Tinkering with CLI 🐍

Refining your terminal toolbox with pipx

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💻 Python Vigo

CLI

CLI

- Command Line Interface
- For this talk, terminal Python programs

Pipx

Pipx

- Install Python applications CLI.
- Each in it’s own isolated virtual environment.
- All of them accessible in the path.

Pipx (Install)

Using your package manager

```
sudo dnf install pipx
```

or with pip

```
python -m ensurepip --upgrade # Up to date pip
python -m pip install --upgrade pipx # Up to date pipx
```

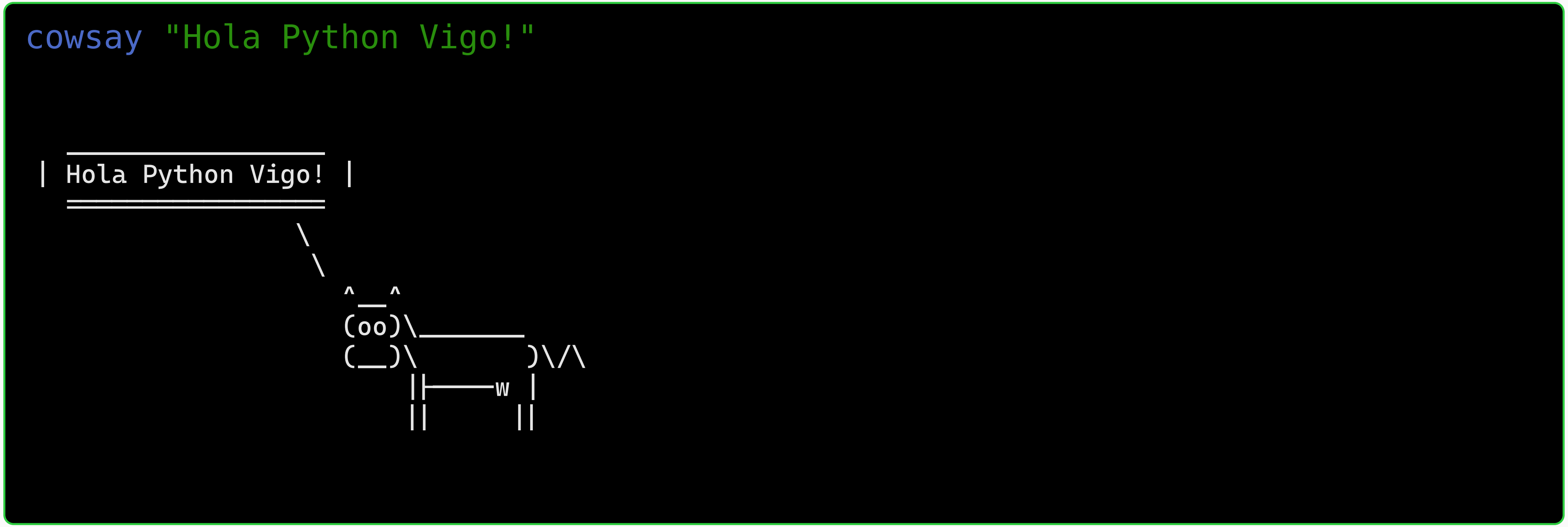
Ensure the installed commands are in the path

```
pipx ensurepath
sudo pipx ensurepath --global # Same for all the users
```

Pipx (Usage)

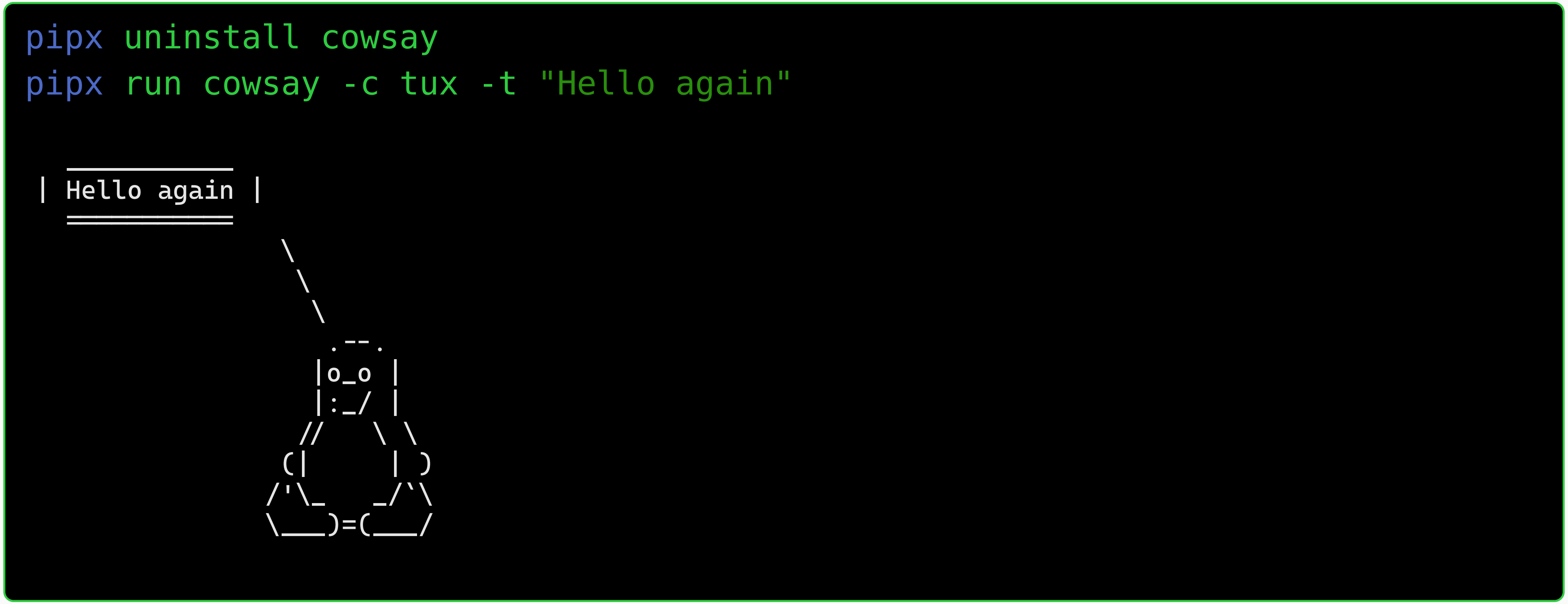
```
pipx list

nothing has been installed with pipx 😴

pipx install cowsay

  installed package cowsay 6.1, installed using Python 3.12.7
  These apps are now globally available
    - cowsay
done! ✨ 🌟 ✨

pipx list

venvs are in ~/.local/pipx/venvs
apps are exposed on your $PATH at ~/.local/bin
manual pages are exposed at ~/.local/share/man
   package cowsay 6.1, installed using Python 3.13.1
    - cowsay
```

