

## 600.446/646 – CIS II – Mentors Report

Dear CIS II Mentor,

First, thank you for mentoring a CIS II project this year. This course provides a great educational experience for the students, and also can produce useful research results. Its success depends greatly on the project mentors, and I hope that your experience this year has been productive both for you and for the students.

As part of our grading process this year, I am encouraging project mentors to provide some input. You all should have been granted access to the course web site and to the individual project(s) that you are mentoring. Go to

<https://ciis.lcsr.jhu.edu/doku.php?id=courses:456:2022:projects>

You will be asked to log in by clicking the login link in the upper right. You can then follow the link to your specific project. Contact either me ([rht@jhu.edu](mailto:rht@jhu.edu)) or the TA (Juan Antonio Barragan, [jbarrag3@jh.edu](mailto:jbarrag3@jh.edu)) if you have problems.

We would really appreciate it if you can answer a few questions. Please, edit the form and send it back to your students, so that they can upload it onto the course web site for us to revise. If you have any additional private comments that you would like to share with us you can send them directly via email to me and Juan with the subject "cis ii project xxx additional feedback".

Finally, note that the annual final exam / poster session will be Thursday, May 11 from 9 AM until about 12:30 PM. This year, the event will be held in person on Hackerman B17. I very much hope that you can attend. Also, the project reports are due on the day of the poster session, but the students have been told that you need an opportunity to review the reports before then. Also, **we will need your comments to us on May 11 before 9AM**, since we will be using them to help us with our evaluation of the projects.

Russ Taylor

PS: An electronic copy of this word file may be found on the CIS 2 Wiki page at

<https://ciis.lcsr.jhu.edu/dokuwiki/doku.php?id=courses:446>

Our contact information is below:

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## Questionnaire – Project 03: Quality assurance of radiotherapy treatment using scattered x-ray

### Overall project and progress

- Were you satisfied with the overall technical progress made in the course of the semester?
  - Yes. The students have made a lot of progress in learning the Monte Carlo simulation code, adapting it to the specific simulations to be simulated, generating results and analyzing them. Serving as preliminary data supporting the feasibility of the proposed QA method, the data generated are very useful.
- Was the total accomplishment appropriate for the number and level (undergrad/graduate) of students on the project?
  - Yes. The accomplishment is appropriate for the two students. At the beginning of the course, the two students did not have much experience in Monte Carlo simulation and knowledge in radiotherapy. It is impressive that they quickly learnt the background knowledge and skills needed, and then accomplished a lot in performing simulations.
- Will the results be useful to you in the future?
  - Yes. The results will be useful in serving as the first-stage proof-of-principle evaluation of the idea using scattered x-ray for QA in radiotherapy. It demonstrated the potential feasibility of this idea.
- Is this a project that you would like to continue? If so, is it left in a state to facilitate this?
  - Yes. While a lot of progress have been made in this semester, substantial efforts down the road are expected to continue to refine the design and carry out the experiments. The data, report, and code prepared by the students are suitable for subsequent studies.
- Do you see a prospect for patents or publication to result?
  - Yes. The idea is patentable and current study already demonstrated its potential feasibility. The current results may not be complete enough for a publication, but with additional simulation work, it will be publishable.

### Work products

- Is the project documentation adequate?
  - Yes. The project progress, codes, results are nicely documented at different places including reports, project webpage, and github.
- If the project involves source code, is the code well-structured and usable by others?
  - Yes. The source code was prepared in CUDA for simulation and Matlab for data analysis. Each code function has a header comment describing the function purpose, inputs, outputs, and the author, which are useful for subsequent users on this project.
- **Important:** Are the project documentation, programs, and data preserved in a place readily accessible and identified in the project Wiki pages?
  - Yes. The project documents are stored in the project webpage, and a github page.

### Report (which the students should have shared with you)

- Does the project report accurately reflect the scope and accomplishment of the project?
  - Yes. The project report included adequate description of the project, the accomplished simulation work and result analysis, and discussion.

- Were you given an adequate opportunity to review the report?
  - Yes. A week time was given to me to review the report.
- Does the report and its appendices, together with the web site, provide sufficient information that subsequent groups can make effective use of the project results?
  - Yes. The students have summarized the progress in the report and all the simulation codes and data are prepared adequately. These should be enough for the subsequent group to continue working on this project.
- Does the report include clear links to project documentation, programs, and data?
  - Yes.

#### **Web site**

- Does the web site reflect the scope and accomplishment of the project?
  - Yes. The webpage clearly described tasks, milestones, dependencies, and progress report, and other relevant information.
- Do you wish the web site to remain password protected after May 30? If so, for how long?
  - Yes. One year.

#### **Management**

- Were the students fully engaged in the project?
  - Yes. The two students were very enthusiastic in the project. They proactively learnt GPU programming and Monte Carlo simulation, as well as background knowledge about radiotherapy. They successfully performed the simulations and analyzed results. The results met our expectation.
- How often did they meet with you? Was this enough?
  - We maintained weekly meeting. The meetings were productive, and they showed progresses each time.
- Were the “deliverables” and “dependencies” realistic?
  - The deliverables met our expectation. The results served as a good starting point for the design of the proposed QA method, and indicated its potential feasibility. The project plan was adjusted during the project based on the progress they made and results obtained. Dependencies were also revised to reflect the actual progress.
- Was the plan realistic? Were unmet dependencies approached in an effective manner?
  - Overall, the research completed as expected. Students completed simulations and obtained valuable results. The plan was designed well, though it was adjusted during the course based on progress and results. The unmet dependency of actual experiment was reasonable. It was included in the project design at the beginning of the course, but it was supposed to be an additional work to complete, if the students completed simulations faster than expected.

#### **Other comments or suggestions**

- Do you have any other comments or suggestions, either about the specific project or about the overall structure of the course for next year.
  - Overall, the project was completed nicely by the two students. They did a great job on this project. I can clearly see their efforts in learning background knowledge and developing simulation techniques.  
Thanks a lot for including me in this course.