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**Modulbezeichnung:** Deep Learning in Multimedia Forensics (DLMFor) 10 ECTS  
 (Deep Learning in Multimedia Forensics)

Modulverantwortliche/r: Christian Riess  
 Lehrende: Christian Riess

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Startsemester: WS 2021/2022	Dauer: 1 Semester	Turnus: jährlich (WS)
Präsenzzeit: 30 Std.	Eigenstudium: 270 Std.	Sprache: Englisch

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**Lehrveranstaltungen:**

Deep Learning in Multimedia Forensics (WS 2021/2022, Praktikum, Christian Riess)

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**Empfohlene Voraussetzungen:**

Practical experience in python is required. It helps to have experience in the implementation of deep learning algorithms, but this is not required.

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**Inhalt:**

Subtle traces in the processing history of an image or video can provide a clue on the recording device, or whether some editing was applied. Multimedia forensics investigates methods to extract these traces from the data. Recent methods in multimedia forensics use deep learning to better adapt to data from the internet.

In this project, participants will gather practical experience with deep learning methods in multimedia forensics. Participants will implement published methods from scratch, and do own performance investigations on selected example inputs.

On the first meeting on October 28, groups of two students will be formed, and tasks will be distributed. During the project, there are regular consultation hours for status updates and programming support.

**Lernziele und Kompetenzen:**

*Fachkompetenz*

*Anwenden*

- Participants implement deep learning algorithms in python

*Analysieren*

- Participants transfer methods from abstract mathematical descriptions in the scientific literature to actual code implementations

*Evaluieren (Beurteilen)*

- Participants compare the empirical performances of different forensic detectors
- Participants discuss possible reasons for observed performance differences of different forensic detectors

*Lern- bzw. Methodenkompetenz*

- Participants independently research common implementation tricks and tweaks for deep learning systems from publicly available sources in the internet

*Selbstkompetenz*

- Participants work towards project deadlines within the framework of a larger programming and evaluation task.

*Sozialkompetenz*

- Participants organize their work in groups of two students
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**Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:**

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

[1] **Informatik (Bachelor of Science)**

(Po-Vers. 2007 | TechFak | Informatik (Bachelor of Science) | Gesamtkonto | Praktika und Wahlpflichtbereich (5. / 6. Semester) | Praktikum Informatik | Project Deep Learning in Multimedia Forensics)

**[2] Informatik (Bachelor of Science)**

(Po-Vers. 2009s | TechFak | Informatik (Bachelor of Science) | Seminare, Praktika, Bachelorarbeit | Praktikum Informatik | Project Deep Learning in Multimedia Forensics)

**[3] Informatik (Bachelor of Science)**

(Po-Vers. 2009w | TechFak | Informatik (Bachelor of Science) | Gesamtkonto | Hauptseminare, Praktika, Bachelorarbeit | Praktikum Informatik | Project Deep Learning in Multimedia Forensics)

**[4] Informatik (Master of Science)**

(Po-Vers. 2010 | TechFak | Informatik (Master of Science) | Gesamtkonto | Hauptseminar, Projekt, Masterarbeit | Projekt Modul | Project Deep Learning in Multimedia Forensics)

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**Studien-/Prüfungsleistungen:**

Project Deep Learning in Multimedia Forensics (Prüfungsnummer: 76351)

Prüfungsleistung, Praktikumsleistung

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

The grade will be determined from the performance during the project and the quality of the obtained results.

Prüfungssprache: Englisch

Erstablingung: WS 2021/2022, 1. Wdh.: SS 2022

1. Prüfer: Christian Riess

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**Organisatorisches:**

Participants must bring some practical experience in python. Experience with the implementation of deep neural networks helps, but is not strictly necessary.