

סמינר - SEMINAR

הנדך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 27.05.2019
(כ"ב באייר תשע"ט), בניין דן קאהן, אודיטוריום 1, 14:30.

מרצה:

Dr. Itzik Klein

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Adjunct Lecturer, Civil and Environmental Engineering
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על הנושא:

Unorthodox Inertial Navigation and Sensor Fusion

The seminar will be given in Hebrew

להלן תקציר ההרצאה:

Navigation plays an important role in various platforms and applications. One of the most common sensors used for navigation is inertial navigation system (INS). The INS popularity stems from that fact that it provides a full navigation solution (position, velocity and attitude), it is a standalone system and it is capable of working in any environment.

In this seminar three topics will be addressed: 1) Looking for the next INS architecture. Since the 1950s INS architecture includes three orthogonal accelerometers and gyroscopes. As for today, this classical architecture is the only one available as an off-the shelf product. We shall present current gyro-free INS theory and a recently proposed angular accelerometer INS as alternatives to the classical INS architecture. 2) Machine learning based navigation. Classical machine learning and deep-learning approaches are employed to improve navigation performance in situations where global positioning satellite systems are unavailable, such as indoors. An example of such fusion, smartphone mode recognition, is addressed. 3) Information aided INS. Instead of using external sensors, information about the platform dynamics and environment can be utilized to aid the INS. For example, in several INSs only the velocity vector can be used as input for aiding, thus limiting the integration approach to a loosely coupled one. In situations of partial Doppler velocity log (DVL) measurements (such as failure to maintain bottom lock) the DVL cannot provide the platform velocity vector and as a result the navigation solution is based only on the standalone INS solution and will drift in time. To circumvent that problem we present an algorithm that combines partial DVL measurements with additional information to form a calculated velocity measurement for aiding the INS.

מאת: פרופ' אולג גנדלמן

בברכה,

פ"פ"מ"מ א"ת" סאס
מרכז הסמינרים