

RESEARCH METHODOLOGY AND SCIENTIFIC WRITING

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Obs. Opiniões pessoais.

Softwares, sites, aplicativos

Processador de texto

Microsoft Word – todo mundo usa.

LibreOffice – versão open source, menos poderosa do Office, problemas de compatibilidade.

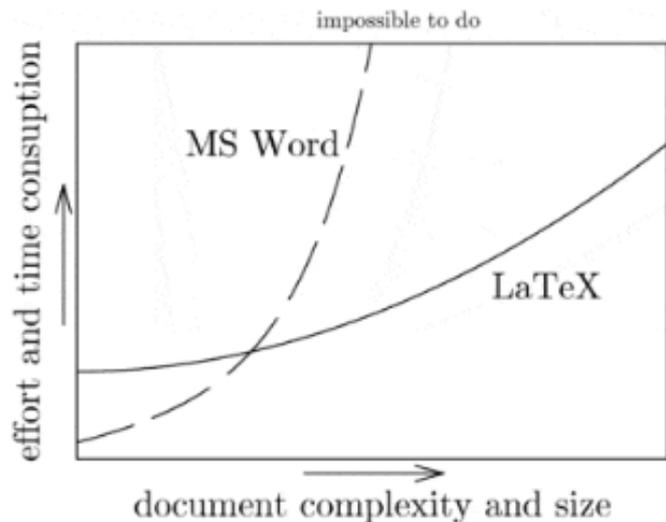
Google Docs – (ainda) limitado.

Latex – tecnicamente é uma linguagem, tal como HTML.

- + Gratuito
- + faz slides, textos, etc
- + antigo e maduro
- + uso é incentivado na academia
- + amplo material de apoio

- MUITO mais difícil que Office
- curva aprendizagem lenta
- usa vários files ao invés de só um doc

Principal diferença... qualidade e potencial Latex >>> Office



Obs. Geralmente há templates LATEX prontos para vários casos, entre os quais Trabalhos ABNT, mestrado UFABC etc.



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Modelo LaTeX para Dissertação/Tese

Prezados(as)

arquivo de um template em LaTeX (clique aqui) para elaboração de dissertação/tese seguindo a normalização (Guia de normalização de trabalhos acadêmicos) definida pela biblioteca da UFABC.

Link Biblioteca UFABC: <https://portal.biblioteca.ufabc.edu.br/servicos/normalizacao>

Link para o TEMPLATE: (AQUI)

Ressalta-se que é responsabilidade do usuário fazer as atualizações necessárias e agradecimentos.

Este template foi atualizado em 23/03/2022.

A Coordenação do PPG-ENE agradece ao prof. Romulo Gonçalves Lins para elaboração e compartilhamento deste template.

Coordenação do PPG-ENE

```

\includegraphics[scale=0.25]{./images/QUCS_results2e200MHz.eps}
\caption{Simulated pulses in time and frequency domains.}
\label{fig.QUCSresults}
\end{figure}

```

The hundredfold distance in rise time for the pulses frequencies, albeit keeping the same waveform, generates quite different responses. The 2-MHz s_1 output pulse spectrum follows its input all the way up to a decade above 2 MHz, whereas s_2 has a 4.88 dB drop in the output energy right at the 200 MHz theoretical break point. Clearly, the capacitance associated with the coaxial cable might impose a toll on fast-signals, with loss in the fast leading edge which conveys timing information.

Table [TimingComparison](#) contains the time distance between output and input peaks, as well as their linear amplitude attenuation. s_1 output is 5 ns ahead of the input, showing the derivative (high-pass filter) effect the circuit imposes, whereas s_2 output is delayed 2.24 ns. From the viewpoint of attenuation, not much difference is observed. Much more impact on the attenuation is caused when the source resistance (R1) is increased, which for the SiPM case is in any case undesirable due to the effect it creates on the pulse rise time.

Line: 298 Column: 554 INSERT

Messages Log Preview Search Results

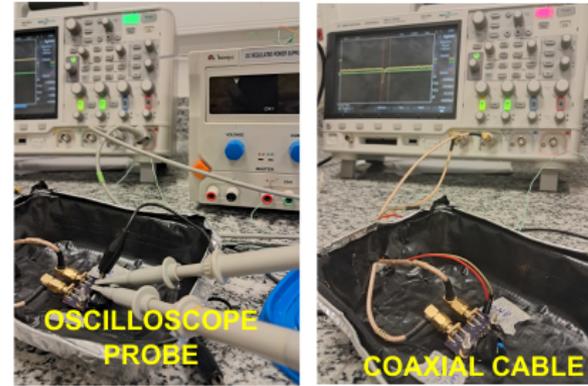


Fig. 2. Setup with the oscilloscope probe and coaxial cable.

$$I(\omega) \approx i_o \left[\frac{1}{j\omega + \frac{1}{\tau_d}} - \frac{1}{j\omega + \frac{1}{\tau_r}} \right]. \quad (2)$$

With ω representing the angular frequency variable. This expression, taken only its amplitude results in:

$$|I(\omega)| \approx \frac{|(1/\tau_r) - (1/\tau_d)|}{|j\omega + (1/\tau_r)||j\omega + (1/\tau_d)|} = \frac{|(1/\tau_r) - (1/\tau_d)|}{\sqrt{(\omega^2 + (1/\tau_r)^2)}\sqrt{(\omega^2 + (1/\tau_d)^2)}}. \quad (3)$$

whose magnitude in dB can be expressed as:

$$|I(\omega)| \approx 20 \log \left| \frac{1}{\tau_r} - \frac{1}{\tau_d} \right| - \left[10 \log \left(\omega^2 + \frac{1}{\tau_r^2} \right) + 10 \log \left(\omega^2 + \frac{1}{\tau_d^2} \right) \right]. \quad (4)$$

The first term is equivalent to a DC energy, and the remaining two items inside the brackets impose the low-pass characteristic of the energy, the breaking points at frequencies $1/(2\pi\tau_r)$ and $1/(2\pi\tau_d)$. Since τ_r in general is smaller than τ_d the pulse energy starts falling after $1/(2\pi\tau_d)$, with a slope of -20 dB/decade and it falls further (-40 dB/dec) when the frequency reaches $1/(2\pi\tau_r)$ [13].

