

1. **Research Title:** "Navigation using optical tracking of objects at unknown locations."

2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level:** Electrical Engineering and Computer Science/Multi-sensor integration and processing (MS or Ph.D. level)

Description: An inertial measurement unit (IMU) is a self-contained navigational instrument comprised of gyroscopes and accelerometers using mounted in an orthogonal position. In the short term, IMU's provide accurate position, velocity, and attitude measurements. However, due to various inherent error sources, including instrument biases, initial condition errors, and instrument misalignments, the IMU's navigational errors grow in time. Various methods are used to limit this error growth by the use of aiding devices to update an IMU.

4. **Objectives:** This research will focus on updating an IMU by tracking an unknown fixed object at an unknown location using optical information.

5. **Research Classification/Restrictions:** None at this time.

6 **Eligible Institutions:** DAGSI