Pipx (Package usage) - Cowsay



```
cowsay "Hola Python Vigo!"


  _________________
| Hola Python Vigo! |
  =================
                 \
                  \
                    ^__^
                    (oo)\_______
                    (__)\       )\/\
                        ||----w |
                        ||     ||
```

Pipx (Temporary Virtual Environment)



```
pipx uninstall cowsay
pipx run cowsay -c tux -t "Hello again"


   ___________
 | Hello again |
   ===========
                 \
                  \
                   \
                    .--.
                   |o_o |
                   |:_/ |
                  //   \ \
                 (|     | )
                /'\_   _/`\
                \___)=(___/
```

Pipx (Administration)

Manually upgrading packages

```
pipx upgrade-all
```

Reinstalling packages (needed python version upgrades. Ex: 3.12 → 3.13)

```
pipx reinstall-all
```

Reinstalling packages (needed python version upgrades. Ex: 3.12 → 3.13)

```
pipx install ansible ansitoimg black bpytop chime commitizen copier datasette dunk edge-tts fnug gita glances hent isort jc jupyterlab lektor lightnovel-crawler llm lolcat markdown-anki-decks mdformat mypy percol pipenv pls pre-commit pyfiglet pytest pyupgrade rich-cli ruff s-tui streamlit terminaltexteffects tiptop tmuxp toolong topgrade uv visidata wsgidav xonsh yq yt-dlp
```

Pipx with pre-commit

This lets you run applications that can be run using pipx run but don't have native pre-commit support.

Example configuration for use of the code linter yapf. This is to be added to your .pre-commit-config.yaml.

```yaml
- repo: https://github.com/pypa/pipx
  rev: 1.5.0
  hooks:
    - id: pipx
      alias: yapf
      name: yapf
      args: ["yapf", "-i"]
      types: ["python"]
```

Pipxu

Install and Run Python Applications in Isolated Environments using UV

- Pipx faster replacement in rust
- Last time I tried failed with some packages
- Retrying now
  - Not sure how update-all
  - Fails with glances
  - Says that install all, but installs 11/46
- Will retry in the future