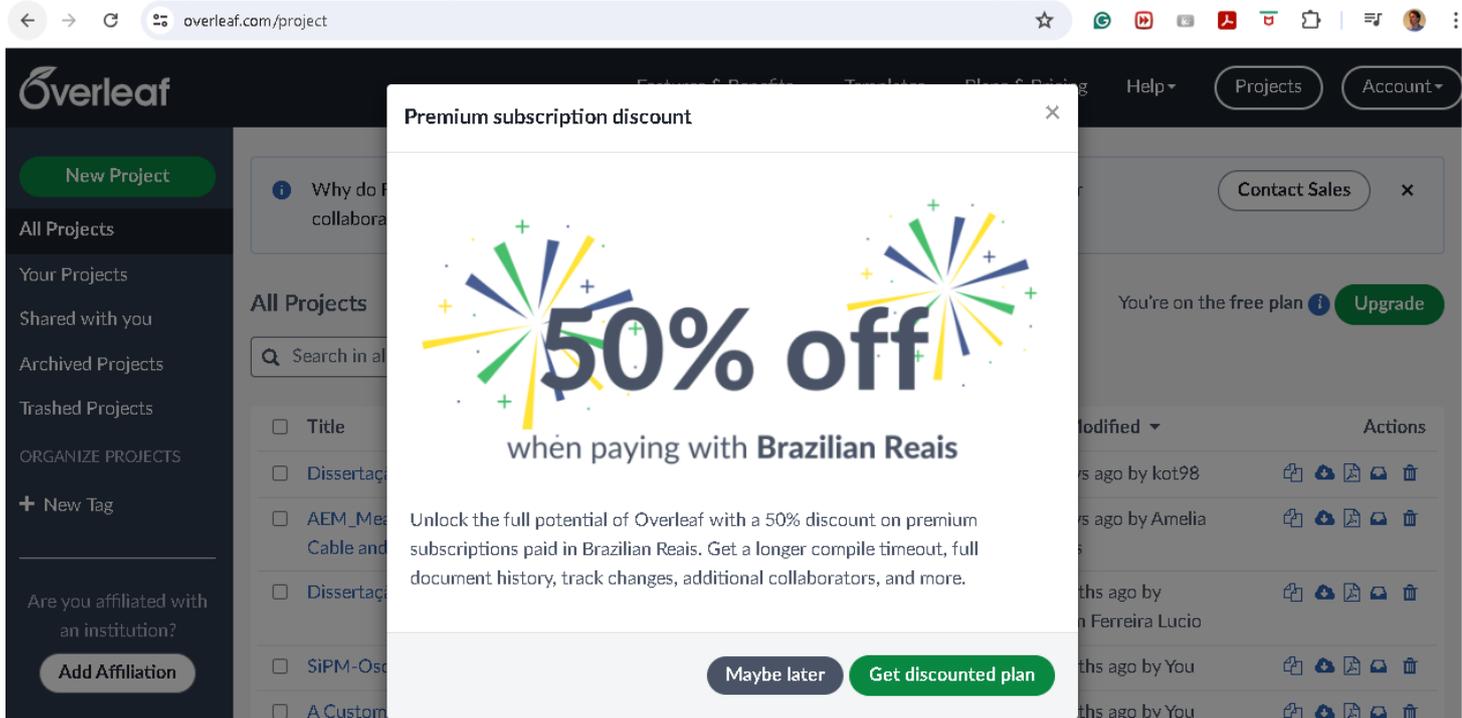
In terms of applications, two kind of parameters of interest are extracted from the waveform, energy, inferred from the pulse amplitude and timing, which relies on the fast-part of the wave (leading edge). Therefore, whereas signal-to-noise amplitude is important for energy measurements, slope-to-noise ratio is fundamental for timing. It implies that for timing readings, both amplifier and detectors should have similar bandwidths [11]. A good estimate of the average pulse received by the sensor is so of paramount importance to continue with an optimal circuit and systemic design.

Lembrar de colaboração com orientador ou revisor externo

Word precisa mandar o arquivo. Problema de versão compatibilidade, desformatação....

