

# Setting up a minimal neovim environment for data science code development

A neovim IDE for R, Python, and Julia

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## Introduction

Neovim (a fork of Vim) is a text editor that has several advantages for data science code development. One of the main attractions is that it is open source and has a number of useful plugins to facilitate working on R, python, and julia code. Also, its modal, keyboard-centric system allows text and code manipulation at potentially far greater speed than conventional, mouse-centric, systems.



Figure 1: under construction

In this post we describe both a minimal, yet functional setup, as well as a more extensive setup utilizing several of the newest neovim-only plugins, for neovim to allow IDE style code editing and REML interaction for the three primary data science coding tools: R, Python, and Julia.

Our presentation here is for a macos environment. Appendix one contains required adjustments for a ubuntu linux environment.

## **Step one: Install the latest stable version of neovim.**

With minimal effort we can install both the terminal and GUI versions of neovim. The simplest approach is to use homebrew:

```
> brew install neovim neovim-qt
```

Set up convenience aliases in `zsh`.

```
> alias ng = neovim-qt
> alias nt = neovim
```

(mnemonic: the `t` in `nt` is for terminal, the `g` in `ng` is for GUI)

## Step 2: Configure neovim

The standard location for `neovim` configuration files on “unix-like” systems is `~/.config/nvim`. The main config file is either `init.vim` (VimL) or `init.lua` (Lua). In this post we’ll focus on lua based configuration.

Specifically, the following code block creates an `nvim` subdirectory under `~/.config` and initialize a configuration file `init.lua`.

Here is the file hierarchy we’ll construct. In fact all the code could be bundled into the `init.lua` file, but this approach is clearer and cleaner.

```
tree --charset=ascii
.
|-- init.lua
|-- leap-config.lua
|-- lua
|   |-- basics.lua
|   |-- nvim-R-config.lua
|   |-- nvim-cmp-config.lua
|   |-- nvim-telescope-config.lua
|   |-- nvim-tree-config.lua
|-- my_snippets
|   |-- giles.tex.snippets
|   |-- mail.snippets
|   |-- rmd.snippets
|   |-- snippets.snippets
```

```

|   |-- tex.snippets
|   |-- text.snippets
|   `-- txt.snippets
|-- spell
|   |-- en.utf-8.add
|   `-- en.utf-8.add.spl
> cd .config
> mkdir nvim
> cd nvim
> touch init.lua

```

install the `paq` plugin manager

```

git clone --depth=1 https://github.com/savq/paq-nvim.git \
  ~/.local/share/nvim/site/pack/paqs/start/paq-nvim
:PaqInstall

```

Add the following code to `init.lua` list the plugins needed to be installed from github and “feed” them to `paq` for installation.

Nvim-R, Leap, UltiSnips, and vimtex need additional configuration. The required code is contained in bespoke files under the `lua` directory.

to use `paq-nvim` to manage plugins (maximally minimal)

```

require "paq" {
  "savq/paq-nvim";
  "junegunn/fzf";
  'voldikss/vim-floaterm';
  'preservim/nerdcommenter';
  "NLKNguyen/papercolor-theme";
  "SirVer/ultisnips";
  "honza/vim-snippets";
  "ggandor/leap.nvim";
  "jalvesaq/Nvim-R";
  'davidhalter/jedi-vim';
  "lervag/vimtex";
}

```

```
"owickstrom/vim-colors-paramount"  
}  
require('basics')  
require('nvim-R-config')  
require('leap').add_default_mappings()  
vim.keymap.del({'x', 'o'}, 'x')  
vim.keymap.del({'x', 'o'}, 'X')
```

