**1. Set up the SDR Project Environment**

- Created GitHub repo: linux-sdr-adsb-receiver
- Cloned the repo onto Raspberry Pi
- Created the full project folder structure
  (python/, captures/, docs/, etc.)
- Set up a Python virtual environment (venv) inside the project
- Installed all necessary Python libraries

**2. Installed and Configured the RTL-SDR Receiver**

- Plugged in RTL-SDR Blog V4 dongle to the Raspberry Pi
- Installed RTL-SDR drivers
- Confirmed Raspberry Pi recognized the SDR as an device

**3 Set Up Radio Parameters & Constants**

Created constants.py containing:

- Center frequency (1090 MHz)
- Sample rate (2 MHz)
- Gain settings
- ADS-B bit rate
- Bit period
- Message lengths (preamble + 112-bit frame)

This file standardizes all radio settings for your entire project.

**4. Captured Real 1090 MHz ADS-B IQ Samples**

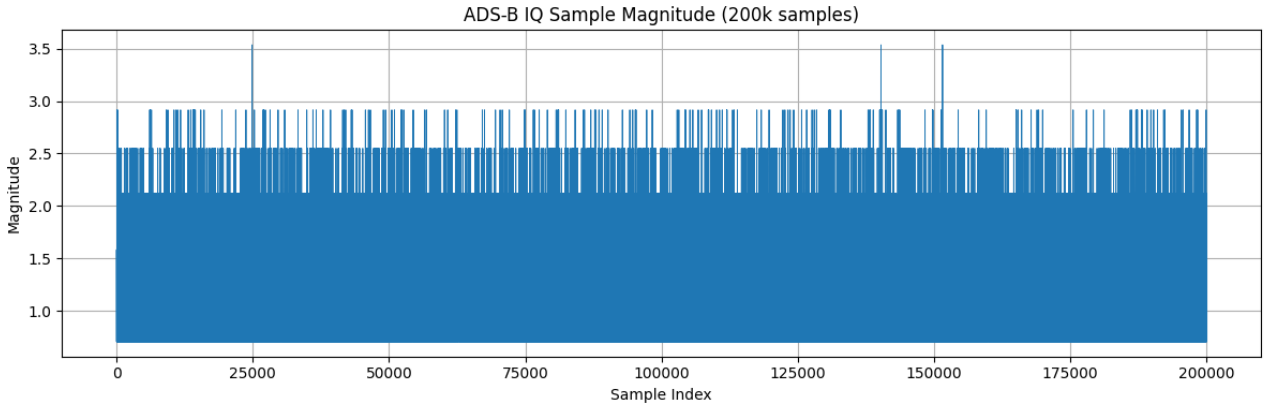
- First raw RF capture
- Saved 200,000 IQ samples to a file
- Verified the SDR is receiving live aircraft signals

### 5. Loaded IQ Data Into Python and Visualized It

Created load capture.py to read the IQ file.

Plotted sample magnitude using:

- NumPy
- Matplotlib




Confirmation SDR was working

- SDR hardware was working
- Antenna + 1090 MHz filter were working
- Captured file contained valid ADS-B pulses