CS689: Computational Medical Imaging Analysis

Spring 2009 (MWF: 2:00PM – 2:50PM) RGAN 203

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Office Hours: WF: 1:00PM – 2:00PM, and by appointment.
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Objectives: Introduce some computational techniques commonly used in medical imaging analysis. If time permits, it will also cover some very new imaging analysis and visualization techniques related to diffusion tensor magnetic resonance imaging (DT-MRI), functional magnetic resonance imaging (fMRI), and some applications.

Prerequisites: Two 500 level CS courses or permission from the instructor.

Suggested Optional Text Book: *Biomedical Imaging, Visualization, and Analysis*, by Richard A. Robb, Wiley-Liss, New York, 1999.

Topical outline (tentative):

- Introduction to imaging science
- Image acquisition systems
- Image representations, displays, communications, and databases
- Image visualization
- Image processing and analysis
- Diffusion tensor magnetic resonance imaging (DT-MRI)
- Functional magnetic resonance imaging (fMRI)

Grading: Two to four projects or homeworks (30%). One midterm (March 13, Friday, 35%) and one final project (35%). (This course is experimental in Spring 2008. The grading policy is flexible and may change during the semester. Students taking this course should understand this grading policy flexibility.)

Letter Grade: A: 100 – 86, B: 85 – 76, C: 75 – 60, E: 59 – 0.