

Edit live Jupyter notebooks from the comfort
of your favorite text editor

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Data Science Workshop, Zoom Meeting
21 July 2022, 12 - 1 PM

GhostText Extension



chrome web store



GhostText

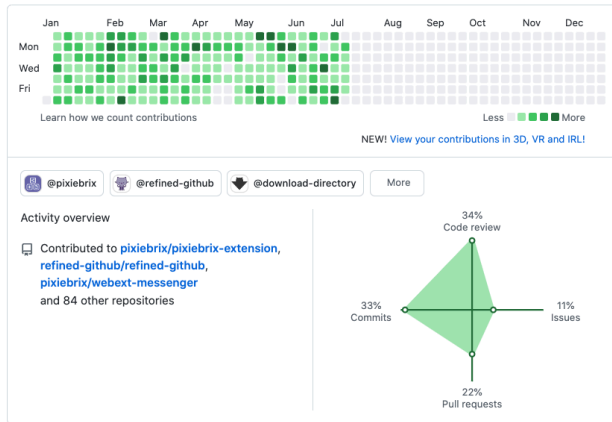


Featured

By Federico Brigante

Federico Brigante on GitHub

1,642 contributions in 2022



2022

2021

2020

2019

2018

2017

2016

2015

2014

2013

2012

<https://ghosttext.fregante.com/>
<https://github.com/fregante/GhostText>

Editing 750 words with NeoVim

```
item https://operations.ouhsc.edu/Centers-and-Principal-Investigators: Point out the need to update rank of Augie and Me.
item Ralf computations
item so

item Relabel folders and files at SSRL.
item Chemical papers review.
item Cech Republic Grant Review
item
item Add images to DSW slideshow
item Outline ACA talk
item
item R01 application
item
item SSRL speaker line-up
item Cathy Knots annual review
item
item Data processing and data transfer
item
item AAA cyberprotection.
item
item Time spent July 12 and July 14
item
item Secure links from SciPy
item
item
end {itemize}

\begin{itemize} % (fold)
item This is a demonstration of GhostText in acti
item change me
end {itemize}
% i4 (end)
```

```
30
31
32 Plans are worthless but planning is essential.
33 The productivity of your day depends on your focusing well.
34
-- 35 \subsection{To Be Done Today}
-- 36 \index{To Be Done!2022-07-20}
37 \begin{itemize}
38 o \sout{Time-tracking yesterday}
39
40 o https://operations.ouhsc.edu/Centers-and-Principal-Investigators: Po
41 o Ralf computations
42 o so
43
-- 44 o Relabel folders and files at SSRL.
45 o Chemical papers review.
46 o Cech Republic Grant Review
47 o
-- 48 o Add images to DSW slideshow
49 o Outline ACA talk
50 o
-- 51 o R01 application
52 o
-- 53 o SSRL speaker line-up
-- 54 o Cathy Knots annual review
55 o
-- 56 o Data processing and data transfer
57 o
-- 58 o AAA cyberprotection.
59 o
-- 60 o Time spent July 12 and July 14
61 o
-- 62 o Secure links from SciPy
63 o
-- 64 o
65 \end{itemize}
66
67
68 \begin{itemize} % (fold)
69 \item This is a demonstration of GhostText in acti
70 o change me
71 \end{itemize}
INSERT [Scratch]
```