Vantagem trabalhar na nuvem (Google Docs)

Latex tem o overleaf, muito bom tecnicamente, mas recentemente se não é pago começou a dar problemas...



overleaf.com/project

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Maybe later Get discounted plan

Erros português/inglês:

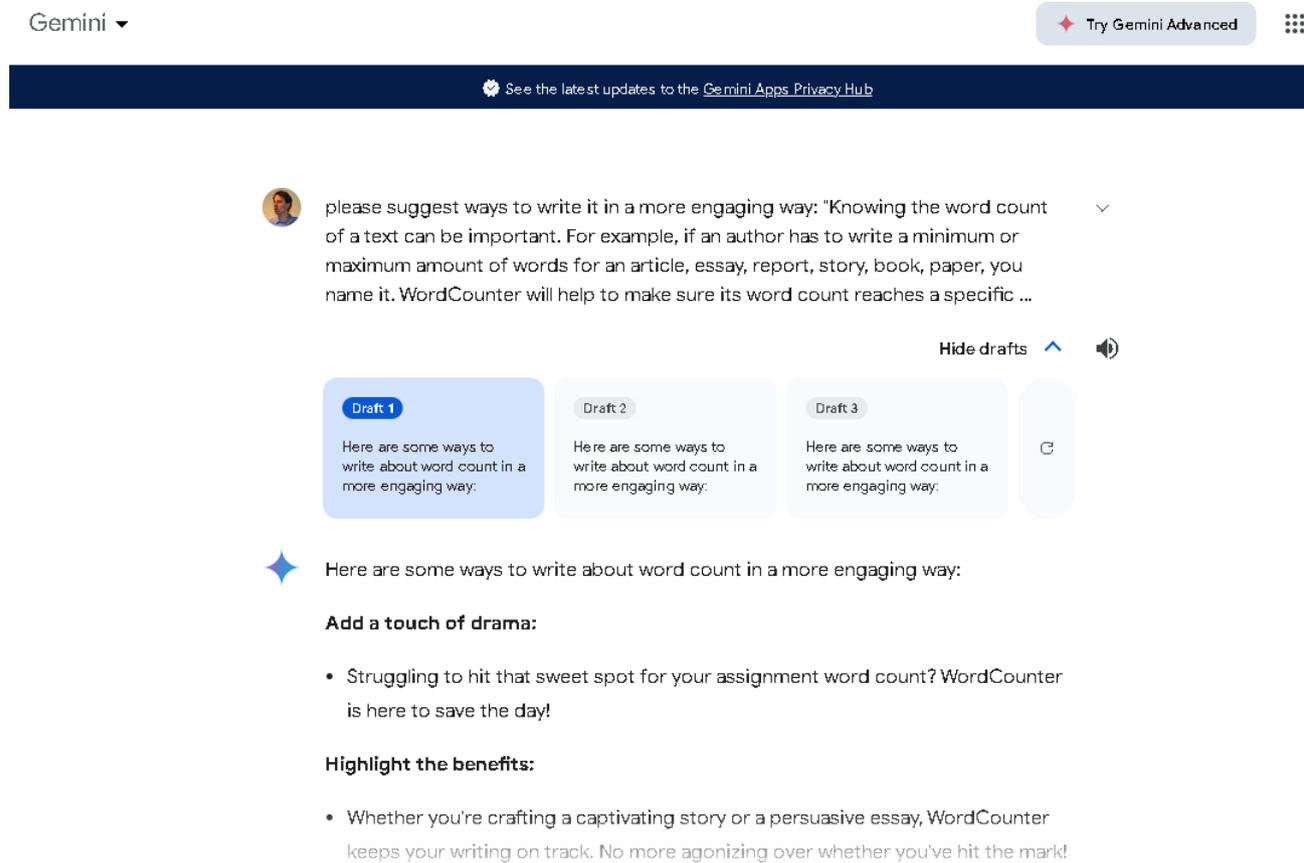
Processadores de texto (Latex incluso) tem corretores ortográficos.

Não há desculpa para grosserias gramaticais a não ser preguiça e desleixo.

Além disso, outras alternativas são:

Wordcounter.com
(inglês)

AI: ChatGPT, gemini, etc



Gemini ▾ Try Gemini Advanced

See the latest updates to the [Gemini Apps Privacy Hub](#)

please suggest ways to write it in a more engaging way: "Knowing the word count of a text can be important. For example, if an author has to write a minimum or maximum amount of words for an article, essay, report, story, book, paper, you name it. WordCounter will help to make sure its word count reaches a specific ..."

Hide drafts ^ 🔊

Draft 1 Here are some ways to write about word count in a more engaging way:

Draft 2 Here are some ways to write about word count in a more engaging way:

Draft 3 Here are some ways to write about word count in a more engaging way:

◆ Here are some ways to write about word count in a more engaging way:

Add a touch of drama:

- Struggling to hit that sweet spot for your assignment word count? WordCounter is here to save the day!

Highlight the benefits:

- Whether you're crafting a captivating story or a persuasive essay, WordCounter keeps your writing on track. No more agonizing over whether you've hit the mark!

AI corrige erros. Cuidado apenas quando pedir referencias, ele “inventa” coisas que não existem.



please correct the english if needed "We is brown, he **did** not gone to school"

Show drafts 



The correct sentence is: "We are brown, he **did** not go to school."

Here's a breakdown of the corrections:

- **Subject-verb agreement:** "We" is plural, so the verb needs to be plural as well. "Are" is the correct plural form of "is".
- **Past tense:** "Gone" is the past participle of "go", but it needs the helping verb "has" to form the past perfect tense. In this case, simple past tense ("did not go") is more appropriate.



Atualmente, perplexity.ai dá boas respostas, mais preciso que os demais, que tendem a ser mais preocupados com PC.

The screenshot shows the Perplexity AI search interface. At the top, the search query is "what is the relation between a signal in the time and frequency ...". Below the query, there are several sources listed, including "Frequency domain - Wikipedia" and "Relationship between the Time Domain and Frequency Domain". The answer section is titled "Answer" and contains the text: "The relationship between signals in the time domain and the frequency domain is fundamentally rooted in the mathematical transformations that allow for the conversion between these two perspectives." Below the answer, there are two sections: "Time Domain vs. Frequency Domain" and "1. Time Domain:", which lists two bullet points: "The time domain representation of a signal shows how the signal varies over time. It captures the sequential nature of events, such as the rise and fall of a sine wave." and "Observations in the time domain are typically made using instruments like oscilloscopes."

