

Themen für Forschungsprojekte

Wintersemester 2018/19

1. Visualisierung von Lernaktivitäten und Lernzustand

- Learning Analytics for visualization and recommendation
https://www.researchgate.net/profile/Erik_Duval/publication/220956620_Attention_please_Learning_analytics_for_visualization_and_recommendation/links/546c70710cf257ec78ffec7c.pdf
- Development of an Interactive Dashboard to analyze cognitive workload
https://www.researchgate.net/profile/Roger_Daglius_Dias/publication/326796723_Development_of_an_Interactive_Dashboard_to_Analyze_Cognitive_Workload_of_Surgical_Teams_During_Complex_Procedural_Care/links/5b6995cc299bf14c6d950911/Development-of-an-Interactive-Dashboard-to-Analyze-Cognitive-Workload-of-Surgical-Teams-During-Complex-Procedural-Care.pdf

2. Analyse von Heart Rate Variability in Lernumgebungen

- HRV: indicator of user state as an aid to HCI
<http://www.iro.umontreal.ca/~blanchae/papers/physiologie/Heart%20rate%20variability%20-%20indicator%20of%20user%20state%20as%20an%20aid%20to%20HCI.pdf>
- Remote measurement of cognitive stress via heart rate variability
<https://dspace.mit.edu/openaccess-disseminate/1721.1/103771>

3. Moodle's xAPI Schnittstelle

- Das Logstore-Plugin von Moodle ist nicht Datenschutz-konform (GDPR). Wie könnte dieses oder ein anderes Moodle-Plugin erweitert bzw. verändert werden, um Datenschutzaspekte zu berücksichtigen?
- Welche Moodle-Benutzer-Aktivitäten werden noch durch kein Moodle-xAPI-Plugin abgedeckt?
- https://moodle.org/plugins/logstore_xapi
- https://moodle.org/plugins/mod_tincanlaunch

4. Multimodales Learning Analytics

- Multimodale Daten, welche aus verschiedenen Quellen stammen (z.B. auch physiologische Sensordaten) bieten neue Möglichkeiten, etwas über den Lernzustand zu erfahren und persönliches Feedback oder Lernempfehlungen zu geben.
- Di Mitri, D., Schneider, J., Specht, M., & Drachsler, H. (2018). From signals to knowledge: A conceptual model for multimodal learning analytics. *Journal of Computer Assisted Learning*, 34(4), 338-349.
- Pijeira-Díaz HJ, Drachsler H, Kirschner PA, Järvelä S. Profiling sympathetic arousal in a physics course: How active are students? *J. Comput. Assist. Learn.* 2018;34:397–408.
<https://doi.org/10.1111/jcal.12271>
- Schneider, J., Di Mitri, D., Limbu, B., Drachsler, H. (2018). Multimodal learning hub: a tool for capturing customizable multimodal learning experiences. In: Viktoria Pammer-Schindler, Mar Perez-Sanagustin, Hendrik Drachsler, Raymond Elferink, Maren Scheffel (eds.) *Lifelong Technology-enhanced Learning, EC-TEL 2018*. LNCS, vol. 11082, pp. 45–58. Springer, AG (2018).

5. Analyse von Sensordaten mit Machine-Learning-Methoden zur Lernunterstützung

- Y.P.Lin, C.H.Wang, T.L.Wu, S.K.Jeng, and J.H. Chen. Support vector machine for EEG signal classification during listening to emotional music. In *2008 IEEE 10th Workshop on Multimedia Signal Processing*, pages 127–130, 2008. doi: 10.1109/MMSP.2008.4665061.
- M. Di, E. Joo: A Survey of Machine Learning in Wireless Sensor Networks. In: *Proceedings of the 6th International Conference on Information, Communications and Signal Processing (ICICS)*, 2007.
- Jerritta, S., Murugappan, M., Nagarajan, R., & Wan, K. (2011, March). Physiological signals based human emotion recognition: a review. In *Signal Processing and its Applications (CSPA), 2011 IEEE 7th International Colloquium on* (pp. 410-415). IEEE.