

**Collaborative Simultaneous Tracking and Navigation with Low Earth Orbit Satellite  
Signals of Opportunity and Inertial Navigation System**

by

Sterling Thompson

A thesis submitted to the Graduate Faculty of  
Auburn University  
in partial fulfillment of the  
requirements for the Degree of  
Master of Science

Auburn, Alabama  
August 6, 2022

Keywords: Collaborative Navigation, Signals of Opportunity, Doppler Positioning, Implicit  
Collaborative Positioning, Sensor Fusion

Copyright 2022 by Sterling Thompson

Approved by

Scott Martin, Chair, Assistant Research Professor of Mechanical Engineering  
David Bevly, Bill and Lana McNair Endowed Professor of Mechanical Engineering  
Chad Rose, Assistant Professor of Mechanical Engineering

This thesis has not been approved for public release.