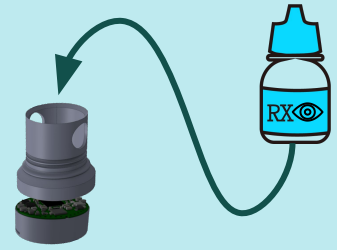# Smart Eye Drop Bottle Holder to Monitor Glaucoma Medication Compliance

Fang-Jhen Su, Kian Talaei, Tianyi Xing, Ryan Zolyomi
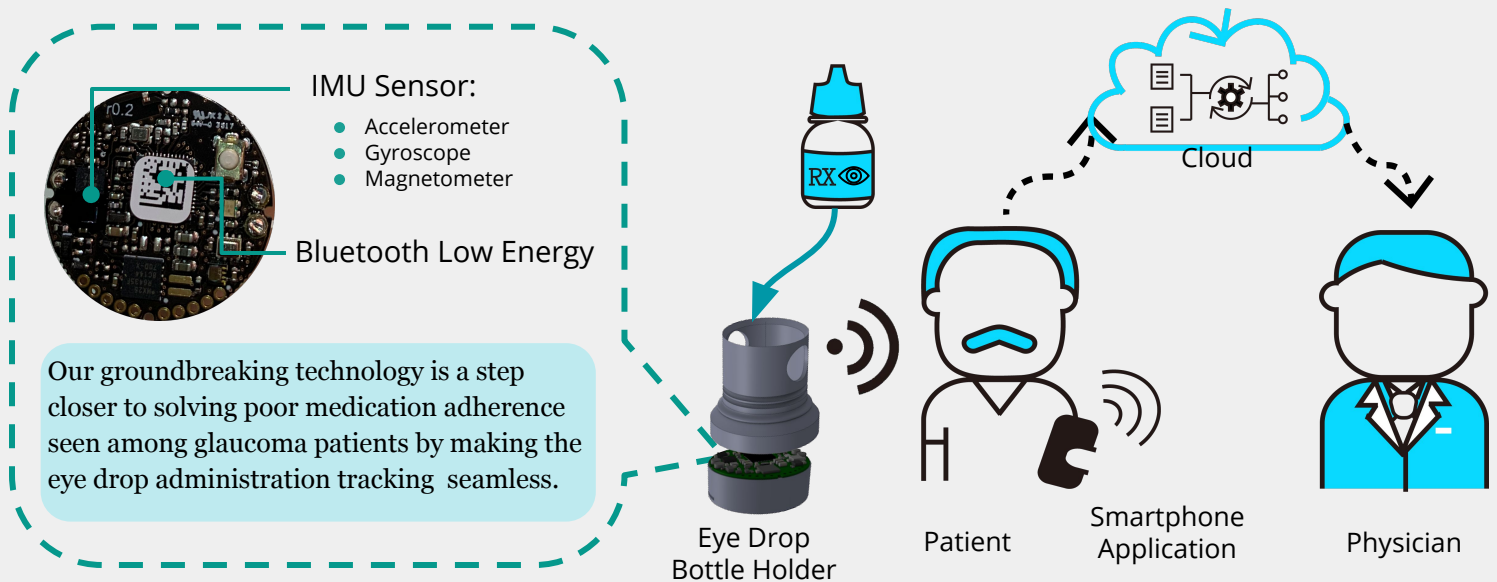Industry Advisor: Taiki Nishihara, Ocuelar
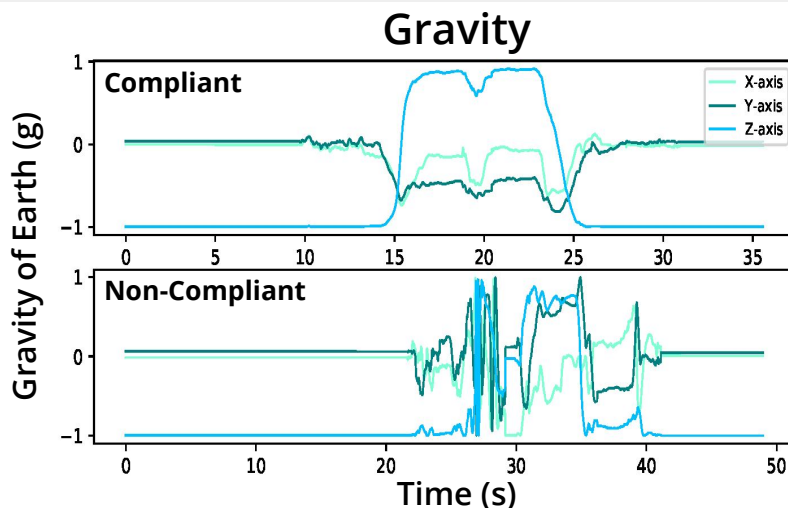
4 in 5
Glaucoma patients have **poor** medication adherence.

More than 75 million people worldwide suffer from glaucoma, the leading cause of irreversible blindness. Unfortunately, the majority of glaucoma patients lack a proper long-term medication routine, a concept referred to as "poor medication adherence." Although medicated eye drops are effective at slowing down disease progression, they "don't work in patients who don't take them."

Our Eye Drop Bottle Holder Design to Improve Medication Adherence

IMU Sensor:
- Accelerometer
- Gyroscope
- Magnetometer

Bluetooth Low Energy

Our groundbreaking technology is a step closer to solving poor medication adherence seen among glaucoma patients by making the eye drop administration tracking seamless.

Cloud

Eye Drop Bottle Holder

Patient

Smartphone Application

Physician

Our Algorithm Accurately Monitors Medication Compliance

Gravity

Compliant

Non-Compliant

X-axis
Y-axis
Z-axis

Gravity of Earth (g)

Time (s)

Our algorithm can predict administration of medicated eye drops with

80% accuracy

The graph on the left is an example of the gravity data extracted from the IMU sensor. Top: Compliant patient delivering a drop to the left and right eye. Bottom: Non-Compliant patient accidentally dropping her eye dropper.