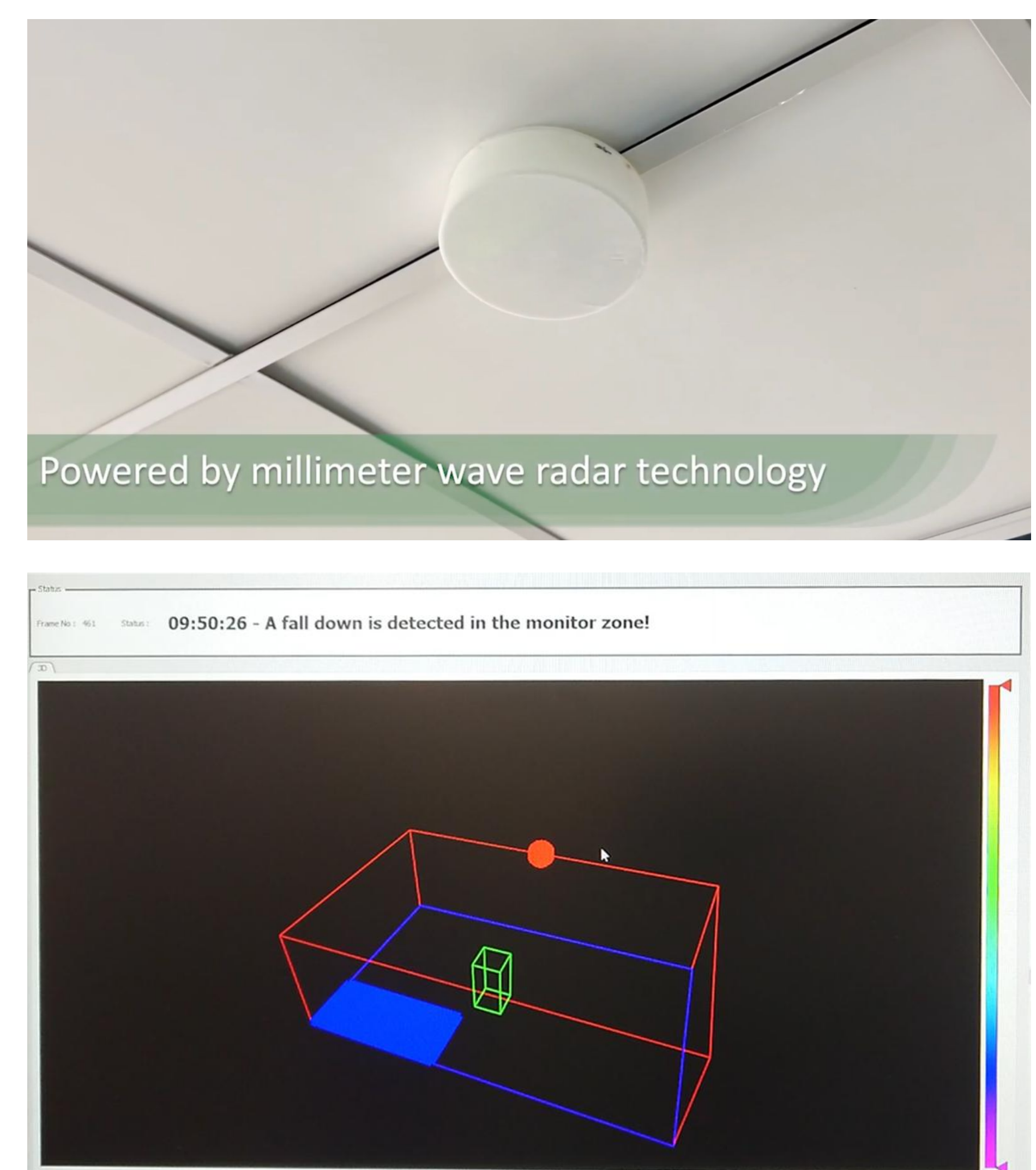## Student: 28 Janice Ma, 41 Zahabiyah Boty, 16 Theodora Kwok

Objective/Background/Motivation

- Aimed to benefit the lives of the elderly and provide reassurance for their family members
- Due to weaker muscles, poor balance, and long-term diseases, elderly people are at high risk of falling and potentially having injures
- Goal = Reduce the damage caused by falls among the elderly using sensor technology and computer programs

Existing Solution

- Guardforce Technovation:
  https://www.gftechnovation.com.hk/en/smart-care/bed-exit-and-fall-detection
- Technology used:
- With millimeter wave radar technology, the system detects human motion in the surveillance area. When compared to infrared, 77GHz radar is subject to significantly less interference.
- non-visual fall detection alarm

