National Center University
Department of Computer Science and Information Engineering
Course Lectured in English
1st Semester of Academic Year 2014/2015

Course	Computational Geometry
Instructor	Sun, Min-Te(Peter)
Credit	3
Whole Year or Semester	Semester
Teaching goal	I) Thorough understanding of the geometric properties of the problem II) Proper application of algorithmic techniques and data structures
Teaching content	Introduction Line Segment Intersection Polygon Triangulation Linear Programming Orthogonal Range Searching Point Location Voronoi Diagrams Midterm exam Arrangements Interval & Segment Trees Convex Hulls Delaunay Triangulations Robot motion planning Mesh Generation Simplex Range Searching

Course	Information Retrieval and Extraction
Instructor	Chang, Chia-Hui
Credit	3
Whole Year or Semester	Semester

Teaching goal	Learn how information extraction (IE) can be accomplished via machine learning techniques. Learn how to build an information retrieval (IR) system with state-of-the-art open source package. Learn how to measure the performance of an IE and IR system.
Teaching content	COURSE DESCRIPTION The objective of this class is to introduce students to the fundamentals of modern information retrieval systems. This course will start by studying classic textual information retrieval systems, then move to modern information retrieval on WWW. The first half of the course will be lecture oriented, and the second half is seminar oriented. Students will be expected to read papers on a research topic of their choice, present a summary to the class, and do an independent project. COURSE CONTENT 1. Introduction to Information Retrieval and Extraction 2. Conventional Information Retrieval Systems 3. Term Operations and Document Processing 4. Automatic Indexing 5. Information-Retrieval Models 6. Retrieval Performance Evaluation 7. Query Operation 8. Relevance Feedback 9. Clustering Algorithms 10. Searching on the Web 11. Information extraction

Course	**Intelligent Surveillance**
Instructor	Cheng, Hsu-Yung
Credit	3
Whole Year or Semester	Semester
Teaching goal	Introduce and discuss related techniques on intelligent surveillance systems Train the students with system implementation, paper survey, and English presentation abalities

Teaching content	1. Introduction to Intelligent Surveillance Systems 2. Image Processing Techniques Review 3. Moving Object Segmentation and Background Modeling 4. Shadow Detection and Removal 5. Multi-object Tracking 6. Features 7. Classifiers 8. Salient Region/Object Detection and Recognition 9. Abandoned Object and Stolen Object Event Detection 10. Pedestrian/human Detection and Analysis of Group of People 11. Human-Body Modeling 12. Face Detection and Face Recognition 13. Gait Analysis 14. Behavior Analysis

Course	**Natural Language Processing**
Instructor	Tsai, Tzong-Han
Credit	3
Whole Year or Semester	Semester
Teaching goal	Learn how to implement the necessary techniques for automatically processing and understanding large amounts of natural language texts (e.g. web pages, news, microblog messages, online reviews, and emails) and employ them to build intelligent applications
Teaching content	1. Course introduction 2. Foundations of processing text 3. Searching 4. Fuzzy string matching 5. Identifying people, places, and things 6. Clustering text 7. Classification, categorization, and tagging 8. Building an example question answering system 9. Sentiment analysis

Course	Machine Learing
Instructor	Li, Yung-Hui
Credit	3
Whole Year or Semester	Semester
Teaching goal	(none)
Teaching content	Face Recognition, Iris Recognition PCA, LDA, Correlation Filters, SVM Supervised Learning Bayesian Decision Theory Parametric Method Multivariate Method Clustering

Course	Cognitive Speech Processing
Instructor	Wang, Jia-Ching
Credit	3
Whole Year or Semester	Semester
Teaching goal	Learn the knowlrdge and technology of cognitive speech processing.
Teaching content	1. Introduction 2. DSP Review 3. Spoken Language Processing 4. Others