Fuzzy logic on GNU/Linux Operative System

Eng. Andrés M. Prieto Álvarez

Diseño: Recursos Informáticos y Educativos CRIE Tel: (6) 313 7140

What is fuzzy logic?

Fuzzy logic is an extension of classical logic that allows us to handle truth values that are not just 0 or 1 (true or false), but values intermediate between the two.

Lotfi Zadeh, 1965

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0
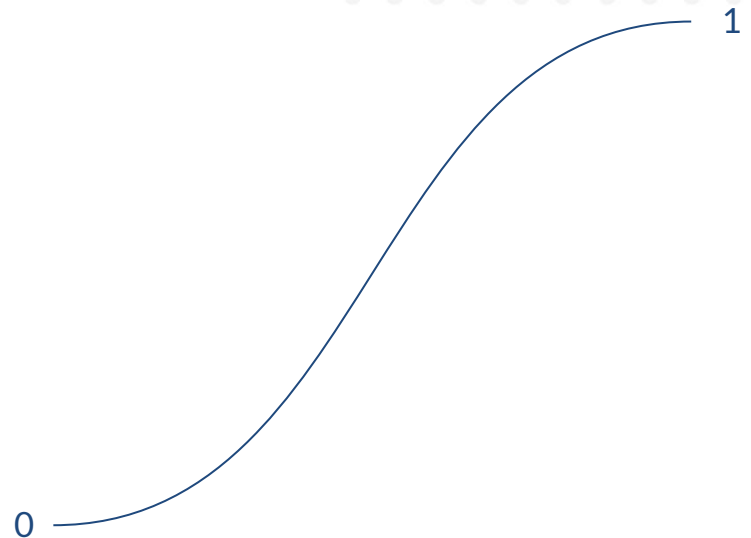
What does it work for?

It is used when we need to model complex situations where decisions are not simply black and white.

It allows decisions to be made in uncertain situations, which is useful in control systems, artificial intelligence and machine learning.

Management of processes, resources and automatic adjustments according to current conditions.
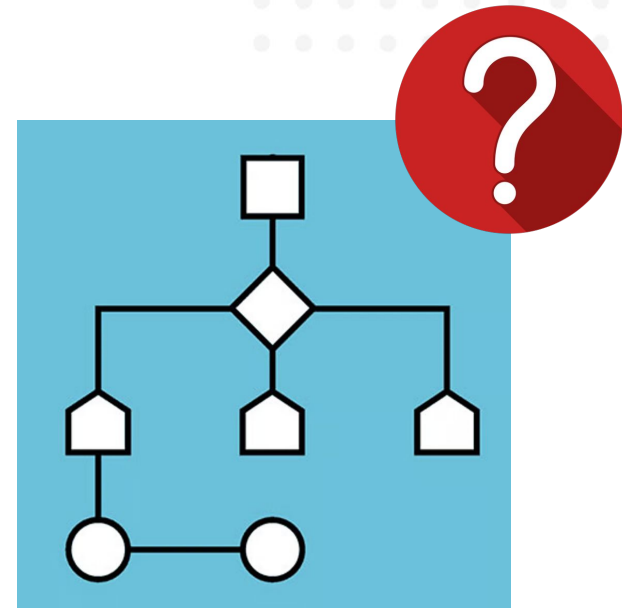
Common hardware utilities for GNU/Linux OS that uses Fuzzy logic

Libprocess

Implementation examples of Libprocess

lm-sensors

lm-sensors implements libprocess to get the temperature of the PC then identify if there's some over warm, also it gets other measures like CPU usage, RAM usage or energy consumption, etc