Packages

Oddities

- pyfiglet
- lolcat
- cowsay
- terminal text effects

Productivity

- rich-cli
- tmuxp
- xonsh
- pls
- percol
- chime
- jc
- wsgidav

Sysadmin

- hent
- glances
- tiptop
- bpytop
- s-tui
- ansible
- toolong
- topgrade

Dev

- commitizen
- dunk
- gita
- pre-commit
- mdformat
- copier

Python dev

- black
- isort
- mypy
- ruff
- uv
- pytest
- pyupgrade

Data science

- datasette
- jupyterlab
- streamlit
- visidata

IA

- llm

Media

- yt-dlp
- lightnovel-crawler

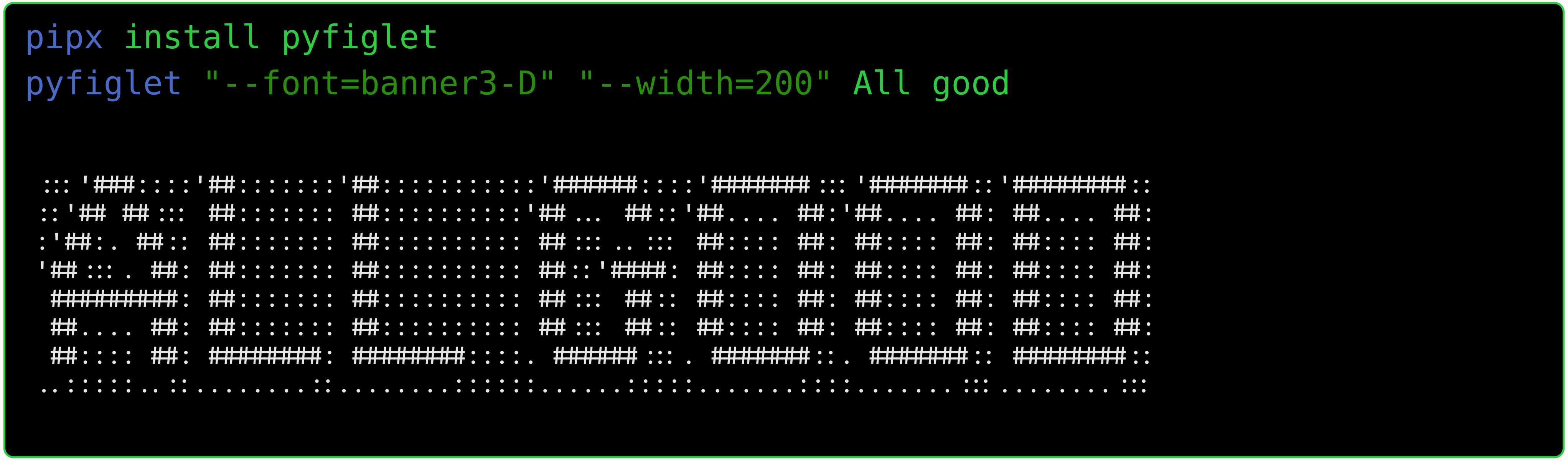
Other

- ansitoimg
- lektor
- markdown-anki-decks
- pyxel

pyfiglet

Pure-python FIGlet implementation

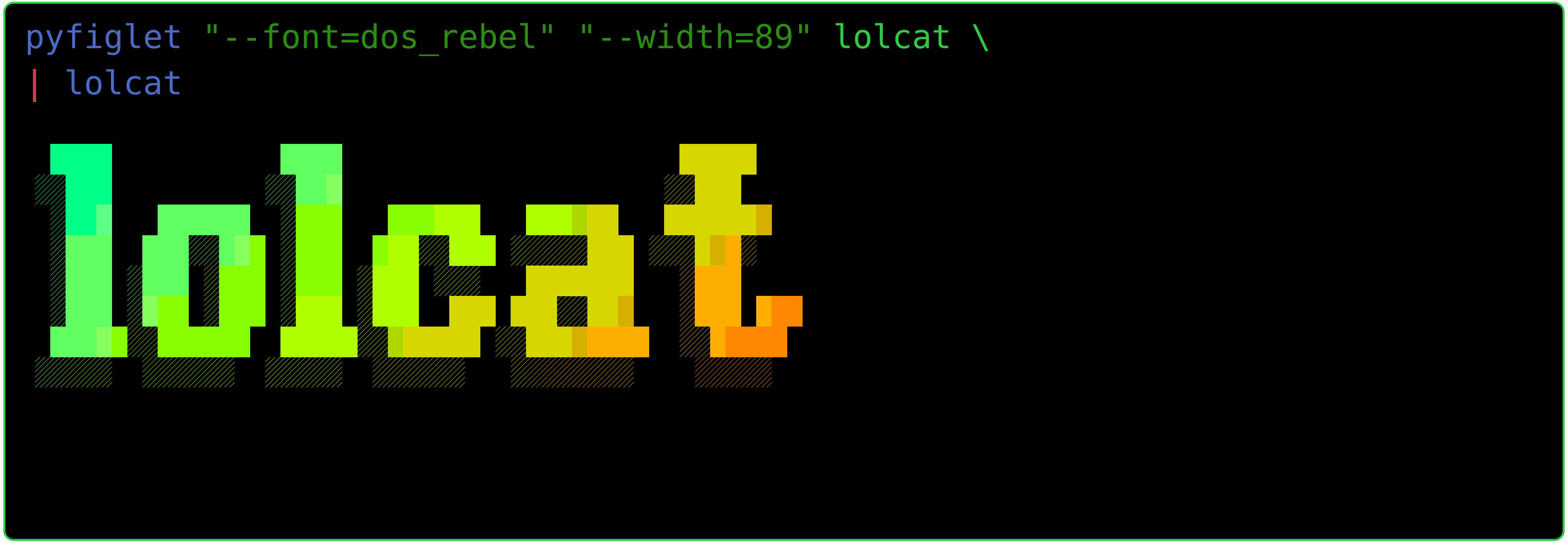
It takes ASCII text and renders it in ASCII art fonts



```
pipx install pyfiglet
pyfiglet "--font=banner3-D" "--width=200" All good


:::'###::::'##:::::::'##:::::::::::'######::::'#######:::'#######::'########::
::'## ##::: ##::::::: ##::::::::::'##... ##::'##.... ##:'##.... ##: ##.... ##:
:'##:. ##:: ##::::::: ##:::::::::: ##:::..::: ##:::: ##: ##:::: ##: ##:::: ##:
'##:::. ##: ##::::::: ##:::::::::: ##::'####: ##:::: ##: ##:::: ##: ##:::: ##:
 #########: ##::::::: ##:::::::::: ##::: ##:: ##:::: ##: ##:::: ##: ##:::: ##:
 ##.... ##: ##::::::: ##:::::::::: ##::: ##:: ##:::: ##: ##:::: ##: ##:::: ##:
 ##:::: ##: ########: ########::::. ######:::. #######::. #######:: ########::
..:::::..::........::........::::::......:::::.......::::.......:::........:::
```

lolcat

Rainbows and unicorns!



```
pyfiglet "--font=dos_rebel" "--width=89" lolcat \
| lolcat
```