Mathematical Relationship

The primary mathematical tool for transitioning between these two domains is the **Fourier Transform**. The Fourier Transform decomposes a time-domain signal into its constituent frequencies, providing a frequency-domain representation. The inverse Fourier Transform allows for the reconstruction of the time-domain signal from its frequency components.

Key Equations

- **Convolution in Time Domain:**

$$y(t) = x(t) * h(t)$$

where $x(t)$ is the input signal and $h(t)$ is the system's impulse response.

- **Multiplication in Frequency Domain:**

$$Y(\omega) = X(\omega)H(\omega)$$

Here, $Y(\omega)$, $X(\omega)$, and $H(\omega)$ are the Fourier transforms of $y(t)$, $x(t)$, and $h(t)$, respectively. This illustrates that convolution in the time domain corresponds to multiplication in the frequency domain, simplifying calculations for linear systems ¹ ².

Advantages of Frequency Domain Analysis

Analyzing signals in the frequency domain offers several benefits:

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3) **PLÁGIO É CRIME?** SIM. A violação dos direitos autorais é **CRIME** previsto no artigo 184 do Código Penal³, com punição que vai desde o pagamento de multa até a reclusão de quatro anos, dependendo da extensão e da forma como o direito do autor foi violado.



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Comissão Nacional de Energia Nuclear

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s verificadores de plágio são ferramentas que permitem identificar suspeita de plágio em documentos disponíveis na Internet e que vem auxiliando muito autores e Instituições nessa questão que infelizmente vem se alastrando muito no meio acadêmico.

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NoPlag é um ótimo verificador de plágio que compara a sua redação a artigos publicados online para detectar possíveis casos de plágio.



Grammarly ganha pontos pela sua interface limpa e fácil de usar e sua eficácia como verificador de plágio, que compara palavras a mais de 8 bilhões de páginas da web.

Copyleaks é um verificador de plágio baseado em nuvem projetado para rastrear, monitorar e rastrear a distribuição de conteúdo online.

CopySpyder (executável, gratuito)

Acima 3% considera plágio.

No relatório ele apresenta as fontes de onde saiu o problema. SEMPRE passar o programa em sua dissertação.

The image shows the CopySpyder software interface. The main window has a menu bar with 'Ferramentas' and 'Ajuda'. Below it is a toolbar with icons for 'Arquivo', 'URL', 'Iniciar', 'Parar', 'Limpar', 'Opções', 'Relatórios', and 'Scholar'. The main area shows an email field with 'marcelo.perotoni@ufabc.edu.br' and a search mode dropdown set to 'Arquivos da internet'. A table displays search results for a file named '4.docx' in the path 'C:\Users\m_per\Downloads'. The table has columns for 'Nome do arquivo de entrada', 'Tempo', 'Progresso', 'Chance', 'Status', and 'Relatório'. The 'Tempo' and 'Chance' columns are highlighted with red boxes. The 'Chance' column shows '1.2%' and the 'Status' column shows 'Ok'.

The report window, titled 'CopySpyder - Relatório', has buttons for 'Salvar', 'Compacto', and 'Fechar'. It shows a 'Resumo' section with a list of sources and their similarity percentages. The 'Arquivo de entrada' is '4.docx (5435 termos)'. The table below lists the sources and their similarity percentages:

