Porting BRL-CAD's GUI Elements over to Qt/Qt5

Mentor: Christopher Sean Morrison <brlcad@mac.com>

|  |  |
| --- | --- |
| Name | Syed Asadullah Hussain |
| Alt. Email | [asadullah.hussain@tum.de](mailto:asadullah.hussain@tum.de)  [asadxflow@gmail.com](mailto:asadullah.hussain@tum.de) |
| Phone (Germany) | +4917625546902 |
| Skype | asadullah.hussain |
| Github (Including GSoC 2015) | <https://github.com/asadpiz> |
| Linkedin | <https://de.linkedin.com/in/asadullahhussain> |

**Motivation:**

Space has always fascinated me. The vastness of space and the prospect of knowing more about our past and future has always gripped me. Like many kids I wanted to grow up to be a space traveller (astronaut wasn’t cool enough) by working at NASA. Due to real life circumstances I was not able to take on a career in physics or aerospace engineering and instead moved in Computer Science due to my love for computer networks and its underlying technology. My interest for a career in space was reignited when I came across “OpenStack” a cloud computing software developed by NASA. The aspect of using computer science in space research didn’t get much attention before but I was thrilled to find out that I can contribute towards furthering our knowledge of space and improving technologies. Since then I’ve been trying to develop my Cloud Computing, Automation, Scripting and programming skills, so that I can get a career in space technology.

The ESA Summer of Code in Space program came as a pleasant surprise to me and opened up an entire world of open source space research to me. Before this program my idea of space research was working at big institutions like NASA and ESA but to know that just like any other computer science field there are various open source space technology projects that I can contribute my skill to, was very exciting for me. Infact even at the start of the semester I had made slots in my schedule dedicated to ESA summer of code projects. I have 20-30 hours per week already scheduled for this program and it can be expanded upon once I am selected because I only have 3 courses this semester and have ample time to contribute.

The project caught my eye from the list of ideas because it gives me a chance to utilize my already existing extensive quality assurance experience and also gives me a chance to learn a lot of new things about space technology. Python Port is interesting because it gives me a chance to utilize my already existing extensive programming experience in Python (Python port) and also gives me a chance to learn a lot of new things about aerospace technology.

**So In summary this project excites me because it gives me a chance to learn about space technologies, utilizes my already existing skills (no need to spoon feed me from mentors) and amazingly is open-source, so I get to share my contributions.**

**Project Breakdown:**

The project for this SoC is expandable but the initial idea is to port one of the GUI elements from BRL-CAD onto Qt. The plan is to do it using pyside which is a Python library which facilitates using the Qt framework. Depending upon the complexity of the module chosen we can also do the port directly to Qt.

After this task is done next task is to implement a GUI element for crash reporting & metrics gathering. This offcourse will be easier if the GUI is already Qt based but this is not completely dependent upon the first task and can be done.

Another idea discussed with the mentor was to extend the basic simulation physics system which is based on the Bullet engine but this is a possibility after the initial tasks are done and maybe beyond SoC.

Another possibility discussed was to model Earth in exceptional detail as a CAD model, pulling data from sources all around the internet. The focus is on terrain digital elevation models, city plot data, accurate curvature modelled on CAD. Again this is subject to my output in the initial tasks and the time constraints.

**About Me:**

* Hi, Asad here and I am pursuing Master of Informatik at [Technical University Munich](http://www.tum.de/).
* I have extensive experience in Software Development (C, Python) & Systems engineering. I've worked for 2 years on projects by Silicon Valley companies such as FireEye, Cavium, Dell and Intel from the platform of Ebryx & xFlow Research.
* I successfully participated in **GSoC 2015 under the CentOS Project**, where I developed an [OpenStack Addon](https://github.com/asadpiz/org_centos_cloud) for [Anaconda (redhat/fedora/centos installer)](https://fedoraproject.org/wiki/Anaconda) in Python.
* I have been working as a DevOps Engineer at [T-Systems, Germany](https://www.t-systems.com/de/en) since last October. My team is developing a continuous integration pipeline by automating infrastructure and providing it as a service (IaaS) for development, test and operation. I have implemented release automation infrastructure via Puppet and this is why this project is so eye-catching for me. As I have experience of release automation pipeline by integrating tools like Git, Jenkins, Jira, Vagrant.