An IMU is a specific type of sensor that measures angular rate, force and sometimes magnetic field. IMUs are composed of a **3-axis accelerometer** and a **3-axis gyroscope,** which would consider a 6-axis IMU.

Deep learning Neural network for the first problem.

Plotting the time series, and calculating the change frequency of the wave form for the plotted wave form.

Accelerometer – It measures acceleration (change of velocity) across a single axis. (Accelerometers measures linear acceleration in a particular direction). An accelerometer can also be used to measure gravity as a downward force.

Integration of acceleration once will provide velocity, and integration again will revolve position.

Gyroscope – While acceleration can measure linear acceleration in a particular direction. They can’t measure twisting or rotational movement. Gyroscopes however measure angular velocity about three axes. **Pitch (x-axis), Roll (y-axis) and Yaw (z-axis).** When integrated with sensor fusion software a gyro can be used to determine an object’s orientation within 3D space.