Activity Insight Update
6100ActivityInsight

Editing 750words in Emacs

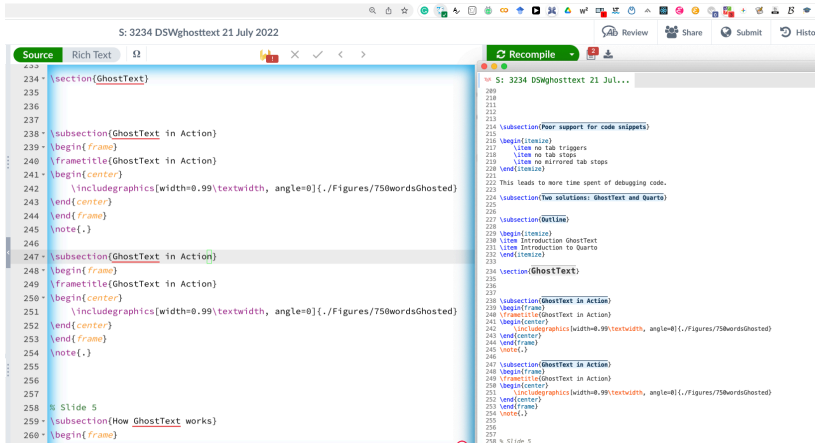
```
Write your words
39 \item Make up new solutions
40 \item consider all possible combinations of valents (Mg, Mn, Ca) and (
41 \end{itemize}
42 \item Plan PHP follow-up tray based on
43 \begin{itemize}
44 \item make production tray to reproduce the leads
45 \item make trays with cryogenic solution additions
46 \item make trays with cryogenic solution substitutions
47 \end{itemize}
48 \item Follow-up on the PHP refinement
49 \item Required training
50 \item Transfer data from SSRL
51 \item Start working on the COBRE report
52 \item Work on the SciPy paper
53 \item Plan multilevel model of diffraction experiments
54 \end{itemize}
55 % i5 (end)
56
57 \subsection{Multilevel}
58
```

```
\end{itemize}
\item Plan PHP follow-up tray based on the lead conditions
\begin{itemize}
\item make production tray to reproduce the leads
\item make trays with cryogenic solution additions
\item make trays with cryogenic solution substitutions
\end{itemize}
\item Follow-up on the PHP refinement
\item Required training
\item Transfer data from SSRL
\item Start working on the COBRE report
\item Work on the SciPy paper
\item Plan multilevel model of diffraction experiments
\end{itemize}
% i5 (end)

\subsection{Multilevel}
```

750 Words – Private, unfiltered, spontaneous, daily

Editing Overleaf via Emacs

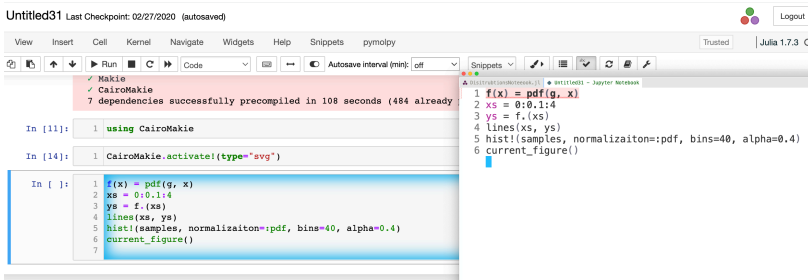


```
234 \section{GhostText}
235
236
237
238 \subsection{GhostText in Action}
239 \begin{frame}
240 \frametitle{GhostText in Action}
241 \begin{center}
242 \includegraphics[width=0.99\textwidth, angle=0]{./Figures/750wordsGhosted}
243 \end{center}
244 \end{frame}
245 \note{.}
246
247 \subsection{GhostText in Action}
248 \begin{frame}
249 \frametitle{GhostText in Action}
250 \begin{center}
251 \includegraphics[width=0.99\textwidth, angle=0]{./Figures/750wordsGhosted}
252 \end{center}
253 \end{frame}
254 \note{.}
255
256
257
258 % Slide 5
259 \subsection{How GhostText works}
260 \begin{frame}
```

```
209
210
211
212
213
214 \subsection{Poor support for code snippets}
215
216 \begin{itemize}
217 \item no tab triggers
218 \item no tab stops
219 \item no mirrored tab stops
220 \end{itemize}
221
222 This leads to more time spent of debugging code.
223
224 \subsection{Two solutions: GhostText and Quarto}
225
226
227 \subsection{Outline}
228
229 \begin{itemize}
230 \item Introduction GhostText
231 \item Introduction to Quarto
232 \end{itemize}
233
234 \section{GhostText}
235
236
237
238 \subsection{GhostText in Action}
239 \begin{frame}
240 \frametitle{GhostText in Action}
241 \begin{center}
242 \includegraphics[width=0.99\textwidth, angle=0]{./Figures/750wordsGhosted}
243 \end{center}
244 \end{frame}
245 \note{.}
246
247 \subsection{GhostText in Action}
248 \begin{frame}
249 \frametitle{GhostText in Action}
250 \begin{center}
251 \includegraphics[width=0.99\textwidth, angle=0]{./Figures/750wordsGhosted}
252 \end{center}
253 \end{frame}
254 \note{.}
255
256
257
258 % Slide 5
```