## plugin discussions

### keymaps

```
vim.cmd([[  
set number relativenumber  
set textwidth=80  
set cursorline  
set iskeyword-=_  
set hlsearch  
set splitright  
set hidden  
set incsearch
```

```

set noswapfile
set showmatch
set ignorecase
set smartcase
set gdefault
filetype plugin on

"completion
"      for text: S-Tab launches pop-up words
"      for R and Rmd completion is automatic
"ultisnips,
"      launch with C-j, move forward with C-j, move backward with C-k
"      open ultisnips file with <leader>u

set dictionary+=/usr/share/dict/words
let g:UltiSnipsSnippetDirectories=["UltiSnips", "my_snippets"]

let g:UltiSnipsExpandTrigger="<c-j>"
let g:UltiSnipsJumpForwardTrigger="<c-j>"
let g:UltiSnipsJumpBackwardTrigger="<c-k>"

let g:UltiSnipsEditSplit="vertical"
let g:UltiSnipsUsePythonVersion = 3
"nnoremap <leader>u :UltiSnipsEdit<cr>
set completeopt=longest,menuone

inoremap <expr> <TAB> pumvisible() ? "\<C-n>" : "\<TAB>"
inoremap <expr> <S-TAB> pumvisible() ? "\<C-p>" : "\<TAB>"
inoremap <expr> <CR> pumvisible() ? "\<C-y>" : "\<C-g>u\<CR>"
let R_set_omnifunc = ["r", "rmd", "quarto", "rhhelp"]
let R_auto_omni = ["r", "rmd", "rhhelp"]
]])
vim.g.mapleader = ","
vim.g.maplocalleader = " "
local map = vim.keymap.set
local opts = {noremap = true}
map('n', ':', ';', opts)
map('n', ';', ':', opts)
map('n', '<Space><leader>', '<C-u>', opts)

```

```

map('n', '<leader>u', ':UltiSnipsEdit<cr>', opts)
map('n', '<Space><Space>', '<C-d>', opts)
map('n', '-', '$', opts)
map('n', '<leader>f', 'vipgq', opts)
map('n', '<leader>v', 'edit ~/.config/nvim/init.lua<cr>', opts)
map('n', '<leader>a', 'ggVG', opts)
map('n', '<leader>t', ':tab split<cr>', opts)
map('n', '<leader>y', ':vert sb2<cr>', opts)
map('n', '<leader>0', ':ls!<CR>:b<Space>', opts)
map('n', '<leader><leader>', '<C-w>w', opts)
map('n', '<leader>1', '<C-w>:b1<cr>', opts)
map('n', '<leader>2', '<C-w>:b2<cr>', opts)
map('n', '<leader>3', '<C-w>:b3<cr>', opts)
map('t', 'ZZ', "q('no')<CR>", opts)
map('t', 'ZQ', "q('no')<CR>", opts)
map('v', '-', '$', opts)
map('t', '<leader>0', '<C-\\><C-n><C-w>:ls!<cr>:b<Space>', opts)
map('t', '<Escape>', '<C-\\><C-n>', opts)
map('t', '<leader><leader>', '<C-\\><C-n><C-w>w', opts)
map('i', '<Esc>', '<Esc>`^', opts)
map('i', '<S-Tab>', '<C-x><C-k>', opts)

vim.cmd([[
"    copy clipboard to register x for safe keeping
nnoremap <leader>x :let @x=@*
"    paste registers into terminal
tnoremap <expr> <C-R> '<C-\\><C-N>'>.nr2char(getchar()).'pi'
set background=light
colorscheme paramount
]])

```

## Set up R

```
vim.cmd([[
let $FZF_DEFAULT_COMMAND = 'rg --files --hidden'
let R_auto_start = 2
let R_hl_term = 0
let R_clear_line = 1
let R_pdfviewer = "zathura"
let R_assign = 2
let R_latexcmd = ['xelatex']
augroup rmarkdown
autocmd!
autocmd FileType rmd,r noremap <buffer> <CR> :call SendLineToR("down")<CR>
autocmd FileType rmd,r noremap <buffer> <space>l :call SendChunkToR("silent","down")<cr>
autocmd FileType rmd,r noremap <buffer> <space>' :call RMakeRmd("default")<cr>
autocmd FileType rmd,r noremap <space>s :call RAction("str")<cr>
autocmd FileType rmd,r noremap <space>i :call RAction("dim")<cr>
autocmd FileType rmd,r noremap <space>h :call RAction("head")<cr>
autocmd FileType rmd,r noremap <space>p :call RAction("print")<cr>
autocmd FileType rmd,r noremap <space>q :call RAction("length")<cr>
autocmd FileType rmd,r noremap <space>n :call RAction("nvim.names")<cr>
autocmd FileType rmd,r noremap <space>c :call RAction("cnt")<cr>
autocmd FileType rmd,r noremap <space>k :call PreviousRChunk()<cr>
autocmd FileType rmd,r noremap <space>j :call NextRChunk()<cr>
augroup END
]])
```