \sum_{j=1}^{10} \sum_{k=1}^{25} (\Theta_{j,k}^{(2)})^2 \right].$$



TESTE > métrica de erro: mae ponderado

A métrica de erro utilizada foi dada pela proponente da competição.

Utilizamos essa medida para ter resultados comparáveis aos de outros competidores.

Completed • \$17,500

Benchmark Bond Trade Price Challenge

Fri 27 Jan 2012 – Mon 30 Apr 2012 (4 years ago)

Evaluation

Performance evaluation will be conducted using mean absolute error. Each observation will be weighted as indicated by the weight column. This weight is calculated as the square root of the time since the last observation, scaled so that the mean weight is 1.

RESULTADOS!

maep: 0.97077

217 lugar na public board...

Caio&Yeny



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195	.43	Saeh	0.92510	12	Mon, 09 Apr 2012 00:56:08 (-4d)
		Random Forest	0.92539		
196	.43	Mmmtoasty	0.92882	4	Sun, 26 Feb 2012 18:01:53 (-3d)
197	.43	Data_Miner23	0.93016	1	Tue, 07 Feb 2012 15:48:28
198	.43	dowdyg1	0.93343	14	Tue, 03 Apr 2012 11:50:53
199	new	chenchendigulu	0.93462	1	Mon, 30 Apr 2012 13:08:51
200	.44	Peter	0.94311	3	Mon, 13 Feb 2012 14:40:16
201	.44	Maxime	0.94347	1	Wed, 28 Mar 2012 17:22:14
202	.44	Robert Lachlan	0.94353	1	Mon, 23 Apr 2012 00:52:34
203	.44	MineOfDiamonds	0.94506	4	Sun, 19 Feb 2012 17:52:29
204	.44	gamerx	0.94520	16	Sat, 24 Mar 2012 10:20:15 (-6,1d)
205	.44	TI_Laing	0.94632	6	Tue, 03 Apr 2012 03:49:56
206	new	drcaron	0.95090	4	Mon, 30 Apr 2012 02:56:05
207	new	El Gringo	0.95231	2	Mon, 30 Apr 2012 23:15:02
208	.46	samos	0.95335	1	Tue, 20 Mar 2012 21:50:04
209	.46	bianchimro	0.95366	4	Tue, 28 Feb 2012 12:30:50 (-24,7h)
210	.46	Herve	0.95741	2	Wed, 11 Apr 2012 12:36:18
211	new	xmu23020092204097	0.96060	1	Mon, 30 Apr 2012 16:28:13
212	.47	BaronWR	0.96205	2	Sat, 11 Feb 2012 18:29:19 (-4d)
213	.47	tentative	0.96464	2	Tue, 06 Mar 2012 22:00:06
214	new	Ellimilial	0.96868	1	Mon, 30 Apr 2012 22:53:51
215	new	Sffetka	0.96899	2	Fri, 27 Apr 2012 23:56:52
216	.49	noxy	0.96959	2	Tue, 27 Mar 2012 16:17:28
217	new	jcb	0.97098	1	Wed, 25 Apr 2012 12:41:20

RESULTADOS

maep = 0.74141

décimo primeiro lugar!!!!



GrupoIV_PSI2672

Dashboard

Public Leaderboard - Benchmark Bond Trade Price Challenge

This leaderboard is calculated on approximately 30% of the test data.
The final results will be based on the other 70%, so the final standings may be different.

See someone using multiple accounts?
[Let us know.](#)

#	Δ1W	Team Name <small>• In the money</small>	Score 🏆	Entries	Last Submission UTC (Best - Last Submission)
1	—	upbeat 🏆 *	0.68548	16	Mon, 30 Apr 2012 23:41:23 (-47.6h)
2	—	S&B500 🏆 *	0.69380	74	Mon, 30 Apr 2012 23:38:51 (-0.8h)
3	—	VikP & Sergey 🏆 *	0.70549	46	Mon, 30 Apr 2012 22:13:56 (-32h)
4	—	Paweł & Chase 🏆	0.70804	56	Mon, 30 Apr 2012 19:00:12
5	—	Stefan Stefanov	0.71101	35	Mon, 30 Apr 2012 10:00:08
6	—	Wayne Zhang	0.72861	126	Mon, 30 Apr 2012 16:34:17
7	—	Student1 & Alec Stephenson 🏆	0.72964	69	Mon, 30 Apr 2012 19:19:38
8	🟢56	Neil Thomas	0.73141	10	Mon, 30 Apr 2012 23:48:28
9	🔴1	GlenK	0.73595	50	Mon, 30 Apr 2012 23:44:34 (-24h)
10	🟢2	lucky guy	0.73780	4	Mon, 30 Apr 2012 18:08:51 (-1.7h)
11	🔴2	Toms' Friends 🏆	0.74120	100	Mon, 30 Apr 2012 19:23:09
12	🔴1	ivo	0.74191	70	Mon, 30 Apr 2012 06:50:04 (-23.6h)
13	🟢31	Linear B - Halla	0.74196	23	Mon, 30 Apr 2012 21:38:44
14	🟢12	Vivek Sharma	0.74281	11	Mon, 30 Apr 2012 23:57:06 (-1.9h)

Referencias

- A. L. B. a. P. Langley, "Selection of relevant features and examples in machine learning," *Artificial Intelligence*, vol. 97, p. 245–271.
- Q. Z. a. L. Zhang, "Temporal and Spatial Features of Single-Trial EEG for Brain-Computer Interface," Department of Computer Science and Engineering, Shanghai Jiao Tong University,, 2007.
- Y. Hashimoto, "EEG-based classification of imaginary left and right foot movements using beta," *Clinical Neurophysiology*, 2013.
- "Data - Give Me Some Credit | Kaggle", *Kaggle.com*, 2016. [Online]. Available: <https://www.kaggle.com/c/GiveMeSomeCredit/data>. [Accessed: 05- Jun- 2016].