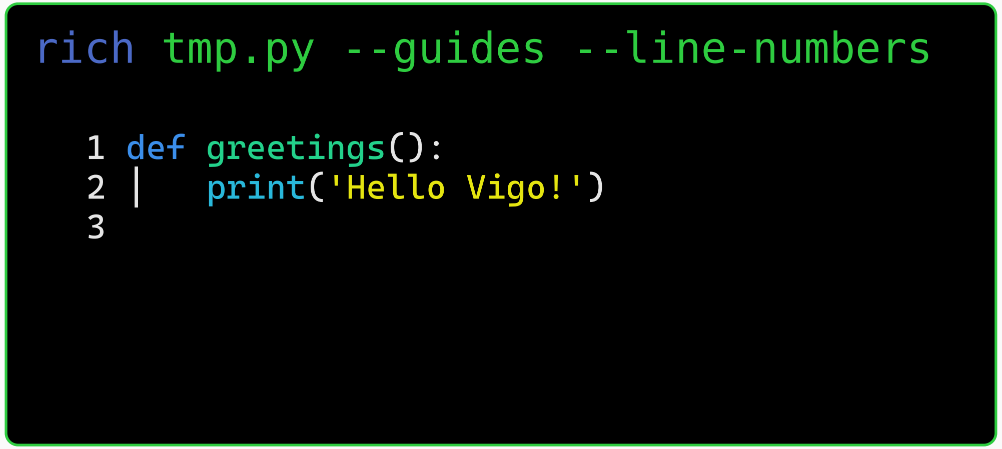
terminaltexteffects

TerminalTextEffects (TTE) is a terminal visual effects engine

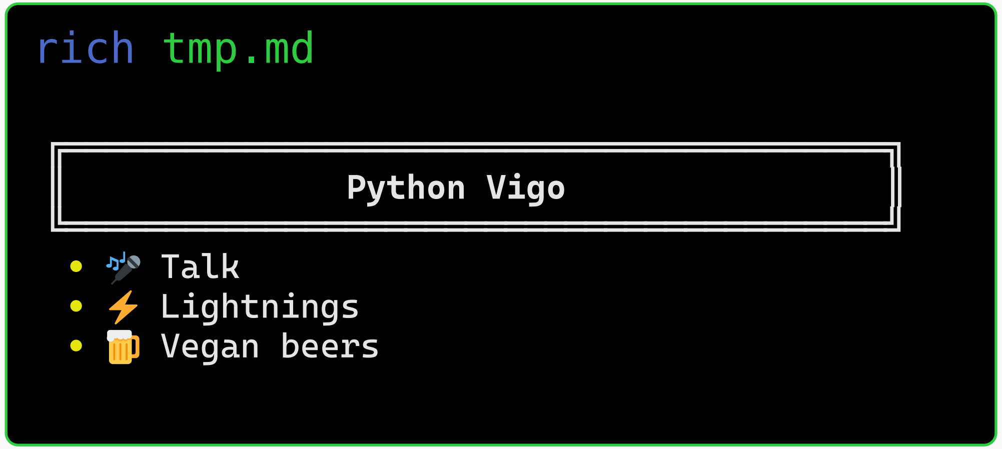
```
ls -l /etc | head \
| tte decrypt --typing-speed 10 \
    --ciphertext-colors 008000 00cb00 00ff00 \
    --final-gradient-stops eda000 \
    --final-gradient-steps 12 \
    --final-gradient-direction vertical
# See demo
```

rich-cli (files)

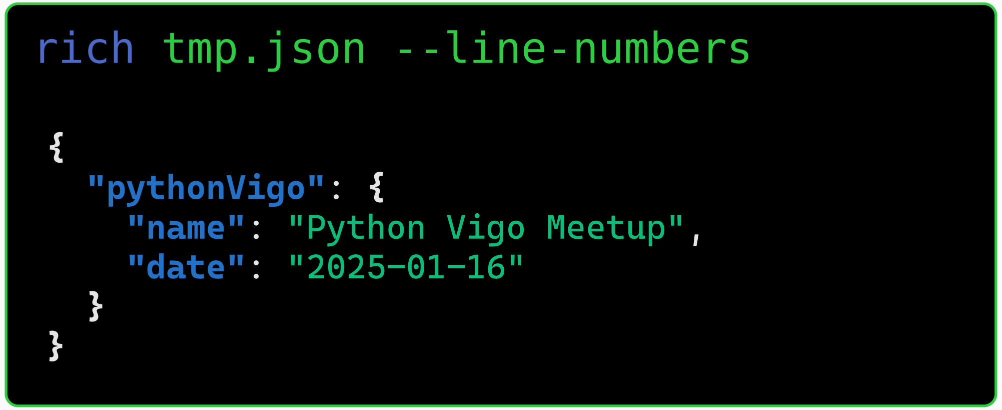
Rich-cli is a command line toolbox for fancy output in the terminal



```
rich tmp.py --guides --line-numbers


  1 def greetings():
  2 │   print('Hello Vigo!')
  3
```



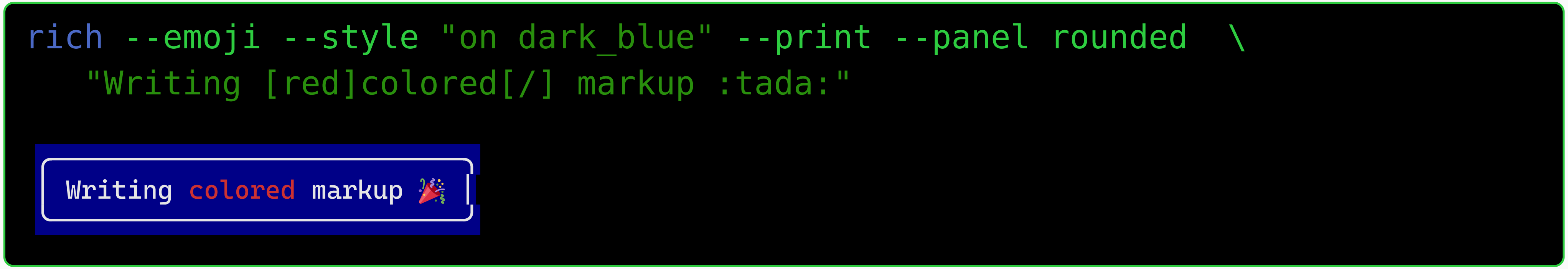
```
rich tmp.md


╔══════════════════════════════════════════╗
║               Python Vigo                ║
╚══════════════════════════════════════════╝

 • 🎤 Talk
 • ⚡ Lightnings
 • 🍺 Vegan beers
```



```
rich tmp.json --line-numbers


{
  "pythonVigo": {
    "name": "Python Vigo Meetup",
    "date": "2025-01-16"
  }
}
```

