Development of a C++-based user-interface for a plasma simulation tool

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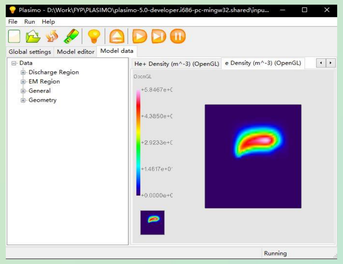
Introduction

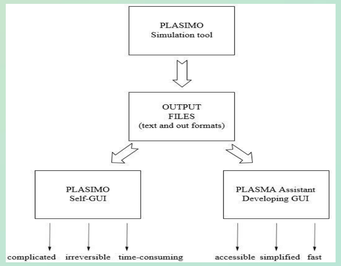
Plasimo

The Plasimo code is a toolbox that provides support for the numerical simulation of plasma sources of various degrees of equilibrium.



Objective

The aim of this project is to develop a user-friendly interface that effectively displays the simulation output from Plasimo.

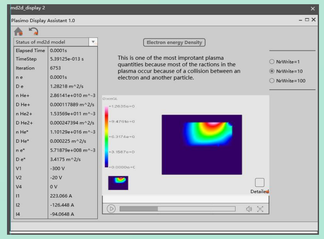


Methodology

Prototype Design

Tool: Mockplus

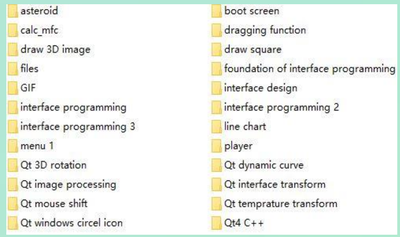
Prototype Design is the critical first step because it helps me to understand the real requirement of users.
And then repeating amend design to get better understand of this project.



Learning OpenGL and MFC

Tool: Visual Studio 2015

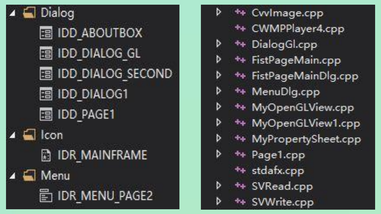
As an EEE student, the foundation of C++ already learned in year 1. However, this project needs more knowledge especially using MFC and OpenGL to build and generate the program.



Programming

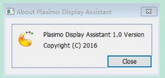
Tool: Visual Studio 2015

Step 1: Build home page and operation dialog
Step 2: Match properties and text files
Step 3: Read and display data in text files
Step 4: Draw 2D graph and line chart based on data



Result

Software name:
Plasimo Display Assistant



Operating environment:
Only for Windows users

Supported Format:
Only for micro discharge 2D model in Plasimo

Home page

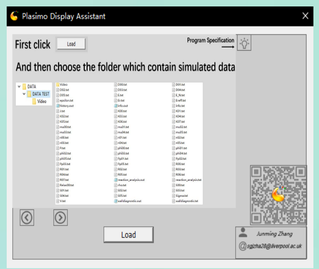
Quick instruction
Open user guide
Open Google Blog
Contact information.

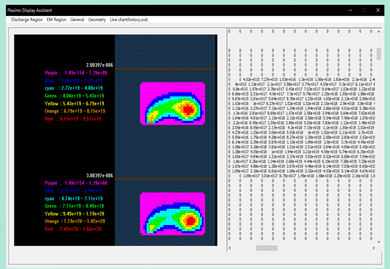
2D image and Data display

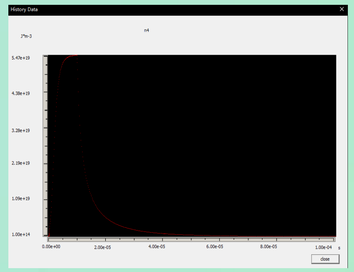
All data in one period will be divide into 7 parts and represented by 7 different colors.

Line chart

Data in history.out will be used to generate line chart as a function of time to help users to do research



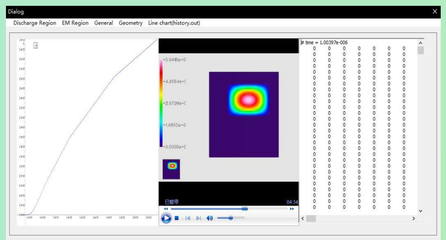




Experience

This project has an abandoned version which is using video and image to show the output data from Plasimo.

It's inapplicable because it needs lots of time to record videos.



The Second version is not perfect either.
The running speed will slow down with the increasing number of data and there are not an effective way to locate particular time.

Keep learning to solve unfamiliar problems are the big challenge but also the most exciting thing in the project.