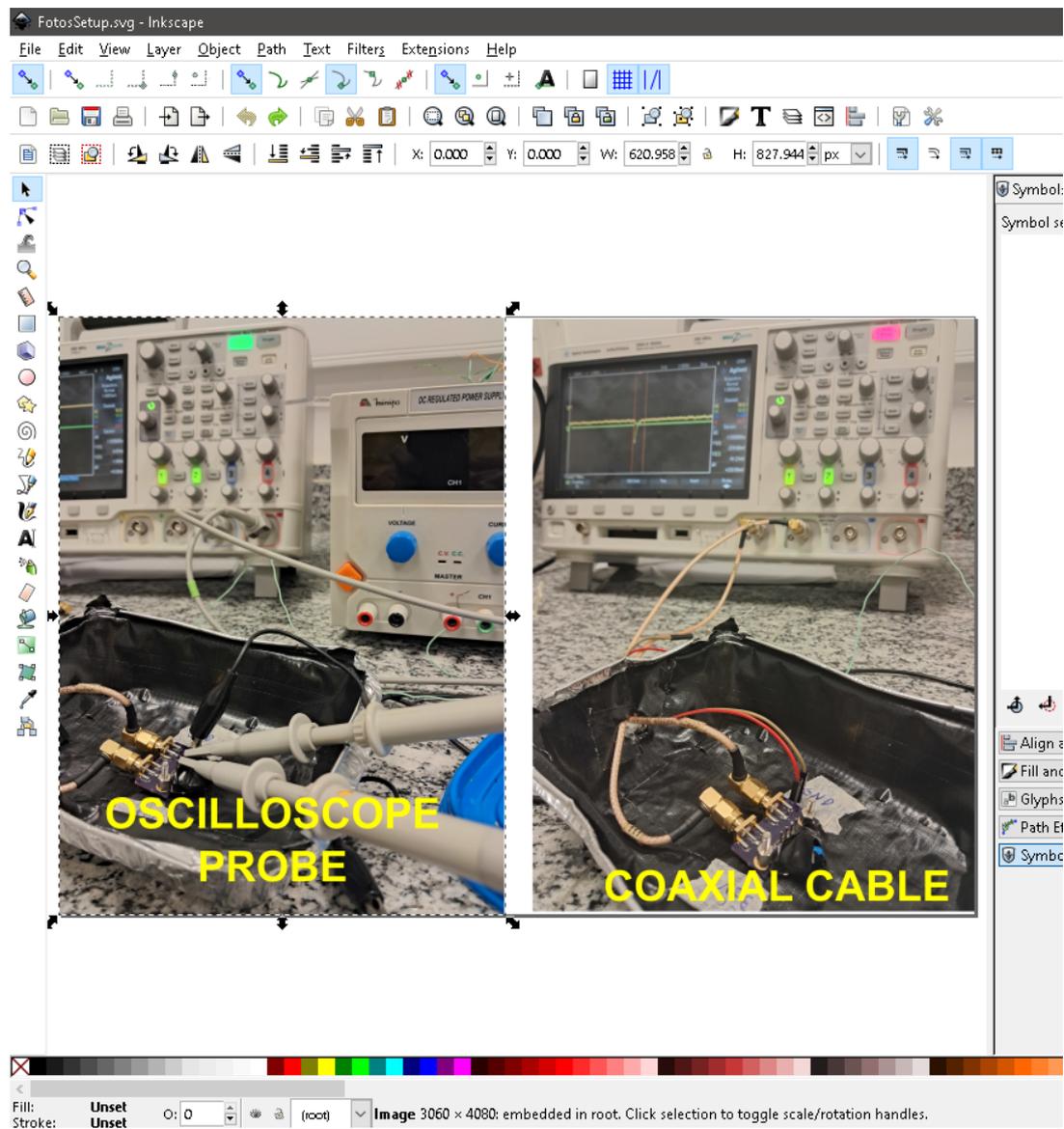
Arquivo encontrado	Similaridade (%)	Visualizar
aws.amazon.com/pt/compare/the-difference-between-grpc-and...	1.20	Visualizar
aws.amazon.com/pt/compare/the-difference-between-rpc-and-r...	0.94	Visualizar
redhat.com/pt-br/topics/integration/whats-the-difference-betwe...	0.60	Visualizar
diegomacedo.com.br/meios-de-transmissao-de-dados	0.32	Visualizar
restful-api.dev/rest-api-history	0.20	Visualizar
blog.readme.com/the-history-of-rest-apis	0.11	Visualizar
dl.acm.org/doi/book/10.5555/932295	0.09	Visualizar

