INF-MSc-536: Data, Knowledge, and Context in Machine Learning and AI (MLAI)				**BOSS-Nr.** 65440
Englischer Modultitel: Data, Knowledge, and Context in Machine Learning and AI (MLAI)				
Studiengänge: Master-Studiengang Informatik , Master-Studiengang Angewandte Informatik				
Turnus: jährlich	**Dauer:** 1 Semester	**Studienabschnitt:** Ab 3. Semester	**Credits:** 6	**Aufwand:** 180 (30/150)

1 Modulstruktur

Nr.	Element / Lehrveranstaltung	Typ	Credits	SWS
1	Data, Knowledge, and Context in Machine Learning and AI	Veranstaltung	6	2

2 Lehrveranstaltungssprache: englisch

3 Lehrinhalte

The course focuses on cutting-edge research in “triangular AI,” which combines a data-intensive approach with expert knowledge and context as two additional powerful sources of intelligence. Methods are examined for integrating knowledge from various sources such as previous experience, informed simulations, mathematical descriptions of physical laws, and explicit knowledge provided by humans. The course also explores methods for exploiting the resources of the open, variable contexts in which the system operates, such as active sensing, experimentation and dynamic multimodal interaction with humans. The course surveys several core areas of research in triangular AI, including hybrid and resource-aware machine learning and human-centered and embodied AI. It also surveys triangular approaches in several application areas, including natural language processing, physics and the life sciences, and industry and logistics. The course also examines the potential of triangular AI for achieving AI that is ethically informed and trustworthy for human users.

4 Kompetenzen

Upon successful completion of the module, students should be able to describe the fundamental concepts and methods of triangular AI and can describe paradigm use cases. Students acquire knowledge about methods for integrating machine-learning systems with knowledge representations and contextual awareness. Students should be able to transfer these methods to new problems and areas of application. Students acquire a differentiated awareness of ethical issues and trustworthiness in AI research. Students learn to put their knowledge of theoretical concepts and methods into practice to realize small projects, both on their own and by successfully working as part of a team. Students should be able to prepare and give oral presentations about their work in front of an audience. Students learn about the different fundamental approaches to artificial intelligence offered at the institute, helping them guide and structuring their further course of study.

5 Prüfungen

- Modulprüfung: Written exam BOSS-NR. 65494

6 Prüfungsformen und -leistungen

[x] Modulprüfungen [ ] Teilleistung

7 Teilnahmevoraussetzungen

- Erfolgreich abgeschlossen: - keine -

8 Modultyp und Verwendbarkeit des Moduls

- Vertiefungsmodul in den Master-Studiengängen Informatik und Angewandte Informatik
- Vertiefungsmodul in den Master-Studiengang Wirtschaftsinformatik
- Track A: Künstliche Intelligenz

9	**Modulbeauftragte/r**	**Zuständige Fakultät:**	**Beschluss Fakultätsrat:**
	Studiendekan	Informatik	09.09.2026