Just click on the GhostText icon in the browser toolbar.

Editing Jupyter with Emacs



The screenshot shows the Jupyter Notebook interface. The top bar indicates the notebook is 'Untitled31' and was last checkpointed on 02/27/2020. The interface includes a menu bar (View, Insert, Cell, Kernel, Navigate, Widgets, Help, Snippets, pymolpy) and a toolbar with icons for running, undo, redo, and other actions. The main area displays a code cell with the following content:

```
In [11]: 1 using CairoMakie
          7 dependencies successfully precompiled in 108 seconds (484 already)

In [14]: 1 CairoMakie.activate!(type="svg")

In [ ]: 1 f(x) = pdf(g, x)
        2 xs = 0:0.1:4
        3 ys = f.(xs)
        4 lines(xs, ys)
        5 hist!(samples, normalizaiton=:pdf, bins=40, alpha=0.4)
        6 current_figure()
        7
```

A snippet titled 'Untitled31 - Jupyter Notebook' is visible on the right side of the interface, containing the following code:

```
1 f(x) = pdf(g, x)
2 xs = 0:0.1:4
3 ys = f.(xs)
4 lines(xs, ys)
5 hist!(samples, normalizaiton=:pdf, bins=40, alpha=0.4)
6 current_figure()
```

GhostText Keyboard Shortcuts

Mac cmd + shift + k

Linux ctrl + shift + h

Windows ctrl + shift + k

Yeah! Keybindings! Count me in!

Outline

- Availability
- Installation
- Neovim setup
- UltiSnips snippet example
- Demo in Jupyter with Julia
- Emacs configuration
- Other uses for GhostText

How GhostText works

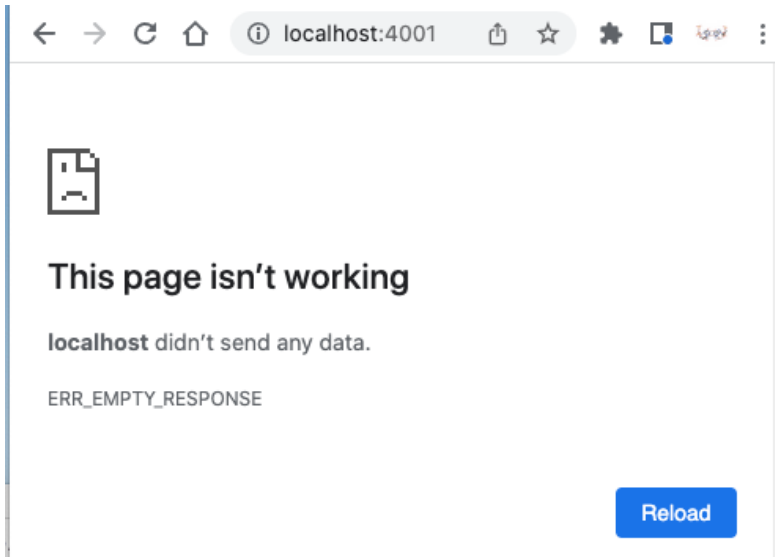
- Activate GhostText.
- Browser contacts server in open text editor.
- `localhost:4001` used to open WebSocket connection.
- Change on one side transmitted to other side.
- Each side can close the WebSocket connection.
- Multiple pages can be opened but only to one server (i.e., one editor).

