

<b>Module title</b> Multimedia Retrieval			
<b>Module code</b> Tbd.	<b>Level</b> Bachelor (B.Sc.)	<b>ECTS credits</b> 5	<b>Duration</b> 2 weeks block course
<b>Module instructor</b> Tomas Skopal, Charles University, Prague	<b>Lecture type</b> Lectures + Project consultations	<b>Prerequisite(s)</b> Programming, basic mathematical ability	<b>Grading</b> Project defense
<p><b>Objectives</b> The module introduces to models and techniques of multimedia retrieval.</p> <p><b>Course Outcomes.</b> By the end of the course, students will be able to recognize many facets of content-based multimedia retrieval techniques. They also get a practical experience in a selected subdomain by means of student project.</p> <p><b>Knowledge &amp; Understanding:</b> General knowledge of content-based multimedia retrieval. Detailed pipeline – use case, domain knowledge, feature extraction, retrieval model, indexing, visualization, user feedback, evaluation.</p> <p><b>Skills &amp; Abilities:</b> a) Navigate in different platforms, interfaces, HCI means and use cases for multimedia retrieval. b) Chose suitable model for particular media type and domain; c) Formulate search intent (query, browsing, filtering); d) Use suitable indexing structure for efficient retrieval.</p> <p>The course consists of a series of lectures, interleaved with consultations to student projects. The lectures span a variety of multimedia retrieval topics, while the projects aim to focus students more deeply to a particular topic by means of a hands-on experience (project implementation).</p>			
<p><b>Content</b></p> <ol style="list-style-type: none"> <li>1. Web platforms for retrieval and sharing of multimedia content.</li> <li>2. Web interfaces, modalities, and the quality of retrieval.</li> <li>3. Text-based and bag-of-words models.</li> <li>4. Similarity search model - models and queries.</li> <li>5. Similarity search model - popular similarity functions.</li> <li>6. Global image features - analytic models.</li> <li>7. Global image features - deep learning.</li> <li>8. Local image features - analytic models.</li> <li>9. Local image features - deep learning.</li> <li>10. Video retrieval techniques.</li> <li>11. Feature extraction from audio, music and melody.</li> <li>12. Principles of metric indexing.</li> <li>13. Metric access methods.</li> <li>14. Approximate search methods.</li> </ol>			
<p><b>Textbook/teaching material</b></p> <ul style="list-style-type: none"> <li>• Course slides</li> <li>• Research papers and monographs (tbd)</li> </ul>			

Note: this is not the official course descriptor according to the “Studien- und Prüfungsordnung” (SPO)