# ADS-B EXPERIMENT

A Wireless Communication Project

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# Introduction

**What is ADS-B?**

Automatic Dependent Surveillance–Broadcast (ADS-B) is a surveillance technology in which aircraft broadcast their position, altitude, velocity, and other data.

Widely used in air traffic control and aircraft tracking.

**Objective of the Experiment:**

To receive and decode ADS-B signals from aircraft using a Software-Defined Radio (SDR) setup and visualize them using a virtual radar.

# Tools and Equipment Required

**Hardware**

RTL-SDR Dongle: A low-cost USB-based Software-Defined Radio receiver.

Antenna: 1090 MHz antenna for receiving ADS-B signals.

Computer : For running decoding software and visualizing data.

**Software**

Dump1090: An open-source ADS-B decoder.

Virtual Radar Server: Software for visualizing decoded ADS-B data on a map.

RTL-SDR Drivers: Necessary drivers for the RTL-SDR dongle.

# Procedure (Step 1 - Setup)

**Install RTL-SDR Drivers**

**Install the required drivers to make the RTL-SDR dongle work with your system.**

**Set Up Antenna and Dongle**

**Connect the 1090 MHz antenna to the RTL-SDR dongle.**

**Plug the RTL-SDR dongle into the USB port of the computer.**

# Procedure (Step 2 - Software Installation)

**Download and Install Dump1090:**

**Install the Dump1090 software for decoding ADS-B signals.**

**Install Virtual Radar Server**

**Set up the Virtual Radar Server to visualize aircraft positions.**

# Procedure (Step 3 - Running the Experiment)

**Start Dump1090**

**Run Dump1090 to begin receiving and decoding ADS-B signals from aircraft.**

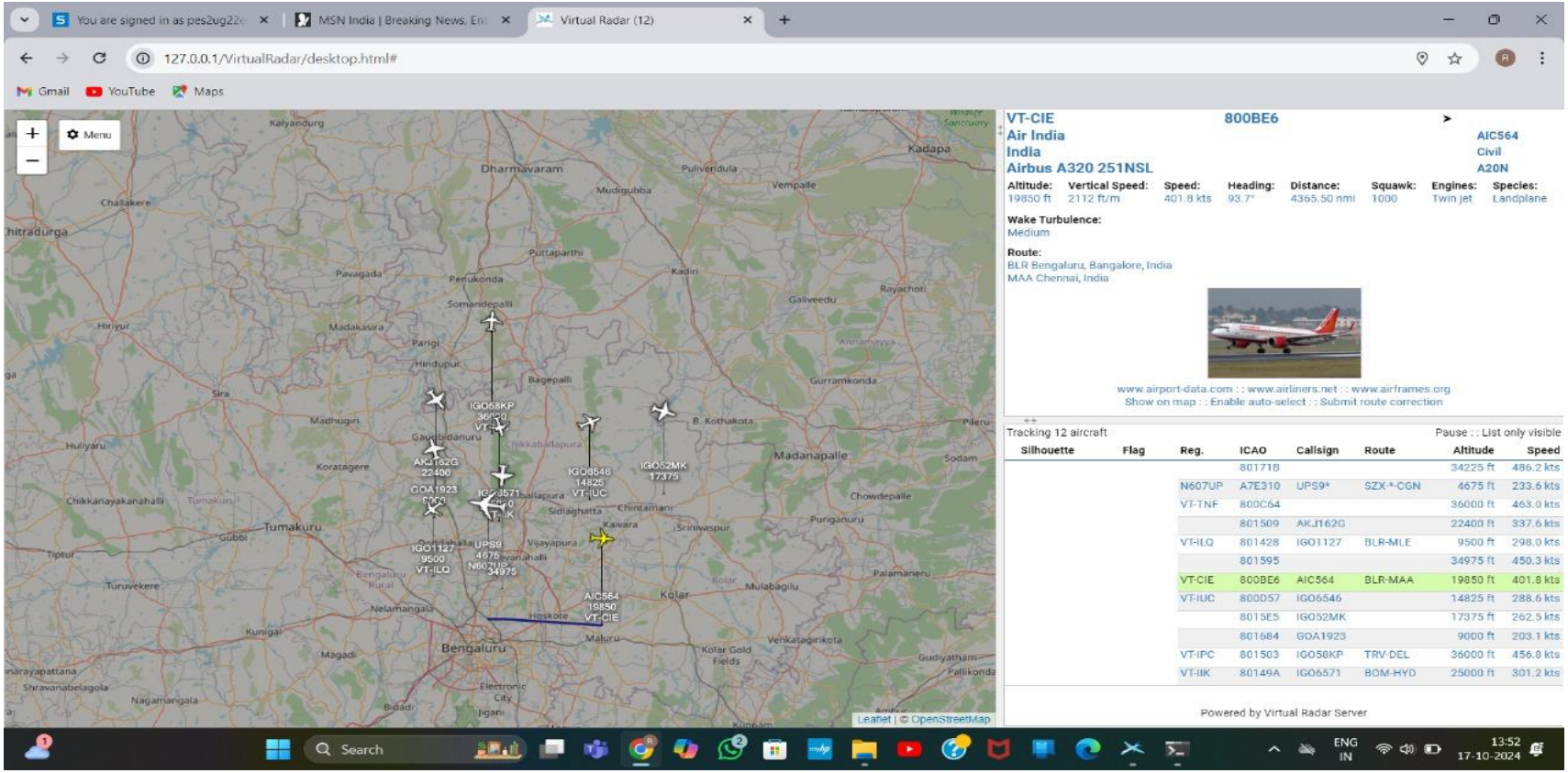
**Configure Virtual Radar Server***

**Use the decoded data from Dump1090 to display aircraft positions on a map.**

**Real-Time Aircraft Tracking***

**Observe the positions, altitude, speed, and other parameters of nearby aircraft.**

# Results and Observations



# Conclusion

Successfully received and decoded ADS-B signals using RTL-SDR and Dump1090.

Demonstrated real-time aircraft tracking and visualization using Virtual Radar Server.