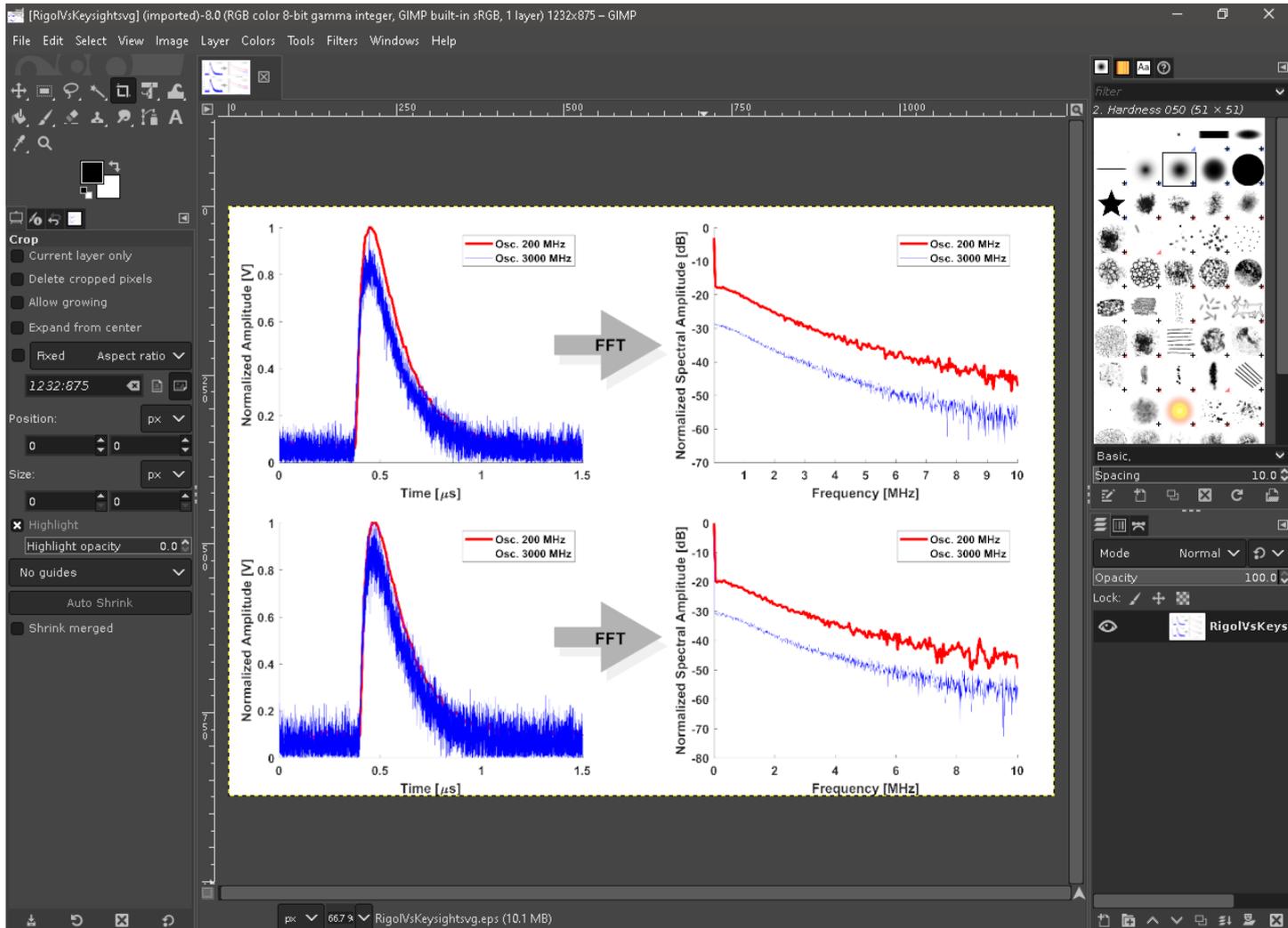
Desenho e processamento imagens

- Photoshop (\$), raster-based
- Inkscape (free), vector-based, aprendizado mais demorado.
- GIMP (free), raster-based
- Power-point (\$)

Raster-based: fotos

Vector-based: logos, desenhos feitos do zero

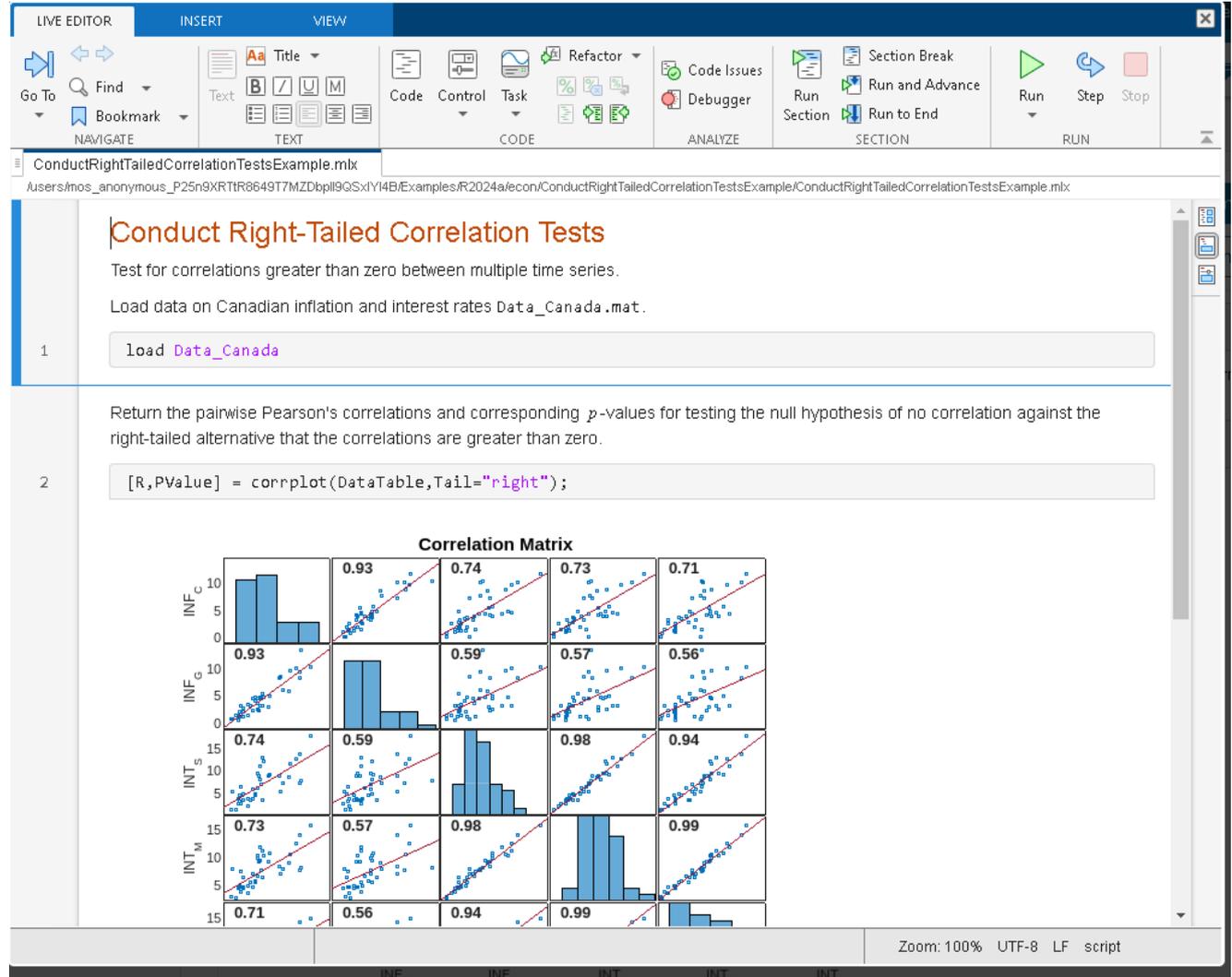




GIMP

Softwares matemáticos, estatísticos, processamento sinais, etc

- Matlab (\$)
- Octave (free), clone Matlab
- Scilab (free)
- Mathematica (\$), cálculos literais, excelente apresentação
- Python (free), recomendado
- Excel (planilhas, gráficos simples, etc)



File Edit Debug Tools Window Help News

Current Directory: C:\Users\m_per

File Browser

C:\Users\m_per

Name
> .android
> .arduinoIDE
> .cache
> .conda
> .config
> .continuum
> .dbus-keyrings
> .designer
> .gnuradio
> .idlerc

Workspace

Filter ()138*loh1404

Name	Class	Dimension	Value	Attribute
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Command History