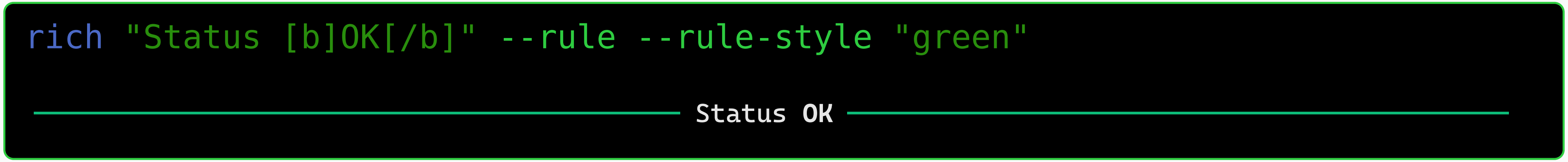
… and csv, ipnb, rst (restructured text)

rich-cli (messages)



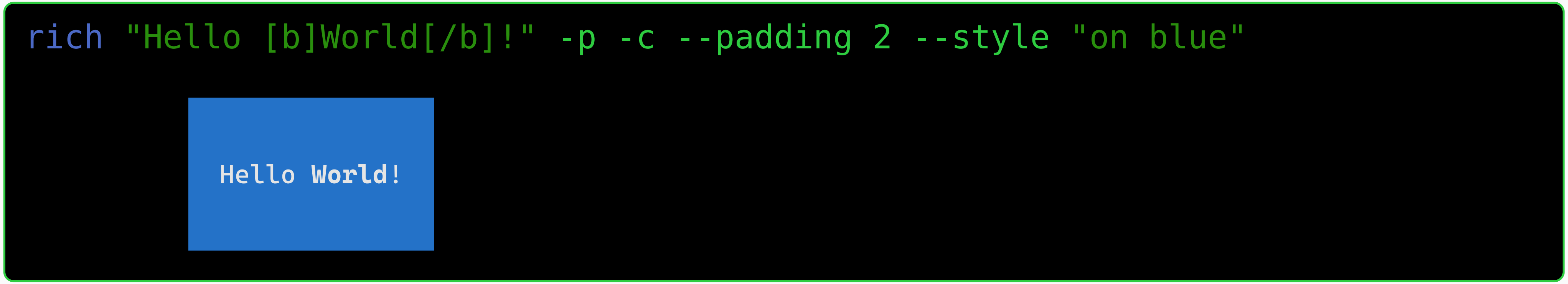
```
rich --emoji --style "on dark_blue" --print --panel rounded  \
   "Writing [red]colored[/] markup :tada:"
```

```
Writing colored markup 🎉
```



```
rich "Status [b]OK[/b]" --rule --rule-style "green"
```

```
Status OK
```

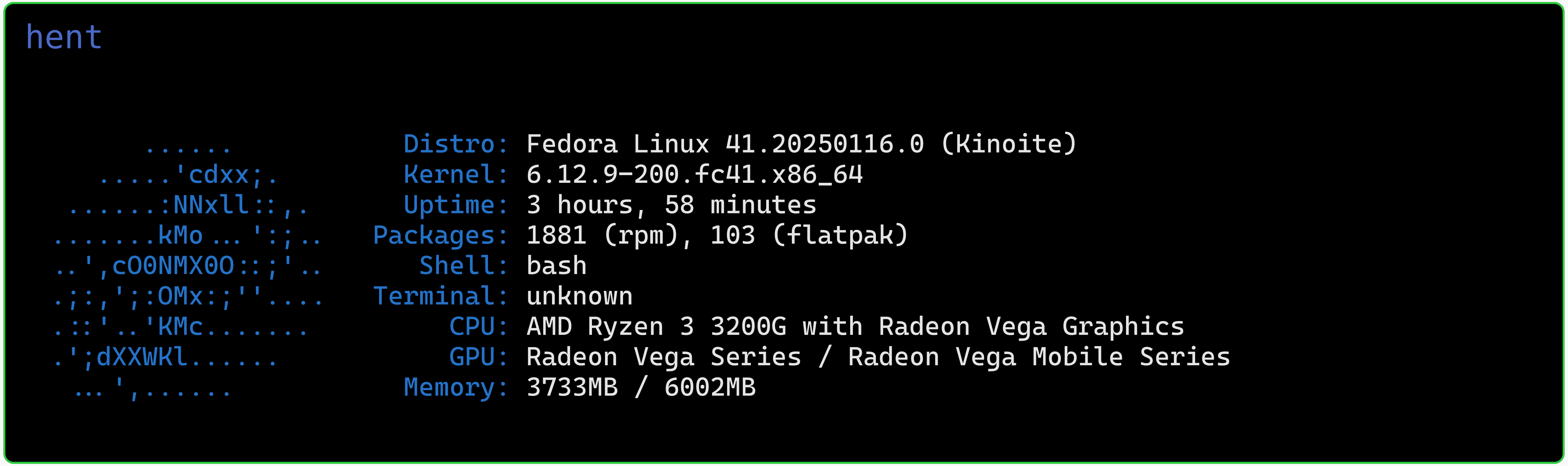


```
rich "Hello [b]World[/b]!" -p -c --padding 2 --style "on blue"
```

```
Hello World!
```

hent

A neofetch alternative written in python.



```
hent


        ......           Distro: Fedora Linux 41.20250116.0 (Kinoite)
     .....'cdxx;.        Kernel: 6.12.9-200.fc41.x86_64
   ......:NNxll::,.      Uptime: 3 hours, 58 minutes
  .......kMo...':;..   Packages: 1881 (rpm), 103 (flatpak)
  ..',cO0NMX0O::;'..      Shell: bash
  .;:,';:OMx:;''....   Terminal: unknown
  .::'..'KMc.......         CPU: AMD Ryzen 3 3200G with Radeon Vega Graphics
  .';dXXWKl......           GPU: Radeon Vega Series / Radeon Vega Mobile Series
   ...',......           Memory: 3733MB / 6002MB
```

tmuxp (🎉 Demo)

