**Project Completion Report - APSC 459, Engineering Physics Project Lab**

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| **Project Number: 1417**  **Title: GPU Probabilistic Tractography**  **Start Date: Sept 8th, 2013**  **End Date: April 11th, 2014** |
| **Project Summary:**  Probabilistic Tractography is an analysis method which attempts to find neural pathways given a set of DTI data. Probtrackx is an existing open-source software that performs tractography. The goal of this project is to convert the old probtrackx algorithm into a functional GPU port that is well integrated with FSL, named oclptx. |
| **Original Deliverables:**   1. A GPU based implementation of the probabalistic tracking algorithm that produces identical or near-identical results as the existing CPU based implementation. Completed to specification. Speed increase validated. 2. Feature port of the features included in the Ptx2 suite: Masking and waypoint conditions, euler streamlining. 3. Update the Graphical User Interface to be able to interact with Oclptx.   **Actual Deliverables, and Reasons for Changes:**   1. Delivered to Spec. The verification of the probabilistic results compared to the old probtrackx2 software is to be done by the sponsor at a later date. 2. Delivered to Spec. 3. Cut from the project scope. The sponsor agrees that a command line interface to interact with oclptx is sufficient. |
| **Physical transfer of items completed, including:**  We have pulled our code into the CFRI machine. We will also provide them with a public repository to our code.  **Are there any items to remain in possession of the students or project lab?**  No. |
| **Follow-up task list (specify the task, person responsible, end date):**  The FMRIB team which works on the primary branch of FSL has been interested in our work, although they appear to want more development before they agree to pull it in their their main distribution. Steve Novakov has expressed interest in possibly supporting additional changes if it could bring our module into the medical community. Such support would be done from May 2014 to August 2014 on a part-time basis. As FMRIB is not the sponsor, Steve's commitment would not be in direct correlation with the sponsor. |
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| **Name/Date Name/Date Name/Date Name/Date**  **Team Member 1 Team Member 2 Team Member 3 Project Lab** |

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