Ref:
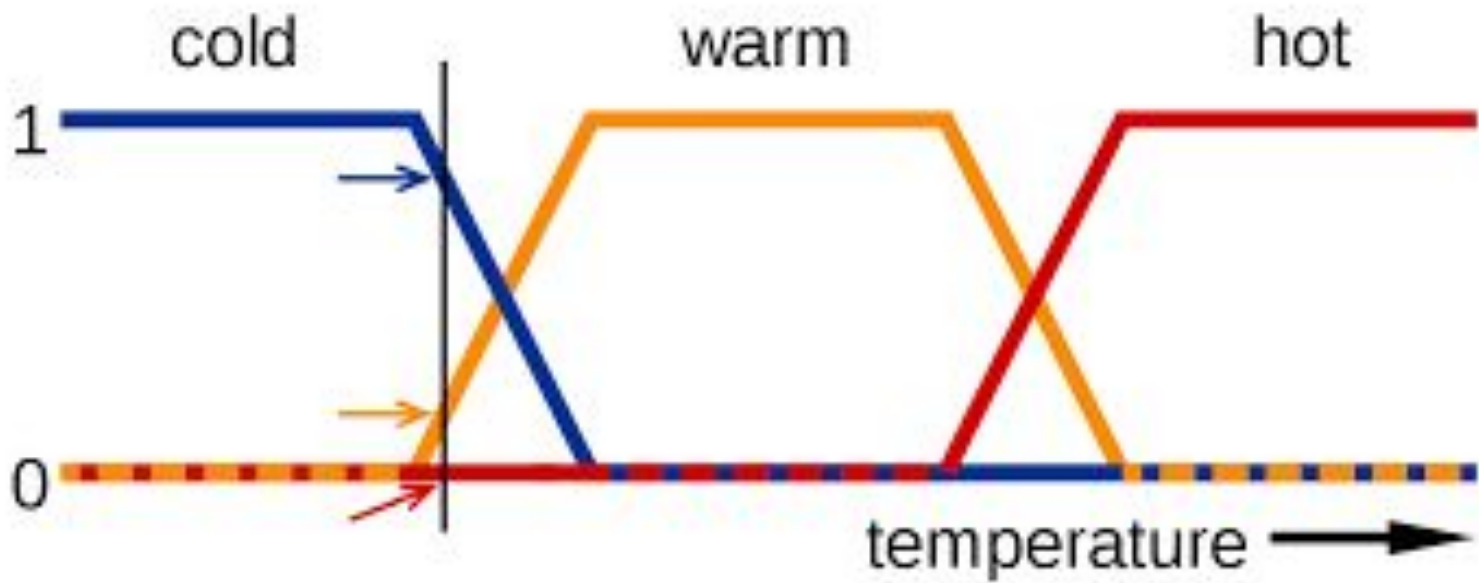https://github.com/lm-sensors/lm-sensors

Fancontrol

This package implements libprocess for getting temperature measurement, then turning on fans if that's required, checking power and energy consumption over the fans velocity in the cooling system

Ref:
https://packages.debian.org/search?keywords=fancontrol

How does it work?

Labeling scale implementation for a widget


```
1   ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
2
3   [module/temperature]
4   type = internal/temperature
5
6   thermal-zone = 0
7   warn-temperature = 60
8
9   format = <label>
10  format-warn = <label-warn>
11  format-warn-background = ${colors.background}
12
13  label = 燮 %temperature-c%
14  label-warn = ▨  %temperature-c%
15  label-warn-underline = ${colors.line_color_alert}
16  format-warn-padding = 2
```


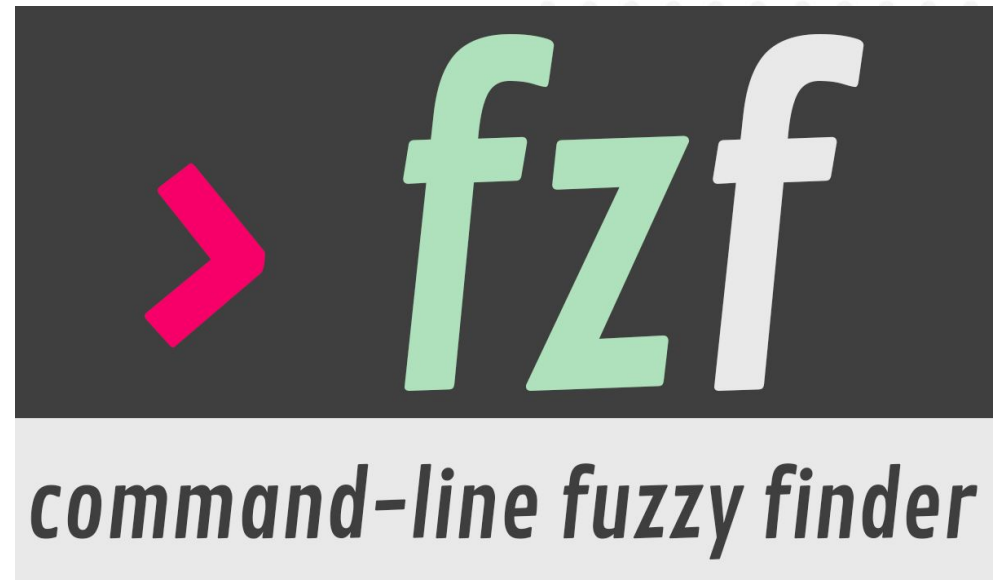
Ref https://github.com/AndresMpa/dotfiles

Fuzzy logic on GNU/Linux terminal

F - Fuzzy - Finder/Search

FZF is a fuzzy finder implemented in different OS, packages, command line, editors, etc. It works to make fuzzy search using a given text.