Session manager for tmux, that save and load tmux sessions in simple configuration files.

```
tmux # tmuxp freeze inside
tmuxp list
tmuxp load terminaltexteffects # See below ~/.tmuxp/terminaltexteffects.yaml
```

```
# ~/.tmuxp/terminaltexteffects.yaml
session_name: 'terminaltexteffects'
start_directory: '~'
global_options:
  default-shell: ~/.local/bin/xonsh
windows:
  - window_name: tte
    focus: 'true'
    layout: tiled
    options:
      mouse: yes
    panes:
      - hent | tte --no-color print
      - hent | tte burn
      - hent | tte decrypt
      - hent | tte rain
    start_directory: ~/
```

xonsh

Python-powered shell. Full-featured and cross-platform.

```
xonsh
```

pls

pls is a prettier and powerful `ls` for the pros.

- Cleaner and more readable colorful output
- Uses `Nerd Fonts`
- Fast and small (rust)
- Good filtering
- Unique display style for symlinks and symlink chains

```
pls /tmp/


    tmp.html
    tmp.json
    tmp.md
    tmp.py
```

percol

Adds flavor of interactive filtering to the traditional pipe concept of UNIX shell

```
cd $(find -type d | percol)
ls /bin | percol --prompt="Choose file "
```

chime

Python sound notifications made easy.

```
chime --theme mario info
# Mario bros "geting coin" sound

chime --help
usage: chime [-h] [--theme THEME] [event]

positional arguments:
  event            either one of {success, warning, error, info}

options:
  -h, --help       show this help message and exit
  --theme THEME    either one of {big-sur, chime, mario, material, pokemon,
sonic, zelda}
```

edge-tts ⛈️

Use Microsoft Edge’s online text-to-speech service from Python WITHOUT needing Microsoft Edge or Windows or an API key

```
edge-tts --list-voices | grep es-ES

es-ES-AlvaroNeural  Male      General Friendly, Positive
es-ES-ElviraNeural  Female    General Friendly, Positive
es-ES-XimenaNeural  Female    General Friendly, Positive

edge-playback --voice 'es-ES-XimenaNeural' \
  --text 'Este es el contestador avanzado de Python'
```

jc

Converts the output of popular command-line tools and file-types to JSON.

```
date -Is | jc --datetime-iso

{"year":2025,"month":"Jan","month_num":1,"day":15,"weekday":"Wed","weekday_num":3,"hour":10,
"hour_24":22,"minute":28,"second":36,"microsecond":0,"period":"PM","utc_offset":"+0100",
"day_of_year":15,"week_of_year":2,"iso":"2025-01-15T22:28:36+01:00","timestamp":1736976516}

dig example.com | jc --dig

[{"id":39078,"opcode":"QUERY","status":"NOERROR","flags":["qr","rd","ra"],"query_num":1,
"answer_num":6,"authority_num":0,"additional_num":1,"opt_pseudosection":{"edns":{"version":0,
"flags":[],"udp":512}},"question":{"name":"example.com.","class":"IN","type":"A"},"answer":[{
"name":"example.com.","class":"IN","type":"A","ttl":186,"data":"96.7.128.175"},{"name":
"example.com.","class":"IN","type":"A","ttl":186,"data":"96.7.128.198"},{"name":"example.com.",
"class":"IN","type":"A","ttl":186,"data":"23.192.228.80"},{"name":"example.com.","class":"IN",
"type":"A","ttl":186,"data":"23.192.228.84"},{"name":"example.com.","class":"IN","type":"A","ttl"
:186,"data":"23.215.0.136"},{"name":"example.com.","class":"IN","type":"A","ttl":186,"data":
"23.215.0.138"}],"query_time":10,"server":"77.26.11.232#53(77.26.11.232) (UDP)","when":
"Wed Jan 15 22:46:14 CET 2025","rcvd":136,"when_epoch":1736977574,"when_epoch_utc":null}]
```

wsgidav

Generic and extendable WebDAV server based on WSGI

```
pipx inject wsgidav lxml cheroot python-pam # Add python dependencies
# Easy sharing with a Windows machine

⚠

# Secure risk: No password
wsgidav --host=0.0.0.0 --port=8080 --auth=anonymous --root=$FOLDER_TO_SHARE
xdg-open webdav://192.168.0.27:8080/
```

glances

A cross-platform curses-based monitoring tool

🤖 Demo

tiptop

A better top

🎸 Demo

bpytop

Resource monitor that shows usage and stats for processor, memory, disks, network and processes.

🌈 Demo

s-tui

Stress Terminal UI stress test and monitoring tool

Monitors CPU temperature, frequency, power and utilization in a graphical way from the terminal.

🔥 Demo

ansible

Radically simple IT automation

- A talk on itself
- Agent-less configuration manager
- Modules to accomplish tasks. Programs (usually python that get json parameters, do the job, returns json of the result).
- Playbooks that have a list of tasks.
- Playbooks $\subseteq$ Modules $\subseteq$ Collections
- There are modules and collections of whatever you can think of, from system administration tasks to cloud management, networking, provisioning, security, user management, ...

toolong

A terminal log file viewer / tailer / analyzer

```
tl test.jsonl
```

🪵 Demo

topgrade

Upgrade all the things

```
topgrade --dry-run
# topgrade
```

]

