Computer Science 6983
Advanced Interaction Techniques /Special Topics in Advanced Interaction Techniques

MEMORIAL UNIVERSITY

Department of Computer Science

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Course Description:

We are living in a world where interactions with computers and machines are ubiquitous. This course provides an overview of the emerging field of advanced interaction techniques. Topics include fundamental knowledge in interaction and exploring the state-of-the-art research in this interdisciplinary area including:

- Introduction
- Hand-Gesture based Interaction
- Eye-tracking in Interaction Techniques
- Body Gesture based Interactions
- Facial Expression (Affective Computing) in Interaction
- Speech and Natural Language in Interaction
- Haptics for Interactions
- Interactions in 3D, Virtual Reality and Augmented Reality
- Interactions for Game Control & Consumer Electronics
- Ergonomics and Human Factors for Interaction Techniques
- Considerations for Interaction Techniques for People with Disabilities

Classes will be held in the form of lectures, paper reading, seminars, and discussions. Students will work on a semester-long research project on the above research topics. Students have opportunities to get hands-on programming experience and using equipment and tools including inertial measurement units (IMUs), eye-trackers, electromyography and force myography, Leap Motion, Depth-Sensors, and AR/VR systems.

Course Objectives:

To give students basic knowledge on interactive technologies and their implementations. Students will learn the emerging field of advanced interactive technologies and understand its applications. After finishing this course, the students will be able to:

Know a relatively full spectrum of interactive technologies
Understand well advantages/shortages of above listed interactive technologies
Choose appropriate interactive techniques for specific applications
Know how different interactive systems are implemented
Design and implement an interactive system

Expected Student Background:

A course in Human Computer Interaction.

Textbook and Resources:

"Human-Computer Interaction" by Alan Dix, Janet Finlay, Gregory Abowd, and Russell Beale. PRENTICE HALL © 1993, 1998, 2004. THIRD EDITION. e-book available at: https://hcibook.com/e3/plain/online/

Additional materials assigned throughout the course.

Evaluation:

The final grade in this course will be determined as follows:

Assignments	18%
Course Project (include literature review)	45%
Final Exam	25%
In-class Participation (quizzes)	12%