Good Connection

← → ↻ 🏠 ⓘ localhost:4001

```
{  
  "ProtocolVersion": 1,  
  "WebSocketPort": 16881  
}
```

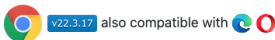
“Houston, we have a problem”



Supported browsers and text editors

Installation

1. Install your browser extension:



2. Install your editor extension:



Source: <https://github.com/fregante/GhostText>

HTML editing with Sublime Text (Moodle):

<https://www.youtube.com/watch?v=JWW3o104npY&t=190s>

The Brave browser will install the Chrome plugin.

WaterFox should install FireFox plugin.

Designed for Sublime Text. Easy to install for Atom.

Chrome Web Store

 chrome web store

 bmooers1@gmail.com ▼

[Home](#) > [Extensions](#) > GhostText



GhostText

 Featured

★★★★★ 138



[Developer Tools](#) | 5,000+ users

Remove from Chrome

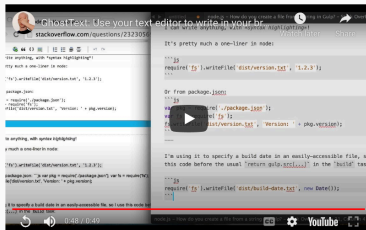
Overview

Privacy practices

Reviews

Support

Related



nvim-ghost install for Neovim

Git clone the package in
~/.config/nvim/plugged.

```
1 alias mp39='/opt/local/bin/python3.9'  
2 mp39 -m pip install -r requirements.txt --user
```

```
1 :call nvim_ghost#installer#install()
```

nvim-ghost install for Neovim

Insert in the init.vim file:

```
1 Plug 'subnut/nvim-ghost.nvim', \  
2 {'do': ':call nvim_ghost#installer#install()'}
```

Then run :PlugInstall

nvim-ghost install for Neovim

Run in command mode and then restart Neovim.

```
1 :call nvim_ghost#installer#install()
```

On start up, get the following message:

```
1 [nvim-ghost] Server running
```

Ready to go!

Click on the GhostText icon in the browser to send text to Neovim.

Settings for nvim-ghost

Goes in init.nvim anywhere below the plugin section.

```
1  let \${GHOSTTEXT_SERVER_PORT} = 4001
2  let g:nvim_ghost_use_script = 1
3  let g:nvim_ghost_python_executable = \
4  '/opt/local/bin/python3.9'
```

Site-specific file types for nvim-ghost

```
1 augroup nvim_ghost_user_autocommands
2   au User www.reddit.com,www.stackoverflow.com \
3     set filetype=markdown
4   au User www.reddit.com,www.github.com \
5     set filetype=markdown
6   au User *github.com set filetype=markdown
7   au User www.750words.com filetype=tex
8   au User www.overleaf.com filetype=tex
9   au User *.ipynb filetype=py
10 augroup END
```

Or in command mode, enter:
:set filetype=jl

Contents of ~/.config/nvim

```
1  for i in $(ls -d */); do echo ${i%\%/}; done
2  UltiSnips
3  autoload
4  colors
5  ghinitvim
6  --> myUltiSnips
7  pack
8  plugged
9  spell
10 undo
11 undodir
12 endsnippet
```

Contents of

~/ .config/nvim/myUltiSnips

```
1  for i in $(ls); do echo ${i%\%/}; done
2    c.snippets
3    html.snippets
4    jl.snippets
5    markdown.snippets
6    pml.snippets
7    r.snippets
8    rmarkdown.snippets
9    sh.snippets
10   snippets.snippets
11   tex.snippets
12   txt.snippets
```

histfit snippet with tab stops

```
1 snippet histfit "Histogram with fitted curve." b
2 using Distributions
3 using CairoMakie
4 CairoMakie.activate!(type="\${1:svg}")
5 N = \${2:100000}
6 samples = rand(\${3:Normal}(), N)
7 samples = (samples).^2
8 g = fit(\${4:Gamma}, samples)
9 f(x) = pdf(g, x)
10 xs = 0:0.1:4
11 ys = f.(xs)
12 lines(xs, ys)
13 hist!(samples,normalization=:pdf,bins=40,alpha=0.4)
14 current_figure()
15 \${0}
16 endsnippet
```

