Porject proposal (brief)

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I propose to create a planetarium application for android devices. The main part of the application will be a 3D view of the universe from a given point on the planet earth. The application will have the following functionality / construction:

1. Use OpenGL for the 3D interface
2. Allow a user to view what is currently visible in the night sky from their current location (using either GPS information present on the device or a manual input).
3. Allow users to see what would be visible in the night sky at any given time in the future or past.
4. Allow the user to view details on a given astronomical object such as position, name, distance from earth, visual magnitude etc.

All of the above requirements are yet to be refined but these are a minimum. I would also like to implement the following if the above doesn’t prove to be too much:

1. Show the position of objects in the solar system such as planets, the maths behind computing these positions is not trivial.
2. Allow the user to select an object and for the application to slew a telescope to this object using Bluetooth.
3. Populate the night sky with objects from the NASA database (file already obtained in CSV format). This sounds easy but I would like to have a default star image and for the application to dim or brighten this image depending on the visual magnitude and change the hue depending on color information given in the CSV.