**Capstone I: Big multi-modal data processing and analysis**

Fall, 2017

Instructor: Jie Wei

**Catalog Description:**

This is a two semester capstone course. The student is required to complete a significant project in computer science or engineering under the mentorship of a faculty member. In addition to technical material required for successful completion of a specific project, topics include identification of a problem, background research, social, ethical and economic considerations, intellectual property and patents and proposal writing, including methods of analysis and theoretical modeling. A detailed project proposal is formulated in the first semester, and the project is completed in the second semester. Each student is required to write an in-depth report, and to make an oral presentation to the faculty.

**Course Goals:**

This course intends to achieve the following goals:

1. Deeper insights into the workings of real world system specification and design.
2. Valuable hands-on experiences to conduct basic researches, developments and explorations.
3. Better understandings of big multi-modal data processing and analysis in an efficient and effective manner.

In this project-based course students are grouped into 3- or 4-member teams to work on projects of practical importance with an emphasis on big multi-modality data processing and analysis based on database/data warehouse, numerical analysis and machine learning methods. Available project topics include:

* human recognition/classification based on face, gait, activity and speech,
* visual object indexing in image and video databases,
* Medical image object indexing,
* Smart sensing and computing using one or more sensors, such as Laser, optical and microphones.

Topics outside the foregoing ones are possible, but need permission by the instructor for its viability. Each team chooses one topic and learns more in-depth and state-of-the-art knowledge corresponding to their chosen topic by group study and instruction/supervision by the instructor. Each team consequently establishes requirements, specification, and system design for their project in the first semester.

**Grading for this section (2/3 of the entire course, another 1/3 from the ethics session):**

* Individual: Two quizzes (30%), Oral presentations (10%)
* Team: Assignment (10%), Specification report (20%), Design report (30%)

**Office hours:** M 11-noon; W 3:30-4:40pm

**Course website:** www-cs.ccny.cuny.edu/~csjie/capstone.html