Get inspired to use UltiSnips

How I'm able to take notes in mathematics lectures using LaTeX and Vim

For the Mathematica users out there, you can do something similar:

```
math Integrate[Tan[x], x] math
```

```
priority 1000
snippet math "mathematica block" w
math $1 math$0
endsnippet

priority 10000
snippet 'math(.*?)math' "evaluate mathematica" wr
`!p
import subprocess
code = 'ToString[' + match.group(1) + ', TeXForm]'
snip.rv = subprocess.check_output(['wolframscript', '-code', code])
`
endsnippet
```

Source: Gilles Castel, Ph.D. student in Math
<https://castel.dev/post/lecture-notes-1>

Configuration for Emacs

```
1 (use-package atomic-chrome)
2 (atomic-chrome-start-server)
3 (setq atomic-chrome-default-major-mode \
4       \'python-mode)
5 (setq atomic-chrome-extension-type-list \
6       \'(ghost-text))
7 ;;(atomic-chrome-start-httpd)
8 (setq atomic-chrome-server-ghost-text-port 4001)
9 (setq atomic-chrome-url-major-mode-alist
10      \'(("github\\.com" . gfm-mode)
11         ("overleaf.com" . latex-mode)
12         ("750words.com" . latex-mode)))
```


SciENCv

My NCBI » [SciENCv](#)

SciENCv: [About](#) | [Using](#)

Blaine Mooers

Associate Professor/Biochemistry and Molecular Biology
University of Oklahoma Health Sciences Center

[edit](#)

SciENCv documents [Edit](#) [Create New Document](#)

Last Update	Name	Type	Sharing
02-Jun-2016	MooersBiosketh2016June2RajanR01	Old NIH Biosketch	Private
02-Jun-2016	MooersBiosketchCOBREJune2016	Old NIH Biosketch	Private
04-Jun-2016	MooersBiosketchR016June2016	Old NIH Biosketch	Private
03-Oct-2020	MooersBiosketchWeiQunR01October2020	Old NIH Biosketch	Private
14-Apr-2022	MooersNSFBiosketchOUJaiML	NSF Biosketch	Private
25-Nov-2020	MooersBiosketchAHANov2020	Old NIH Biosketch	Private
16-Dec-2020	MooersBiosketch2021EACJanMeeting	Old NIH Biosketch	Private
22-Dec-2020	MooersBiosketch2021molgr	Old NIH Biosketch	Private
16-Mar-2021	MooersBiosketch2021March16SintimMPIR01	Old NIH Biosketch	Private
07-Jan-2022	1812nsf2022mriQSUscNSFbio	NSF Biosketch	Private
12-Jan-2022	OCASCR NIH biosketch 1 Page	NIH Biosketch	Private

[Create New Document](#)

Editing SciENcv with Neovim

University of Oregon/HHMI, Eugene,
Oregon, USA

Postdoctoral Fellow

06 / 2003

Protein structure and stability

University of Oregon, Eugene,
Oregon, USA

Other training

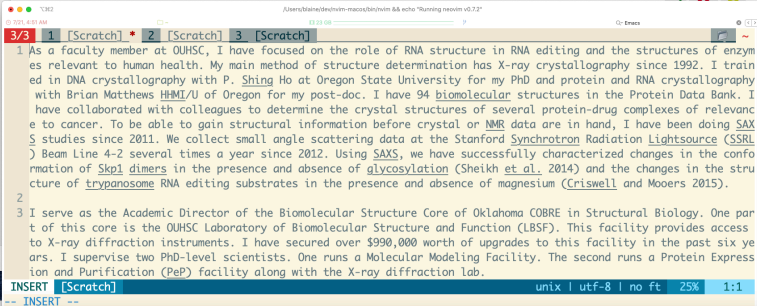
07 / 2006

Structure determination methods, RNA structure

 [add another degree/training](#)

