

Computer Integrated Surgery II

600.446/646/452

Spring 2017
Russell H. Taylor
Tu, Th 1:30-2:45



Course concept

- Combination:
 - Lectures on computer-integrated surgery and related subjects by instructor, guests
 - Projects
 - Seminar on current research
- Similar material to 600.445, but with much greater implementation & project focus
- Prerequisite: 600.445 or my consent



Course Numbers and Credits

- 600.446 (3 credits)
 - Full course (lecture/seminar + project)
 - Advanced undergrads
- 600.646 (3 credits)
 - Same as 600.446 but intended for grad students
 - Projects tend to be more advanced
 - Project teams can consist of grad students and undergrads
- 600.452 (1 credit)
 - Seminar only



Contact Information

- Course web sites:
 - Wiki page: <https://ciis.lcsr.jhu.edu/dokuwiki/doku.php?id=courses:446>
 - Piazza: <https://piazza.com/class/ixqmqzb17zt4hs>
- TA = Alexis Cheng
 - Email: acheng22@jhu.edu
 - Office Address: Hackerman 137
 - TA office Hours = TBD
- My office hours
 - By appointment (see Rose in Hackerman 200)
- My lab meeting is Mon. 16:00-17:00 in Hackerman B08
 - May change, but all are welcome
- ERC/LCSR Seminars Wed. 12-1:00 in Hackerman B17
- Medical Image Analysis Seminar (600.746, 520.746)
 - Jointly led by Prof. Taylor and Prof. Prince
 - Paper reading and discussion on medical image analysis



Grades

- 600.446/646
 - 25 % seminar presentation/writeup
 - 15 % project plan
 - 10 % project checkpoint presentation
 - 10 % project final presentation (poster presentation)
 - 40 % project implementation & final report
 - Attendance can affect your seminar / presentation grades, so see me and the TA if you have special situation or needs
- 600.452
 - Grade based on seminar presentation & critical summary of pertinent research papers



Date conflicts

- I will be out of town occasionally
 - Will arrange for guest speakers
- We may need to find make-up dates
 - Pick an evening (e.g., 5-7pm) or dawn (7-8am)
 - Evenings preferred
 - The TA will make a poll when things settle down



Rough Calendar

- 1/31, 2/2, 2/7(if need): Discuss possible projects in class
- Pick project & seminar topics by 2/14 (preferably sooner)
- Approved project proposals by 2/21
- Project plan presentations 2/7 or sooner through early March
- Paper seminars March through April
- Project checkpoints mid-March through mid-April
- Project poster session on final exam day (May 18)
- Project final reports on final exam day
- Will modify a bit as semester unfolds



Projects

- Typically will involve some substantial implementation/experimentation component
- Require a “mentor”
 - Me, colleague, or an end user
 - **Mentor must interview you and agree that you are appropriate for the project**
- Require funding/equipment support
 - Can come from me, other mentor, or end user
 - Note that my discretionary funds are limited
- Require a defined plan and budget
- Team projects encouraged



Project Web Sites

- **The course web site is a Wiki**
 - <http://ciis.lcsr.jhu.edu/dokuwiki/doku.php?id=courses:446>
 - Access to students-only pages is controlled
 - Log in with JHED ID
 - I preloaded from class enrollment on ISIS, but may not have all.
 - Try login; if problem send your JHED id as soon as possible to me and the TA.
- **Piazza web site for communication**
- **Each group should maintain a project web site as a wiki page under the course web site**
 - Will contain project descriptions and also PDF copies of all reports and presentations.
 - May contain media and other material as well.
 - Format and template guidelines on the web site
 - Each group will have permissions to write own site, read others in course
 - Each group should indicate if their web site may be viewed outside of course
 - Please respect the rules for where things can be put
 - Please keep them up-to-date. The TA and I will be spot-checking them.



Confidentiality and Projects

- Some of the projects may involve potentially patentable or otherwise confidential material
 - Premature disclosure can compromise patentability
 - Student inventors can get patents and licensing income
 - Some projects (e.g., those using ISI API data) may require students to sign a non-disclosure agreement with a company.
 - You need to close the loop with me on projects involving 3rd party confidential data, to be sure that something is publishable. Usually, this has not been a problem, but should be addressed early
- Web sites for these projects will be only accessible by me, the TA, the students involved, and the mentors
- To permit free discussion in class, we can consider this plan
 - The whole class can sign a non-disclosure agreement to cover in-class presentations and discussion (JHTT has promised a template)
 - If any student is uncomfortable with this, please speak up. In that case, we will not have such a blanket agreement.



Project Proposals

- “Closed” plan by 2/18 or before
- Approximately 3 page summary containing
 - Stated topic and goal
 - Team members, mentor
 - **Short** statement of relevance/importance
 - **Short** technical summary of approach
 - List of “deliverables” (min, expected, max)
 - Key dates & assigned responsibilities
 - List of dependencies & plan for resolving
 - Management Plan
 - Reading list
- Project plan presentations in late Feb, early March
 - Cover similar material to written proposals



Seminar Presentations

- Select a single important paper or series of papers (2-5) relevant to your project or other interest
- Give short (typically, 20 minutes) talk
 - Critical summary of what paper says & its significance
- Bring hard copy of presentation materials to class to be put in your notebook
- Also, write a short (3-5 page) critical review
 - Due day before talk (post on class WIKI page)
 - Will be flexible on due date for the first talks
- Copy of paper will go into your notebook & one to me
- Will be critiqued in class (in a friendly way)



Typical Outline (modify as appropriate)

- 1 slide statement of your project
- Paper selection and why
- Summary of problem & key result
- Significance of key result
- Necessary background
- Description of what the author(s) actually did
 - Theory, experiment, etc.
- Your assessment
 - Importance, relevance to you, good & bad points, etc.
 - Possible next steps for this work
- Conclusions



Project Checkpoint Presentation

- Approximately 20 minutes talk
- Given in late March, early April
- Summarize/update plan material
- Present work to date
- Present problems, exposures, dependencies
- Bring hard copy of presentation materials to class to be put in your notebook
- Will be critiqued in class (in a friendly way)



Project Final Presentation (Poster)

- Currently planned for date of final exam, but may move to last day of class
- Standard format
- Project should be done or nearly so
- Present/demo results
- Discuss work remaining to be done
- Discuss significance of work

- Discuss lessons learned
- Prizes awarded in various categories



Project Final Report

- Technical summary
 - Similar to a short conference paper
 - Explain background, problem, approach, results, significance, etc.
- Management summary (1 page)
 - Who did what
 - Discuss what was accomplished vs planned
 - Discuss what might be next
 - What you learned
- Technical appendices
 - Code, user's manual, etc. (may be on the Wiki)