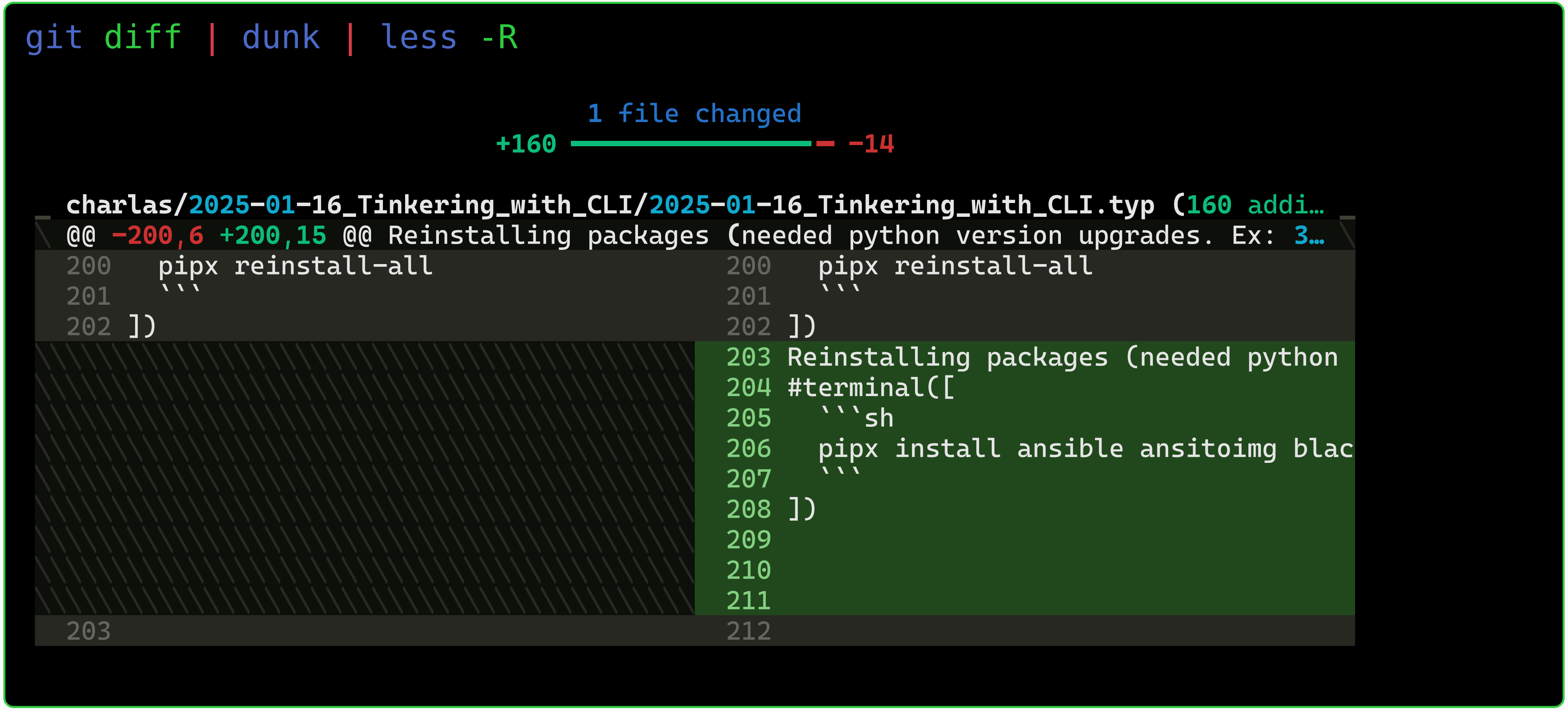
⚠️ Excessive automation is indistinguishable from magic 🪄 🧹🪣🧹🪣🧹🪣 🌊🌊🌊🌊

commitizen

Python commitizen client tool Being Commitizen is release management tool designed for teams. By default, commitizen uses conventional commits,

dunk

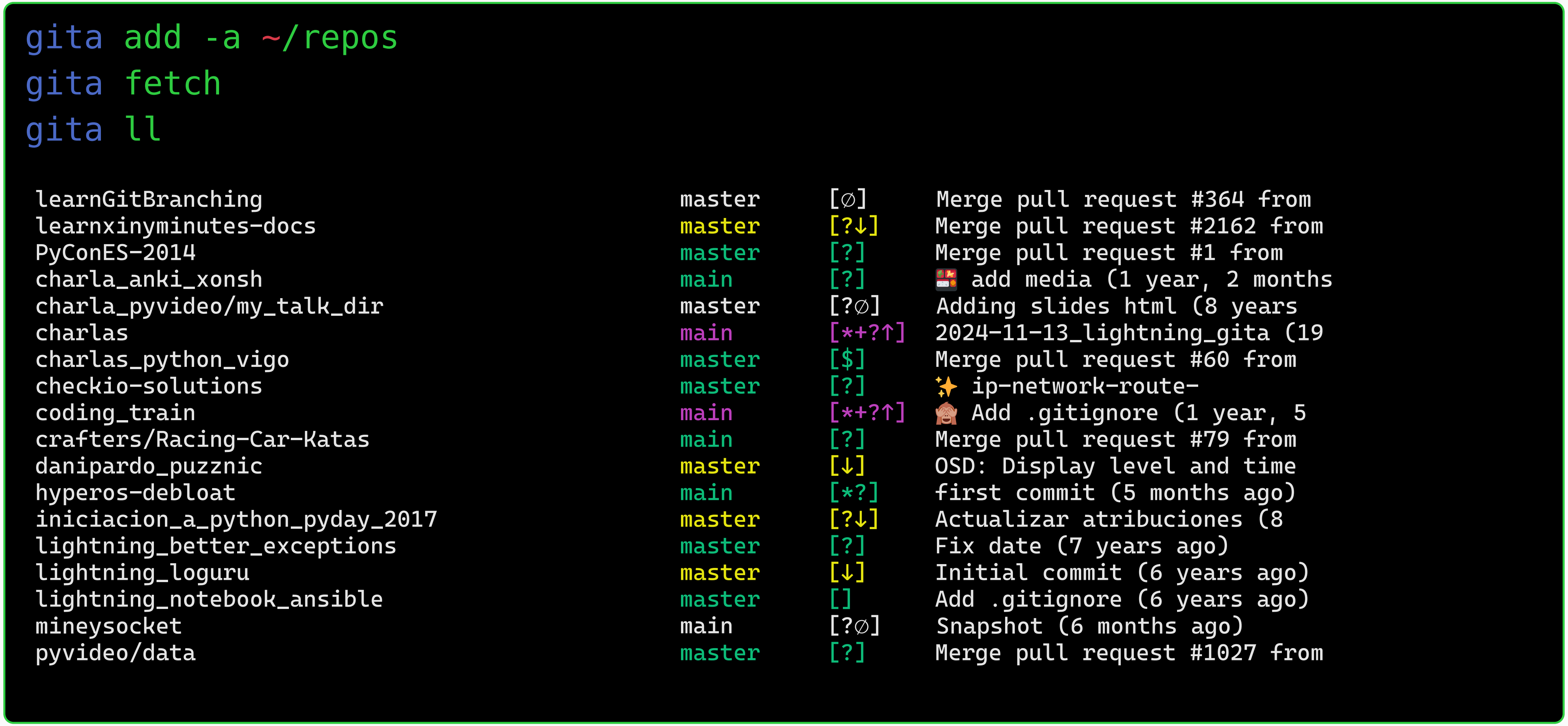
Prettier git diffs in the terminal



```
git diff | dunk | less -R

                     1 file changed
                +160 ━━━━━━━━━━━━━━━━━ ━ -14

  charlas/2025-01-16_Tinkering_with_CLI/2025-01-16_Tinkering_with_CLI.typ (160 addi…
  @@ -200,6 +200,15 @@ Reinstalling packages (needed python version upgrades. Ex: 3…
  200   pipx reinstall-all                    200   pipx reinstall-all
  201   ```                                   201   ```
  202 ])                                      202 ])
                                              203 Reinstalling packages (needed python
                                              204 #terminal([
                                              205   ```sh
                                              206   pipx install ansible ansitoimg blac
                                              207   ```
                                              208 ])
                                              209
                                              210
                                              211
  203                                         212
```

