Organization: SunPy in OpenAstronomy

**SunPy Gallery, Docs, Website Upgrades**

1.       **Student Information**

         Name: Hemant Khatri

         Time Zone : +05:30 GMT

         IRC Handle: hemant27

         Github ID: [hemantkhatri27](https://github.com/hemantkhatri27)

         Messaging: Google Hangout ([hemant.skhatri@gmail.com](mailto:hemant.skhatri@gmail.com))

2.        **University and Education**

         University: The LNM Institute of Information Technology

         Major: Computer Science and Engineering

* Current Year: 1st

         Graduate Year: 2019

3.       **Programming Experience**

         Intermediate in  C language

         I recently  worked with a Professor on a research project related to dark matter, dark energy, Gravitational waves in which I worked with GNU plots and also involved a lot of C programming as well.

         Intermediate knowledge of Python and Python for Data Science. I started learning Python about 2 months ago.

I am comfortable in writing programs in Python. Also, I am pretty comfortable working  with Matplotlib.

         I did workout all the sample examples given in the documentation analyzed on changing a particular attribute what changes come to the LightCurve/Maps.

         I am comfortable working with Git/Github.

4.       **Proposal Abstract**

         I intend to take up the SunPy Gallery, Docs, Website upgrades idea. This would involve some research on the SunPy existing tutorials i.e. Lightcurve tutorial, SunPy overview and SunPy 0.6 Release Preview  (which support Jupyter )as well as on the existing map and Lightcurves submodules, data clipping, masking, map cubing etc.

         Also it would involve improving the SunPy documentation making it more interactive for new users. Inserting more information on these ( Plotting in SunPy, Time in SunPy,Region of interest, Customizing SunPy) would be my aim

         The work on the website of SunPy involves  writing blogs improving documentation.

         For plotting I would use Matplotlib.

         I did checkout the SEP\_007 so I am pretty familiar with what has been done till now on SunPy.

5.       **Software Packages  to be used**

Numpy, Matplotlib,Scipy,Astropy

6.       **How will I complete the Project**

         I started  looking into SunPy about 2-3 weeks back. I was pretty active on IRC asking out mentors about SunPy. I am pretty familiar with the software now. My main task is to look into all the things I could do with Jupyter Notebooks(as I don’t know much about it). On the programming part, i keep looking into Python Docs, Edx courses.

         I will go through the documentation again and again so that I can make it better and better. Since the topic in spotlight is LightCurves so I will try to add to the documentation of LightCurves as much as possible.

         I am a beginner and did go through SunPy documentation lately, so I remember on which topics I faced issues so will try to include them so that new users don't face the issues I faced

         The website's gallery tab is in beta version so I will try to improve the gallery and also if I am able to do major changes to SunPy , I will try preparing SunPy enhancement proposals(SEP).

7.       **Benefits to the Community**

         Since I started my journey of development in SunPy lately I might be able to address more issues that beginners face than someone else. The website of SunPy is still in development state until the completion of my project it would be in a better state than it is at present. Small things that otherwise may not come into notice of developers will be solved as my main aim would be to work on documentation, website etc.

8.       **Open Source experience**

         Google Code-In 2015: I participated in Google Code-In 2015 and was successful in completing a task under the community FOSSAsia in which I learned using Git, IRC, IRC etiquettes. Also, I did work on a Hello World example task of RTEMS organization due to which I got to know how to build things

         Recently I made 2 pull requests:

1. [#1710](https://github.com/sunpy/sunpy/pull/1710): It involved change in Developer’s guide document, also changed another file for the issue [#1704](https://github.com/sunpy/sunpy/issues/1704).
2. [#1707](https://github.com/sunpy/sunpy/pull/1707): This pull request tried to make a diskspace check before downloading sample data . My work on this is still on.

I am a Ubuntu user for more than 6 months .

9.       **Deliverables**

Improvement in SunPy Docs(inserting new info as well).

Website improvement.

Adding Examples to SunPy gallery.

10.   **TIMELINE**

22 April -23 May (Community Bonding Period)

This period would be dedicated to knowing about the project more and more. I would seek answers as in what format(bug fixes, tutorials, SEP’s)  do my mentors want me to improve the website and the documentation(Region Of Interest ,Customizing SunPy etc), which subtopics does the SunPy community expect me to focus on the most.

**23 May – 20 June**

This period will be dedicated to inserting tasks in the Docs and refactoring the Net Documentation. Probably improving present docs and inserting new ones in SunPy User Guide (mainly Plotting in SunPy, Time in SunPy, Region of Interest, Customizing SunPy) would be my main target. Some  Possible options would be:

1.       Adding histogram, customization using Matplotlib basic tutorial to this (Plotting in SunPy). – 1 week

2.       Since ROI module is still under development I will make it more developed so that it contains more information about a particular time range. 1-2 weeks

3.       Customizing SunPy contains docs related to only specifying location of files being used. – 1 week

4.       SunPy lightcurve under API reference is probably too short.  Adding more options to lightcurves such as merging two graphs or customizing these curves . – 1 week

**20 June – 27 June**

Mid term evaluation

**27 June – 25 July**

This period will be dedicated to improving and adding examples to SunPy gallery. Probably a SunPy map tutorial or I could also add some video tutorials on basics of Lightcurves and Maps. Also, the main task would be to make full use of Jupyter notebooks (which I would have learned by then).  Adding tutorials for various options available with Matplotlib could be one option as well.

**25 July- 15 August**

Insert Tasks for the Website would be done in this period. Also, I could make the website layout a bit better as I know a bit of HTML/CSS as well.

 A much need FAQ section could be added to the website. Also, if time permits I would add some tutorials for Astropy as well.

Would look forward to some bug fixing or further changes in documentation.

**15 August – 23 August**

Final week: Students tidy code, write tests, improve documentation and submit their code sample. Students also submit their final mentor evaluation.

**23 August – 29 August**

Mentors submit final student evaluations.

**30 August**

Final results of Google Summer of Code 2016 announced.

Even after Google Summer of Code 2016 I will be a regular contributor of Open Source .

11.    **Commitments**

I have my end Semester exams from 15 April – 8 May so I won’t be able to work much on the idea. Still I would try my best to take out 2-3 hours a day for the project.

Also due to a family function in mid-June I might take 4-5 days off. Rest I have no other summer plans so would be working around 6-7 hours a day making it around 35-40 hours a week. I have 24\*7 access to high-speed  internet. I have not participated in GSoC before and I am not applying to any other organization .

12.   **About  Me**

I am a first-year Undergrad at The LNM Institute of Information Technology, Jaipur, India.

My interests are Data science, Problem solving. I also took a course in Discrete Mathematical Structures, Shell Programming . My open Source journey began from November 2015 when I participated in Google Code-In. Though I didn’t contribute much but I learned the basics of open source i.e. Github, IRC etc. Other than Python I am pretty good at C programming and also used it recently for my research project about which I had mentioned earlier in this document. On the non-technical side, I am a Badminton Player.

13.   **Eligibility**

Yes, I am eligible to receive payments from Google. To contact do drop me a mail on [hemant.skhatri@gmail.com](mailto:hemant.skhatri@gmail.com) .