Ref

https://github.com/junegunn/fzf

> fzf

command-line fuzzy finder

Brightness control script

```bash
test.bash
1   #! /bin/bash
2   luz_actual=$(cat /sys/class/backlight/intel_backlight/brightness)
3   if [[ $luz_actual -lt 1000 ]]; then
4       # Luz baja
5       brillo=0.5
6   elif [[ $luz_actual -lt 3000 ]]; then
7       # Luz media
8       brillo=0.7
9   else
10      # Luz alta
11      brillo=1.0
12  fi
13  xrandr --output eDP-1 --brightness $brillo
```

Ref https://github.com/junegunn/fzf

Regarding the permission system


```
dotfiles / etc / systemd / system / brightness-permission.service

AndresMpa   Quick fix

Code   Blame   12 lines (10 loc) · 307 Bytes

1    [Unit]
2    Description=Set light writable for every user, place this file at /etc/systemd/system
3    Before=nodered.service
4
5    [Service]
6    User=root
7    Type=oneshot
8    ExecStart=/bin/bash -c "/bin/chmod a+w /sys/class/backlight/amdgpu_bl0/brightness"
9
10   [Install]
11   Alias=brightness-permission.service
12   WantedBy=multi-user.target
```
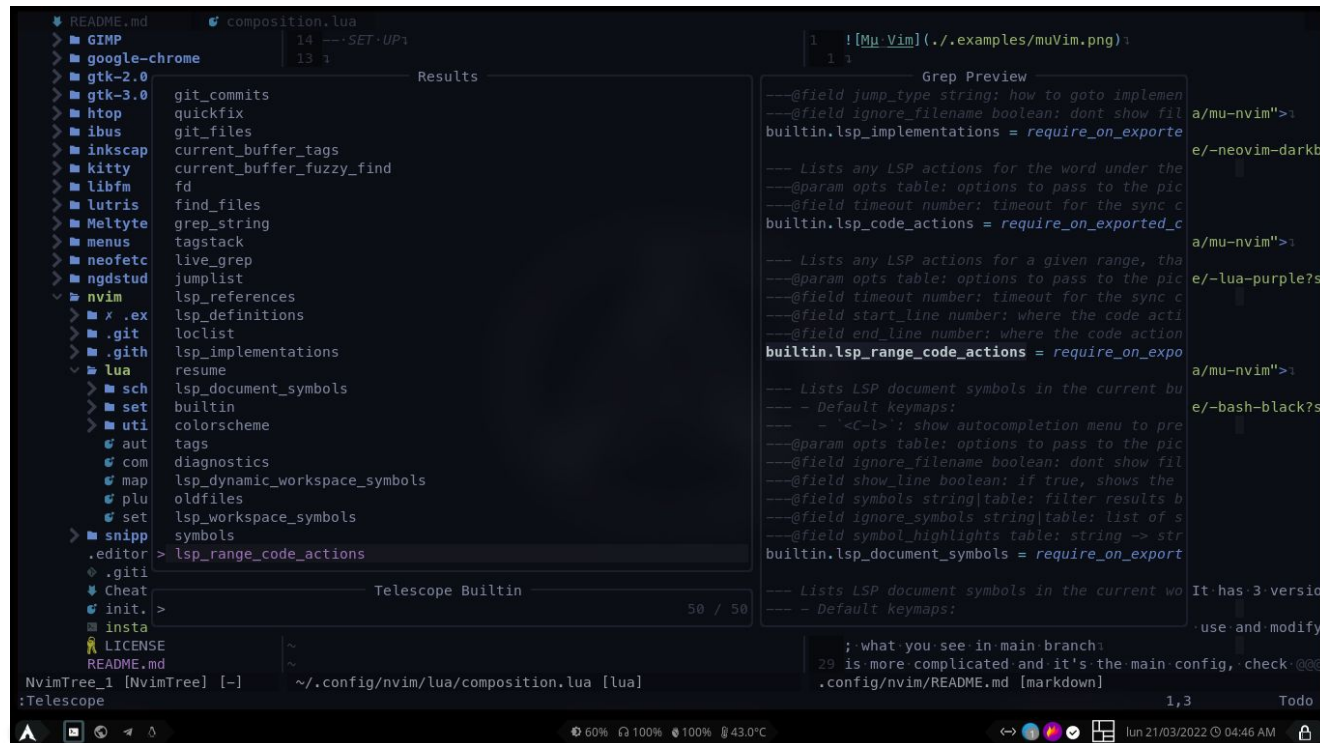
```
1    #! /bin/bash
2
3    brightness=$(cat /sys/class/backlight/amdgpu_bl0/brightness)
4    brightness=$(expr $brightness + 10)
5    echo $brightness > /sys/class/backlight/amdgpu_bl0/brightness

#
# Brightness
#

XF86MonBrightnessDown
    brightnessctl -d amdgpu_bl0 s 10-

XF86MonBrightnessUp
    brightnessctl -d amdgpu_bl0 s 10+
```

Other fuzzy search implementation regarding different context

Thank you

Eng. Andrés M. Prieto Álvarez