

Phase 2 documentation :

Aim: Install JSBSim and FlightGear and run a basic working example

- 1) A clear, step-by-step installation and setup guide and Screenshots of aircraft running in JSBSim and FlightGear

JSBSIM installation:

- We clone the main repo from the GitHub provided by jsbsim.
Clear steps are as follows:
- Cloning JSBSim Repository - **git clone https://github.com/JSBSim-Team/jsbsim.git**
- Then we go to that directory - **cd jsbsim**
- Make the build folder from where files will be executed - **mkdir build && cd build**
- Now, we make up the executable file so that our computer can understand - **cmake..**
- Executable file so my Mac os can understand - **make -j4**
- Now we run a basic simulation on a plane like Cassena 172 - **./src/jsbsim --root=.. --script=scripts/c1721.xml**

This c1721.xml contains all the details about plane geometry, mass aerodynamics coefficient, etc
Screenshot :

```
set fcs/elevator-cmd-norm to 0.500000 (delta via exponential approach with time constant 0.500000)
}

GEAR_CONTACT: 0.000000 seconds: NOSE 1

Mass Properties Report (English units: lbf, in, slug-ft**2)
      Weight  CG-X  CG-Y  CG-Z  Ixx  Iyy  Izz  Ixy  Ixz  Iyz
0 Base Vehicle 1800.0  41.0   0.0  36.5  948.0 1346.0 1967.0  0.0  -0.0  0.0
0 Pilot      180.0  36.0  -14.0  24.0   0.0   0.0   0.0  -0.0   0.0  -0.0
1 Co-Pilot   180.0  36.0  -14.0  24.0   0.0   0.0   0.0  -0.0   0.0  -0.0
2 Left Passenger 0.0  70.0  -14.0  24.0   0.0   0.0   0.0  -0.0   0.0  -0.0
3 Right Passenger 0.0  70.0  -14.0  24.0   0.0   0.0   0.0  -0.0   0.0  -0.0
4 Baggage    0.0  95.0   0.0  24.0   0.0   0.0   0.0  -0.0   0.0  -0.0
0 Fuel       100   56  -112  59.4   0   0   0   0   0   0
1 Fuel       100   56  -112  59.4   0   0   0   0   0   0
Total:      1800.0  42.1  -1.3  37.7  1524.5 1384.3 2525.6  3.3  -16.7  7.5

End of vehicle configuration loading.

Simulation Configuration
-----
Mass Properties Model:
Ground Reactions Model:
Aerodynamics Model:
Propulsion Model:

State Report at sim time: 0.000000 seconds
Position
ECI: -7649021.27957385, 12080959.41416749, 15276542.5941619 (x,y,z, in ft)
ECEF: -7649021.279574, 12080959.414168, 15276542.594162 (x,y,z, in ft)
Local: 47.191909, 122.000000, 4.700026 (geodetic lat, lon, alt ASL in deg and ft)

Orientation
ECI: -155.1494357955349, 36.05085901413414, 160.2817992112658 (phi, theta, psi in deg)
Local: -1.138674391577389e-15, 2.150005003339451e-15, 150 (phi, theta, psi in deg)

Velocity
ECI: -880.9574535844341, -550.4833130809967, 0 (x,y,z in ft/s)
ECEF: 0, 0, -0 (x,y,z in ft/s)
Local: 0.000000, 0.000000, 0.000000 (n,e,d in ft/sec)
Body: 0.000000, 0.000000, 0.000000 (u,v,w in ft/sec)

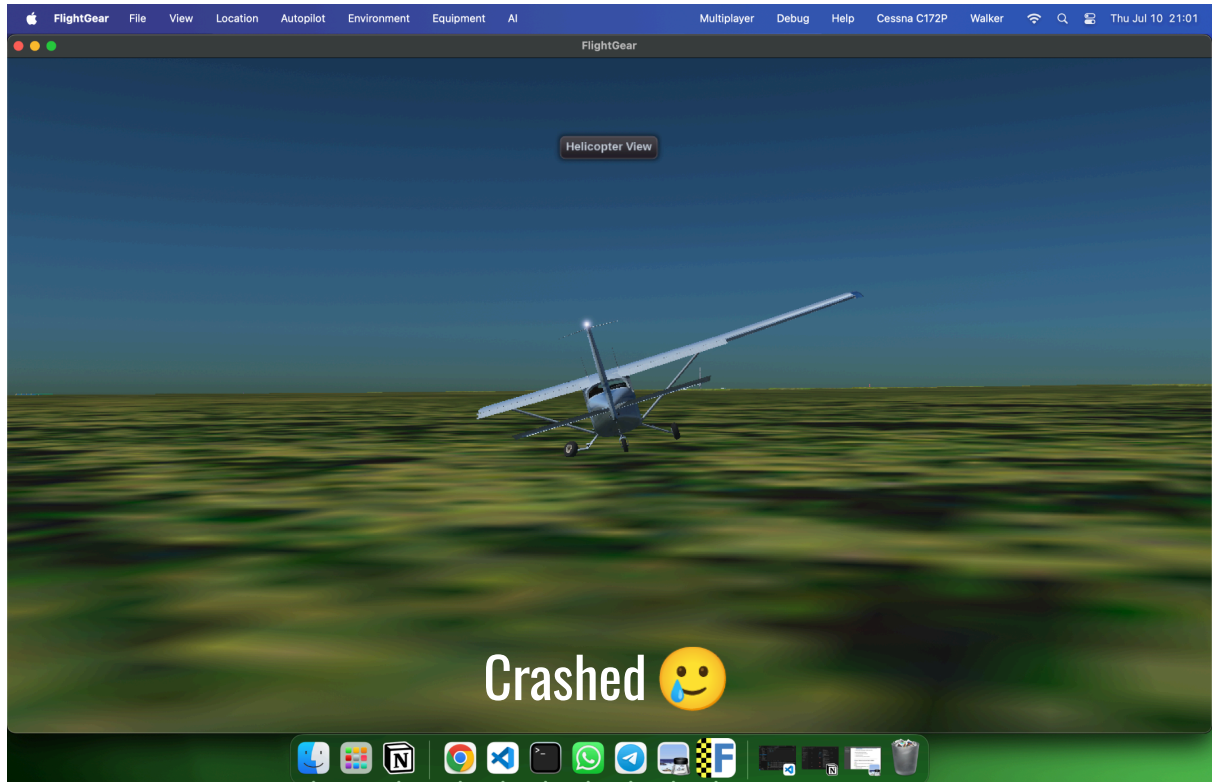
Body Rates (relative to given frame, expressed in body frame)
ECI: -0.0024588097895578, -0.001419594493887283, -0.003065176886408019 (p,q,r in deg/s)
ECEF: 0, 0, 0 (p,q,r in deg/s)

----- JSBSim Execution beginning -----

Start: Monday July 14 2025 23:01:57 (HH:MM:SS)
GEAR_CONTACT: 0.158327 seconds: LEFT_MAIN 1
GEAR_CONTACT: 0.158327 seconds: RIGHT_MAIN 1
End: Monday July 14 2025 23:01:57 (HH:MM:SS)
(base) ~ - build git(master) x
```

