National Center University
Department of Computer Science and Information Engineering
Course Lectured in English
1st Semester of Academic Year 2015/2016

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	Introduction to Bayesian Data Analysis
Instructor	Sun, Min-Te(Peter)
Credit	3
Whole Year or Semester	Semester
Teaching goal	(none)
Teaching content	(none)

Course	Advanced Audio Signal Processing
Instructor	Wang, Jia-Ching
Credit	3
Whole Year or Semester	Semester
Teaching goal	Students can learn advanced audio processing techniques
Teaching content	1.Introduction 2. Temporal Processing 3. Spectral Processing 4. Speech Signal Representation 5. Audio Enhancement 6. Other Selected Topics

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 Learning
Instructor	Li, Yung-Hui
Credit	3
Whole Year or Semester	Semester
Teaching goal	Machine Learning is an automated algorithm that teaches computers to enhance their classification ability by learning from experience. There are many applications of ML, including: face recognition, iris recognition, speech recognition, spam mail filtering. All of them are examples that computers learn and improve themselves by learning from past experience. This course is for the students who are interested in applying ML in their future research or career. In this course, students will learn the basic theory, algorithm and concept about how to teach computers to perform classification or regression, and how to train computers to recognize targets (supervised learning) or analyze data (unsupervised learning).
Teaching content	1. Face Recognition, Iris Recognition 2. PCA, LDA, Correlation Filters, SVM 3. Supervised Learning 4. Bayesian Decision Theory 5. Parametric Method 6. Multivariate Method 7. Clustering