gita

Manage multiple git repos with sanity



```
gita add -a ~/repos
gita fetch
gita ll

learnGitBranching                               master     [∅]     Merge pull request #364 from
learnxinyminutes-docs                           master     [?↓]    Merge pull request #2162 from
PyConES-2014                                    master     [?]     Merge pull request #1 from
charla_anki_xonsh                               main       [?]     🍱 add media (1 year, 2 months
charla_pyvideo/my_talk_dir                      master     [?∅]    Adding slides html (8 years
charlas                                         main       [*+?↑]  2024-11-13_lightning_gita (19
charlas_python_vigo                             master     [$]     Merge pull request #60 from
checkio-solutions                               master     [?]     ✨ ip-network-route-
coding_train                                    main       [*+?↑]  🙈 Add .gitignore (1 year, 5
crafters/Racing-Car-Katas                       main       [?]     Merge pull request #79 from
danipardo_puzznic                               master     [↓]     OSD: Display level and time
hyperos-debloat                                 main       [*?]    first commit (5 months ago)
iniciacion_a_python_pyday_2017                  master     [?↓]    Actualizar atribuciones (8
lightning_better_exceptions                     master     [?]     Fix date (7 years ago)
lightning_loguru                                master     [↓]     Initial commit (6 years ago)
lightning_notebook_ansible                      master     []      Add .gitignore (6 years ago)
mineysocket                                     main       [?∅]    Snapshot (6 months ago)
pyvideo/data                                    master     [?]     Merge pull request #1027 from
```

pre-commit

A framework for managing and maintaining multi-language pre-commit hooks.

```
cd repo_to_check
zed .pre-commit-config.yaml
pre-commit run --all-files
```

pre-commit (config-file)

```yaml
# $REPO_ROOT/.pre-commit-config.yaml
repos:
  - repo: https://github.com/pre-commit/pre-commit-hooks
    rev: v5.0.0
    hooks:
      - id: check-merge-conflict
      - id: check-xml
      - id: check-symlinks
      - id: check-toml
      - id: check-json
      - id: check-illegal-windows-names
      - id: check-added-large-files
      - id: check-yaml
        # args: [--unsafe] # Needed for ansible vault
      - id: check-ast
      - id: pretty-format-json
      - id: end-of-file-fixer
  - repo: https://github.com/astral-sh/ruff-pre-commit
    rev: v0.8.4
    hooks:
      - id: ruff
      - id: ruff-format
```

And much more…

mdformat

CommonMark compliant Markdown formatter.

copier

A library for rendering project templates.

black

The uncompromising code formatter.

isort

A Python utility / library to sort Python imports.

mypy

Optional static typing for Python

And much more…

ruff

An extremely fast Python linter and code formatter, written in Rust.

uv

An extremely fast Python package and project manager, written in Rust.

pytest

simple powerful testing with Python

pyupgrade

A tool to automatically upgrade syntax for newer versions.

datasette

An open source multi-tool for exploring and publishing data

And much more…

jupyterlab

JupyterLab computational environment

streamlit

A faster way to build and share data apps

visidata

terminal interface for exploring and arranging tabular data

llm

A CLI utility and Python library for interacting with Large Language Models, including OpenAI, PaLM and local models installed on your own machine.

yt-dlp

A feature-rich command-line audio/video downloader

And much more…

lightnovel-crawler

An app to download novels from online sources and generate e-books.

ansitoimg

Convert an ANSI string to an image. Great for adding terminal output into a readme.

lektor

A static content management system.

markdown-anki-decks

A command line program to convert markdown files into anki decks.

pyxel

A retro game engine for Python