EE 570: Location and Navigation

Course Overview

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Course Outline

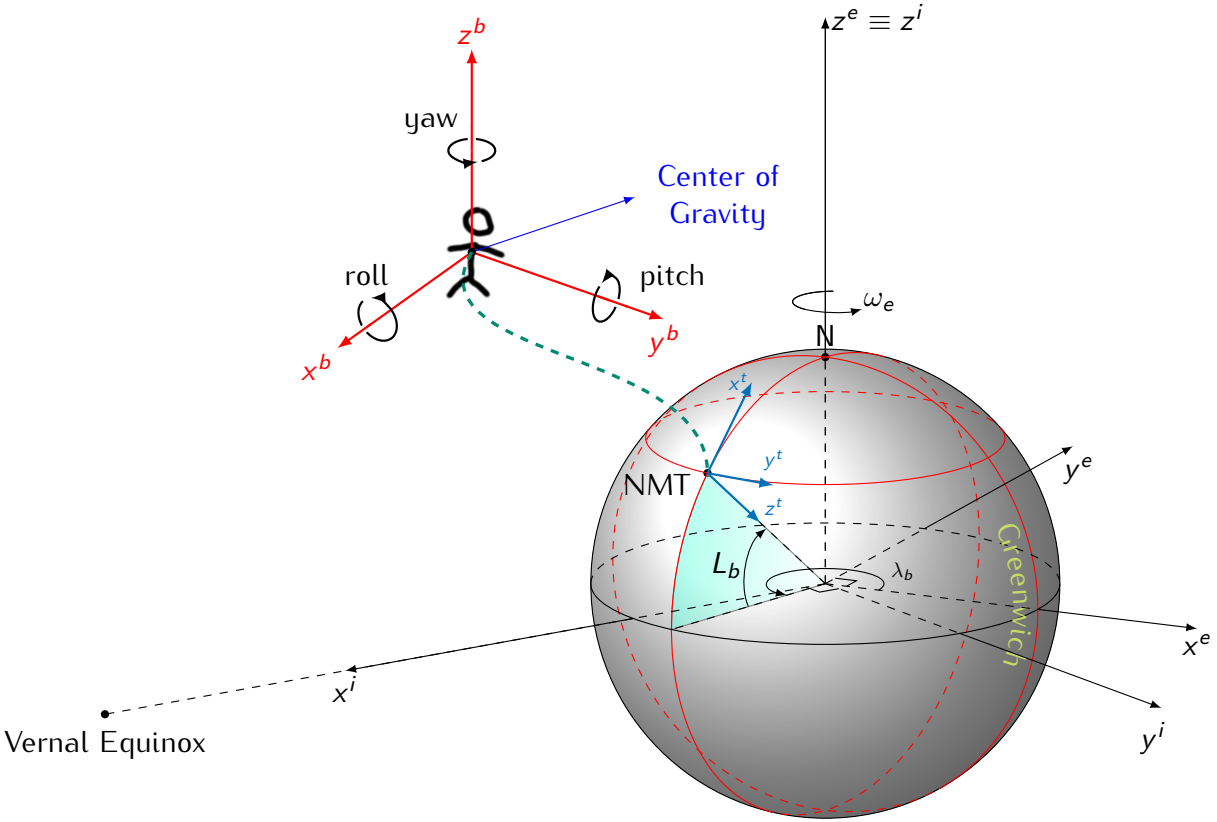
- Required Textbook:
  Principles of GNSS, Inertial, and Multisensor Integrated Navigation Systems , Second Edition, Paul D. Groves, 2013.
- Recommended Software: MATLAB or Octave
- Lectures: Tues and Thu 12:30-13:45 CRAMER 127
- Instructor: Aly El-Osery and Kevin Wedeward

Grading

- Homework assignment:30%
- Two mini-projects: 10% each
- Final project: 30%
- Presentation/Paper: 10%
- Class participation: 10%

Course Description

This course will cover the basics of terrestrial location and navigation with an emphasis on practical exposure to technology.



- Introduction to navigation
- Coordinate frames
- Kinematics
- Earth surface and gravity
- Frame transformation

} Ch. 2

Part II: Navigation Sensors and INS Mechanization

- Accelerometers
- Gyroscopes
- Error Characteristics
- Inertial navigation equations

} Ch. 4 & 5

Part III: INS/GPS Integration

- GPS — Ch. 8
- Kalman filtering — Ch. 3
- Integration architecture
- System Model
- Measurement model

} Ch. 14-16