PD234 Jan 2:1

Intelligent User Interface

Instructor

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Teaching Assistant

Email:

Department: CPDM

Course Time:

Lecture venue: CPDM Classroom

Detailed Course Page: https://cambum.net/IUI2018/IUI2018.htm

Announcements

Brief description of the course

Aim of the course:

Â·   Introducing importance and applications of Intelligent User Interface (IUI)

Â·   Discussing basics of Artificial Intelligence and its application in user interface design

Â·   Developing intelligent user interface using multiple input and output modalities

Â·   Making aware of state of the art IUI research

Â·   Evaluating user interfaces through user trials

Â·   Undertaking representative IUI project

Prerequisites

Basic knowledge of computer science, human computer interaction, mathematics and statistics

Syllabus

Basics of Artificial Intelligence (Heuristic and State Space Search), Expert System, Information Retrieval

(Precision and Recall, Web page Ranking), Machine Learning (Supervised, Unsupervised and Reinforcement

Learning, Cross Validation, Cluster Validation Index), Image and Signal Processing (Fourier Transform,

Filtering, Edge Detection).

Developing Intelligent Interaction Techniques â€" Cursor Trajectory Smoothing, Pointing Target Prediction,

Multimodal Interaction, Fusion and Fission Algorithms.

Gaze Controlled, Speech and Gesture Recognition Systems. Static and Dynamic Adaptation of Interface, User

Profile and Modelling, Content Adaptation, Experiment Design and Data Analysis.

Hands on Training on Machine Learning Toolbox (Weka and Matlab) and Expert System (CLIPS in .Net

Framework).

Developing Intelligent Interaction Techniques involving Eye Gaze, Finger and Hand Tracking Sensors.

Course outcomes

Â·   Using AI to develop intelligent interface and interaction

Â·   Idea of user modelling and interface personalization

Â·   Exposure to state-of-the-art eye gaze, hand, head and finger movement and EEG trackers

Â·   Developing new input modalities tracking eye gaze, hand, finger, head movement of users

Â·   Hands on training on Expert System and Machine Learning toolbox

Â·   Conducting usability evaluation and reporting results

Grading policy

40% Group project

30% Individual Assignment

30% Examinations

Assignments

Resources

Shneiderman B. "Designing The User Interface - Strategies for Effective Human-Computer Interaction."
Pearson Education

Buxton B., Sketching User Experiences: Getting the Design Right and the Right Design, Morgan Kaufmann

Norman K (Ed), Wiley Handbook of Human Computer Interaction, Wiley 2017

Biswas P., Inclusive Human Machine Interaction for India, Springer 2014

Biswas P., Exploring Eye Gaze Controlled Interface in Automotive Environments, Springer 2016

Field A. "Discovering Statistics Using SPSS." SAGE Publications Ltd., 2009.