Flightgear installation:

- Just follow this link: <https://www.flightgear.org/download/>
- Then we chose which operating system for me, it was mac, so I downloaded the version 2020.3.19
- This will automatically download all the required files, including jsbsim, which I didn't know and wasted some time
- Now, just open the application and select the aircraft and environment, and we are ready to fly
- Screenshot :



What worked and what didn't?

JSBSIM

- Script File Not Found Errors:
At first, I was trying random paths like `../scripts/c1721.xml`, and obviously, JSBSim wasn't having any of it. Turns out, the script file needs to exist in the correct directory, and you need to point to it properly relative to the build folder. Took me a while to figure that out.
- Mixing Up the Flags:
`./src/jsbsim --aircraft=../aircraft --script=../scripts/c1721.xml`
Which didn't work because JSBSim doesn't like it when you mix-- aircraft and script together without a proper setup. ChatGPT saved me here.

- Build Folder Confusion:

At one point, I deleted everything inside the build folder and ran `cmake ..` again — but from the wrong place. This messed things up and dumped files in the main jsbsim folder instead of the build one.

Fixed it later by clearing everything again and running `cmake ..` from inside the build folder, properly this time.

Flightgear :

Installation was easy, and everything worked well.

Well, I realised I am not a pilot. I crashed the plane every single time -_-.

Also, I tried connecting FlightGear and JSBSim from the terminal, and it didn't work out... and now I realise there was no need to do that. Ended up wasting a few days. Tried a Python simulation instead — worked well.