Filter

```
log10(10)
a=41.54/50
a*a
7.354/log10(2)
140.48
140.4*log10(2)
# Octave 8.2.0, Fri Jun 14 17:49:20 2024 GMT
t=linspace(0,4*pi,128);
y=sin(t);
plot(t,y)
```

Command Window

```
GNU Octave, version 8.2.0
Copyright (C) 1993-2023 The Octave Project Developers.
This is free software; see the source code for copying conditions.
There is ABSOLUTELY NO WARRANTY; not even for MERCHANTABILITY or
FITNESS FOR A PARTICULAR PURPOSE. For details, type 'warranty'.

Octave was configured for "x86_64-w64-mingw32".

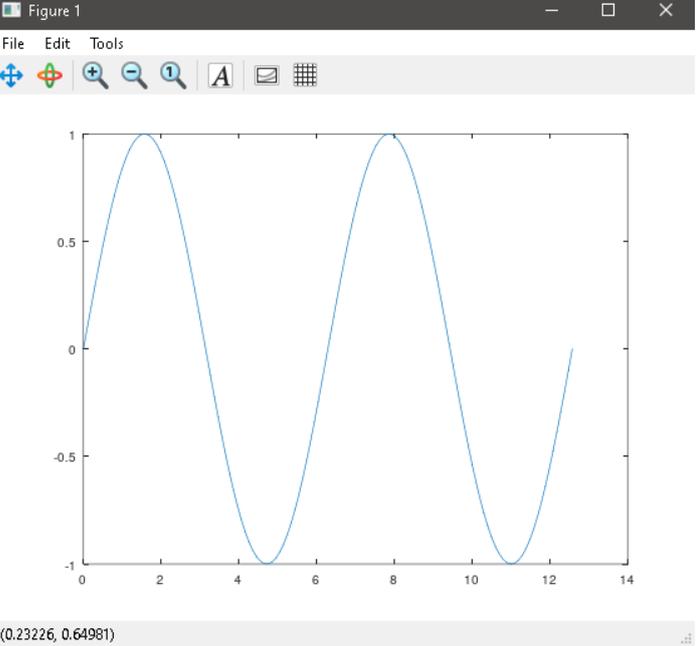
Additional information about Octave is available at https://www.octave.
Please contribute if you find this software useful.
For more information, visit https://www.octave.org/get-involved.html

Read https://www.octave.org/bugs.html to learn how to submit bug report
For information about changes from previous versions, type 'news'.

>> t=linspace(0,4*pi,128);
>> y=sin(t);
>> plot(t,y)
>> |
```

