



An Integrated Synthetic Aperture Radar/Global Positioning System/Inertial Navigation System for Target Geolocation Improvement

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Biblioscholar Dez 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x10 mm. This item is printed on demand - Print on Demand Neuware - A significant amount of military and civilian research has been aimed at the sensor fusion technology area. However, there has been little research into the fusion between synthetic aperture radar (SAR) sensors and navigation sensors like the inertial navigation sensor (INS) and the global positioning system (GPS). SAR is used in civilian and military applications to image ground based targets in reconnaissance and fighter targeting missions. The SAR range and range rate measurements are generally obtained and processed independently from the aircraft navigation system. This thesis explores a potential integration technique to fuse information from the navigation sensors with the SAR target measurements. Using Kalman filtering techniques, an INS/GPS/SAR integrated system was simulated in a single Kalman filter to analyze the SAR target geolocation accuracy benefits. Three different GPS receiver models were used in the integrated system: stand-alone, differential, and carrier-phase differential (using floating ambiguity resolution). Each of these GPS models were integrated with a common INS/SAR combination to determine the target geolocation accuracy improvements due only to GPS receiver type. Thesis results show that SAR targeting can...

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