

# Three-Dimensional & Advanced Interaction

Winter

(in German: Three-Dimensional & Advanced Interaction )

**Module-ID: FIN-INF-120286**

| Abbreviation | Credit Points | Semester | Term           | Duration   | Language | Level  |
|--------------|---------------|----------|----------------|------------|----------|--------|
| TAI          | 6             | Winter   | starting at 1. | 1 Semester | english  | Master |

|                                     |                                                                                                                                                                                                                                                                       |
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| <b>Link:</b>                        | <a href="#">LSF</a>                                                                                                                                                                                                                                                   |
| <b>Limited accessibility:</b>       | true                                                                                                                                                                                                                                                                  |
| <b>Responsibility:</b>              | Christian Hansen                                                                                                                                                                                                                                                      |
| <b>Lecturer:</b>                    | Florian Heinrich                                                                                                                                                                                                                                                      |
| <b>Classes:</b>                     | <ul style="list-style-type: none"><li>• Lecture <i>Three-Dimensional &amp; Advanced Interaction</i></li><li>• Seminar <i>Three-Dimensional &amp; Advanced Interaction</i></li></ul>                                                                                   |
| <b>Applicability in curriculum:</b> | <ul style="list-style-type: none"><li>- M.Sc. INF: Informatik</li><li>- M.Sc. INGINF: Informatik</li><li>- M.Sc. WIF: Informatik</li><li>- M.Sc. DKE: Applied Data Science</li><li>- M.Sc. DE: Methoden der Informatik</li><li>- M.Sc. VC: Visual Computing</li></ul> |

**Intended learning outcomes:**

Students ...

- understand the nature and importance of future user interfaces and the challenges and problems associated with them
- know, analyze and evaluate technologies, interaction techniques and methods for the development of advanced user interfaces
- are able to select suitable technologies and interaction techniques in the field of three-dimensional and modern Post-WIMP user interfaces
- have the ability to critically analyze scientific literature and knowledge of scientific publishing
- can conduct own research on a postgraduate level in the field of advanced user interfaces

### Content:

- Introduction to Post-WIMP and Reality-based User Interfaces
- 3DInteraction: Tasks, Devices, 3D-Widgets,
- 3D UIs Augmented Reality Interaction
- Pen-based Interaction Techniques and Sketching
- Multitouch: Technologies, Gestures, Applications
- Gestural Interaction: Tracking, Freehand Gestures
- Tangible Interaction
- Advanced Topics: Gaze-based Interaction, Organic Interfaces, Everywhere Interfaces

### Workload:

56h contact time + 124h self study

| Pre-examination requirements:                                     | Type of examination: | Teaching method / lecture hours per week (SWS):                                                       |
|-------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------|
| Successful completion of the seminar (clarified in first lecture) | Written exam         | <ul style="list-style-type: none"> <li>• Lecture (2 SWS)</li> <li>• Exercise class (2 SWS)</li> </ul> |

| Prerequisites according to examination regulations: | Recommended prerequisites:        |
|-----------------------------------------------------|-----------------------------------|
| keine                                               | Module <i>Interactive Systems</i> |

| Media: | Literature: |
|--------|-------------|
|--------|-------------|

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|  | <ul style="list-style-type: none"><li>• Bowman, Kruijff, Laviola, Jr., Poupyrev: „3D User Interfaces: Theory and Practice“, Addison-Wesley, 2004</li><li>• Müller-Tomfelde (Ed.): „Tabletops – Horizontal Interactive Displays“, Springer, 2010</li><li>• Saffer: „Designing Gestural Interfaces“, O'Reilly Media, 2008</li><li>• Shaer, Hornecker: „Tangible User Interfaces: Past, Present and Future Directions“. In Foundations and Trends in Human-Computer Interaction, 3 (1), 2010</li></ul> |
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## Comments:

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