Figure 1

File Edit Tools



t	y
0	0
π	1
2π	0
3π	-1
4π	0
5π	1
6π	0
7π	-1
8π	0
9π	1
10π	0
11π	-1
12π	0

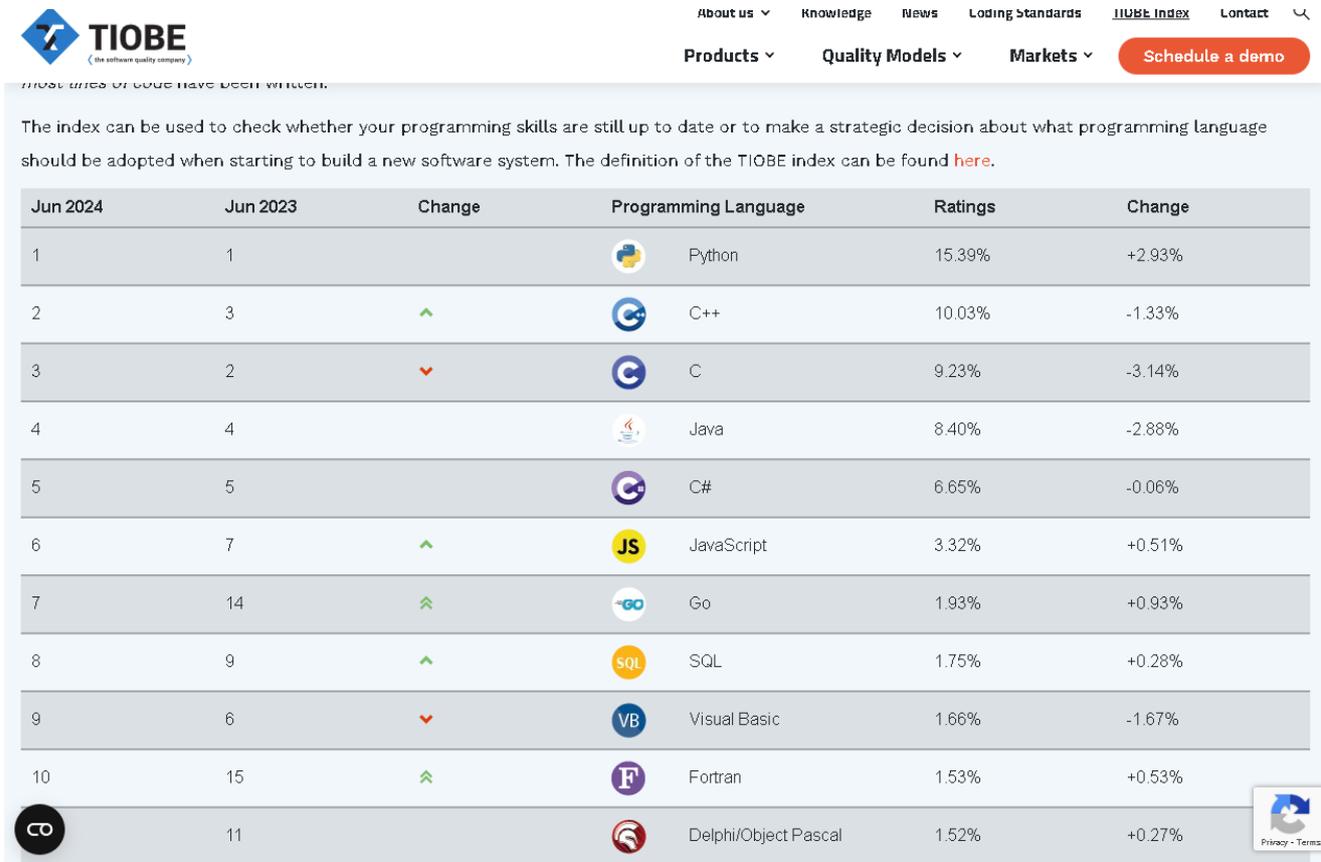
Command Window Doc

(0.23226, 0.64981)

Octave

Recomendado para quem está iniciando, Python.

- gratuito
- sendo progressivamente usado como ferramenta para interface com máquinas, interface com outros softwares (substituindo antigo VBA)
- uso se expandindo cada vez mais
- fácil de usar
- multi-plataforma (Linux, Win, até Android)
- muita coisa pronta em bibliotecas
- usado em massa pela comunidade de AI
- quantidade de cursos, livros, vídeos enorme
- grande oferta (free) de IDEs: Spyder, Pyzos, Pycharm, VSCode, etc



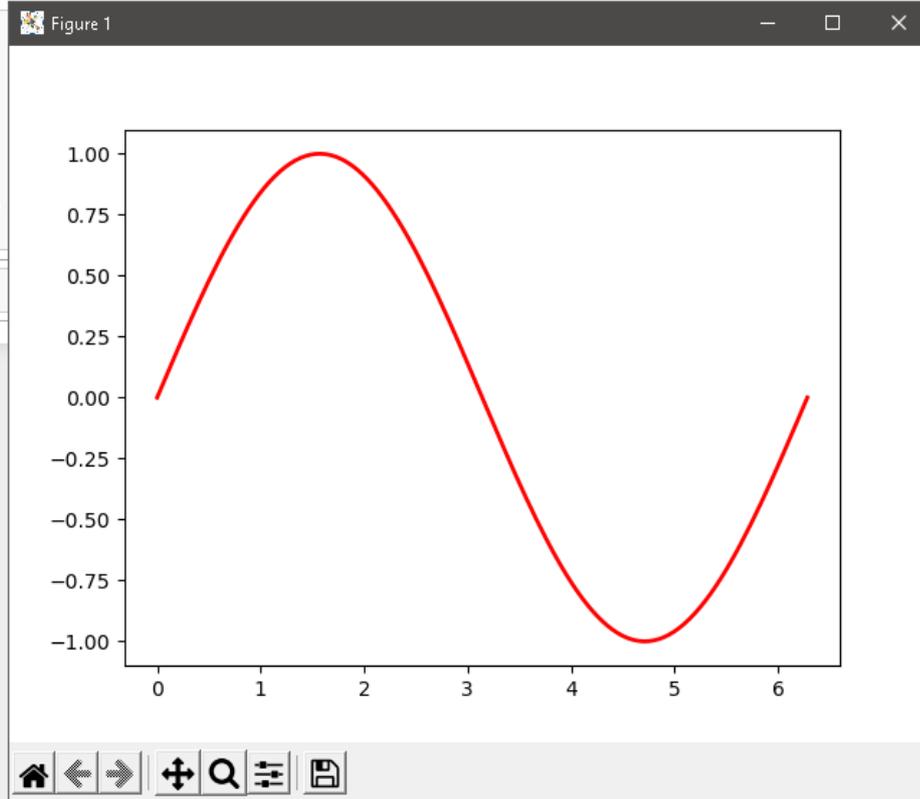
The screenshot shows the TIOBE Index website. The header includes navigation links: About us, Knowledge, News, Lodging Standards, TIOBE Index, and Contact. Below the header, there are dropdown menus for Products, Quality Models, and Markets, and a red button labeled "Schedule a demo". The main content area features a table with the following columns: Jun 2024, Jun 2023, Change, Programming Language, Ratings, and Change. The table lists 10 programming languages with their respective icons, rankings, and percentage changes.

Jun 2024	Jun 2023	Change	Programming Language	Ratings	Change
1	1		 Python	15.39%	+2.93%
2	3	↑	 C++	10.03%	-1.33%
3	2	↓	 C	9.23%	-3.14%
4	4		 Java	8.40%	-2.88%
5	5		 C#	6.65%	-0.06%
6	7	↑	 JavaScript	3.32%	+0.51%
7	14	↑↑	 Go	1.93%	+0.93%
8	9	↑	 SQL	1.75%	+0.28%
9	6	↓	 Visual Basic	1.66%	-1.67%
10	15	↑↑	 Fortran	1.53%	+0.53%
	11		 Delphi/Object Pascal	1.52%	+0.27%



```
In [*]: ▶ 1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 x=np.linspace(0, 2*np.pi, 128)
5 y=np.sin(x)
6
7 plt.figure(1)
8 plt.plot(x,y,color='red',linewidth=2)
9 plt.show()
```

In []: ▶ 1



Jupyter notebook, interessante pois roda no browser, pode ser escolhido que trecho se quer modificar, pode inserir comentarios, etc

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Solução: sem rede ou
Maquina virtual (Oracle VM), free