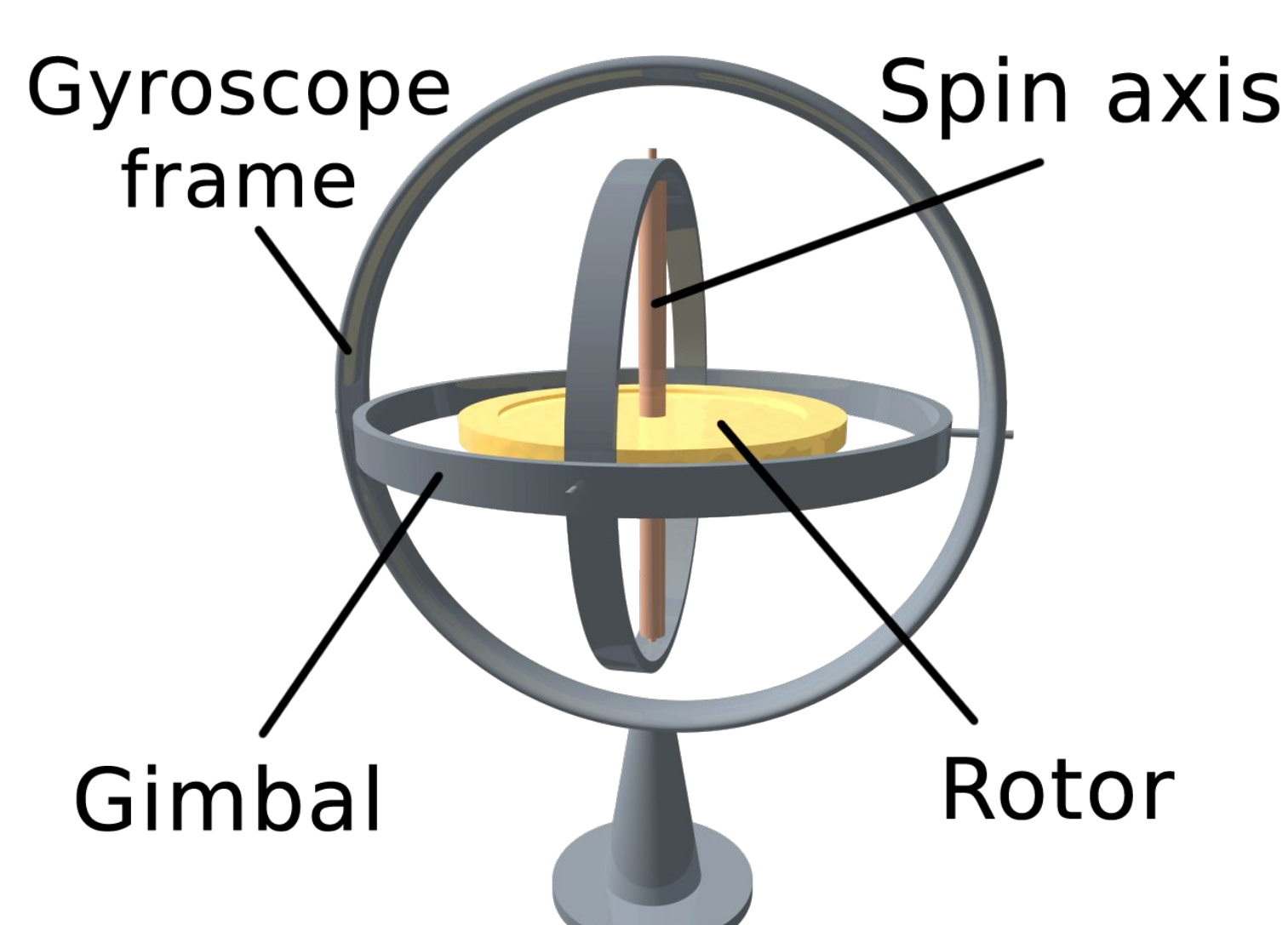Powered by millimeter wave radar technology

Your Solution

- Optimize this technology and propose additional features that will result in a jacket that could be easily wrist-worn and implemented in daily life.
- Alert notification system: Using Bluetooth to connect the device to the phone and sending immediate alert notifications to family members when the fall is detected.
- Detecting the fall through tilt and motion sensors: Integrating the research regarding the biomechanics of a fall with sensors to effectively determine a fall.
- Tracking feature (GPS): Enables family members to know the location of their loved one effectively showing the location of their fall as well as overseeing those with dementia

Resources Needed

- Arduino Uno
- Inclinometers
- Accelerometer/gyrometer
- GPS sensor

Gyroscope frame — Spin axis — Gimbal — Rotor

Department of Electrical Engineering
CityU
香港城市大學
City University of Hong Kong