Modulbezeichnung:	**Machine Learning in Communications (MLC)** (Machine Learning in Communications)	**5 ECTS**
Modulverantwortliche/r:	Laura Cottatellucci	
Lehrende:	Laura Cottatellucci	

Startsemester: WS 2020/2021	Dauer: 1 Semester	Turnus: jährlich (WS)
Präsenzzeit: 60 Std.	Eigenstudium: 90 Std.	Sprache: Englisch

Lehrveranstaltungen:

Machine Learning in Communications (WS 2020/2021, Vorlesung, 3 SWS, Laura Cottatellucci)
Tutorial for Machine Learning in Communications (WS 2020/2021, Übung, 1 SWS, Nikita Shanin)

Inhalt:

Recently, in many areas of wireless communications such as wireless sensor networks (WSNs), heterogeneous networks and complex ad hoc networks, distributed graph algorithms and machine learning on graphs are gaining relevance as fundamental tools in network analysis and information processing. This motivates to deliver a general introduction to fundamentals of machine learning such as detection of clusters on graphs. The introduction is followed by the application of machine learning to the design of physical and data layer techniques in wireless communications and in the optimization of mobile networks.

Lernziele und Kompetenzen:

The students

- know and explain the fundamentals of machine learning with special attention to machine learning over graphs.
- apply these principles in the design and optimisation of wireless communications systems and mobile networks.

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

Das Modul ist im Kontext der folgenden Studienfächer/Vertiefungsrichtungen verwendbar:

[1] **Computational Engineering (Rechnergestütztes Ingenieurwesen) (Master of Science)**
(Po-Vers. 2013 | TechFak | Computational Engineering (Rechnergestütztes Ingenieurwesen) (Master of Science) | Gesamtkonto | Wahlpflichtbereich Technisches Anwendungsfach | Information Technology - DT | Machine Learning in Communications)

Dieses Modul ist daneben auch in den Studienfächern "Advanced Signal Processing & Communications Engineering (Master of Science)", "Communications and Multimedia Engineering (Master of Science)", "Computational Engineering (Master of Science)", "Elektrotechnik, Elektronik und Informationstechnik (Master of Science)", "Information and Communication Technology (Master of Science)", "Informations- und Kommunikationstechnik (Master of Science)", "Wirtschaftsingenieurwesen (Master of Science)" verwendbar.

Studien-/Prüfungsleistungen:

Machine Learning in Communications (Prüfungsnummer: 668129)
(englische Bezeichnung: Machine Learning in Communications)

Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 30
Anteil an der Berechnung der Modulnote: 100% Prüfungssprache: Englisch

Erstablegung: WS 2020/2021, 1. Wdh.: SS 2021
1. Prüfer: Laura Cottatellucci