



# BOOTCAMP DE PROCESAMIENTO DE IMÁGENES CON INTELIGENCIA ARTIFICIAL

## Procesamiento de Imágenes

(Image Processing)

**Wladimir E. Banda-Barragán**

**2025**

# Linux and the need for open source software

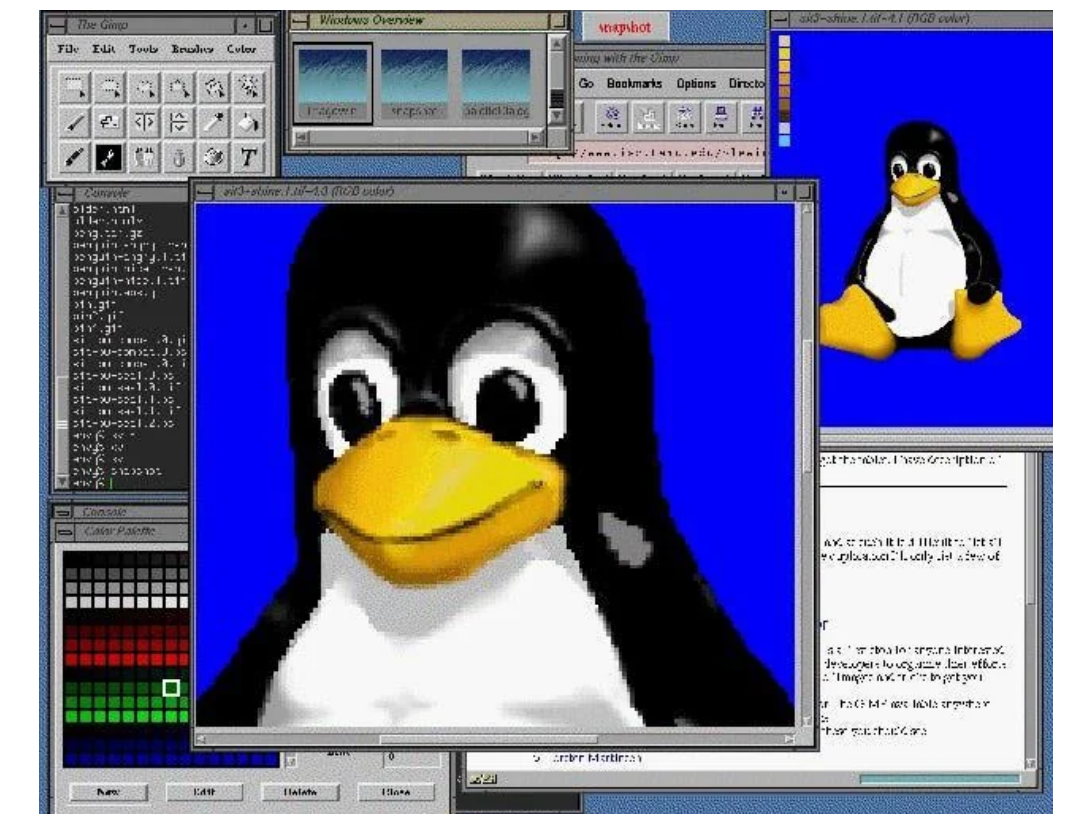
It is an operating system based on Unix, which was developed by Ken Thompson and Dennis Ritchie (at AT&T Bell Laboratories) during the 60's/70's.

Unix was highly portable, so it was adopted, copied, and modified by many companies and universities.

The source code was available, but modification and redistribution were restricted and its commercial version was too expensive.

Finnish student Linus Torvalds decides to create a new free operating system kernel called Linux.

Linux released its first version in 1991.



[https://www.reddit.com/r/aggies/comments/vintc1/tamu\\_linux\\_released\\_in\\_1992\\_it\\_was\\_the\\_first/](https://www.reddit.com/r/aggies/comments/vintc1/tamu_linux_released_in_1992_it_was_the_first/)

# Advantages of Linux OS

Linux OS are free and open source.

You can modify the source code and adapt it to your applications at will.

Linux provides security (much harder to hack, nearly no viruses).

<https://www.geeksforgeeks.org/blogs/kde-vs-gnome/>

Linux distributions come with an in-built platform to do programming.

There are two types of desktops:  
**KDE and GNOME.**





# Flavours of Linux OS

You have many options, the most popular ones in physics are:

1. Ubuntu
2. Fedora
3. Debian
4. CentOS

Linux can run on virtual machines / co-exist with other OS.

Linux is installed in (pretty much all) large-scale, high-performance supercomputers.

Linux is the OS of cloud servers (Google Colab).

The backend of GitHub relies heavily on **Linux**.



# Basic Linux OS commands

1. man — offline manual, get help about any commands
2. which — find out where a command is defined.
3. <command> --help — Find help on any command
4. cd — Change the current directory (folder)
5. ls — List files in a directory
6. mkdir — Make/create a new directory
7. pwd — Print current directory
8. cp — Copy files and directories
9. rm — Delete files and directories
10. cat file.txt — see contents of file.
11. head file.txt — see the first 10 lines of a file
12. tail file.txt — see the last 10 lines of a file.
13. chmod — change permissions of a file or directory for 3 user groups: user (owner) permission, group permission, and other permission.
14. diff file1.txt file2.txt — show differences between two files
15. file — show the type of a file
16. less — browse the contents of a file, exit with q
17. locate — find files with names matching a pattern
18. touch — Create a new file or update an existing one
19. top — See what is going on, what processes are running, exit with q
20. ping server — check to see if a server is alive
21. df — show free disk space
22. du — show disk space usage
23. uname -a — information on Linux kernel
24. uptime — how long the system has been running
25. date — show current date/time



**Tutorial**