A. Personal Statement

As a faculty member at OHSU, I have focused on the role of RNA structure in RNA editing and the structures of enzymes relevant to human health. My main method of structure determination has X-ray crystallography since 1992. I trained in DNA crystallography with P. Shing Ho at Oregon State University for my PhD and protein and RNA crystallography with Brian Matthews HHMI/U of Oregon for my post-doc. I have 94 biomolecular structures in the Protein Data Bank. I have collaborated with colleagues to determine the crystal structures of several protein-drug complexes of relevance to cancer. To be able to gain structural information before crystal or NMR data are in hand, I have been doing SAXS studies since 2011. We collect



```
3/3 1 [Scratch] * 2 [Scratch] 3 [Scratch]
1 As a faculty member at OHSU, I have focused on the role of RNA structure in RNA editing and the structures of enzymes relevant to human health. My main method of structure determination has X-ray crystallography since 1992. I trained in DNA crystallography with P. Shing Ho at Oregon State University for my PhD and protein and RNA crystallography with Brian Matthews HHMI/U of Oregon for my post-doc. I have 94 biomolecular structures in the Protein Data Bank. I have collaborated with colleagues to determine the crystal structures of several protein-drug complexes of relevance to cancer. To be able to gain structural information before crystal or NMR data are in hand, I have been doing SAXS studies since 2011. We collect small angle scattering data at the Stanford Synchrotron Radiation Lightsource (SSRL) Beam Line 4-2 several times a year since 2012. Using SAXS, we have successfully characterized changes in the conformation of Skp1 dimers in the presence and absence of glycosylation (Sheikh et al. 2014) and the changes in the structure of trypanosome RNA editing substrates in the presence and absence of magnesium (Criswell and Mooers 2015).
2
3 I serve as the Academic Director of the Biomolecular Structure Core of Oklahoma COBRE in Structural Biology. One part of this core is the OHSU Laboratory of Biomolecular Structure and Function (LBSF). This facility provides access to X-ray diffraction instruments. I have secured over $990,000 worth of upgrades to this facility in the past six years. I supervise two PhD-level scientists. One runs a Molecular Modeling Facility. The second runs a Protein Expression and Purification (PeP) facility along with the X-ray diffraction lab.
INSERT [Scratch] unix | utf-8 | no ft 25% 1:1
-- INSERT --
```

Use where boilerplate is needed

- ✓ Activity Insight
- Faculty webpage
- Sooner Track
- NIH MyBibliography
- ✓ Oklahoma Grant Exchange
(<https://ogx.ok.gov>)
- GitHub
- Manuscript submission websites.
- ✗D2L: could use to grade exams on-line with snippets of comments

Cautions about GhostText (1/2)

- **PLUTO WILL NOT ECLIPSE JUPYTER!** GhostText does not work in cells of Pluto. Use IJulia in Jupyter, the Julia REPL, Julia REPLs in text editors, or org-mode.
- **DO NOT SAVE THE TEXT FROM THE EDITOR.** Save work in the browser. Can loose your work.
- **WORKS IN TEX FILES INSIDE JUPYTERLAB.**
- **DOES NOT WORK WITH PYVIM.** pyvim is faster than Vim or Neovim. I use it in place of vi.

Cautions about GhostText (2/2)

- **DOES NOT WORK IN RSTUDIO.** Run R in Jupyter.
- **THERE IS ONLY ONE WEBSOCKET** so run only one ghosttext enabled editor at a time.
- **EMACS DAEMONS MAY FILL** localhost:4001
Use `ps -e > list.txt` to find the PID and then kill with `kill -9 PID`.

Conclusions about GhostText

- GhostText enables live editing of Jupyter notebooks from popular text editors.
- GhostText enables access to snippets with tab triggers and tab stops in Jupyter notebooks.
- Can configure text editor to treat text sent from web browser as being of a specific file type.
- Fully equipped snippets can enhance coding accuracy and reduce time spent debugging.

Acknowledgements

Funding:

- NIH: R01 CA242845, R01 AI088011
- NIH: P30 GM145423), P30 CA225520, P30 AG050911-07S1
- OCAST HR20-002
- PHF Team Science Grant with Ian Dunn