Free for TUM Students

Elective Lecture

Navigation and Data Fusion

Prof. Dr.-Ing. Johann Dambeck

Navigation is the science of determination and propagation of position, velocity, and orientation of a vehicle in air as well as on ground, at sea and in space by using sensor measurements. The sufficiently precise knowledge of the actual navigation states is of fundamental importance for platform control, guidance and mission. Statistical data fusion of complementary navigation technologies results in integrated navigation systems which combine the advantages of the individual technologies by avoiding their disadvantages at the same time. Navigation is and has always been of strategic importance and is covered by the German constitution guaranteeing the freedom of university research and teaching, since otherwise export restricted.

The multidisciplinary lecture/seminar focuses on both the mathematical theory and the operational algorithms, which allow robust as well as precise navigation systems mostly, but not restricted to, flight navigation. The exercises focus on the implementation of the covered algorithms with the aim to generate a Matlab toolbox for IMU/GNSS navigation.

	Monday, 8. April	Tuesday, 9. April	Wednesday, 10. April	Thursday, 11. April	Friday, 12. April
9:00 to 12:30	*Lecture* **Geodesy and Inertial Sensors**	*Lecture* **Error Propagation & Sensor Error Models**	*Lecture* **Satellite Navigation & System Theory**	*Lecture* **Statistical Data Fusion**	*Lecture* **Integrated Navigation Systems**
	Lunch Break	*Lunch Break*	*Lunch Break*	*Lunch Break*	*Lunch Break*
13:30 to 17:00	*Lecture* **Inertial Navigation**	*Exercise* **Trajectory Generator**	*Exercise* **Inertial & Satellite Navigation**	*Exercise* **Data Fusion**	*Exercise* **Integrated Navigation & Repetitorium**

Monday – Friday, 8. – 12. April 2024

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Seminar Price for
external Participants
     1899,- €
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