Star Tracker: A Computational Framework to Locate Celestial Bodies

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Noting the difficulty of locating a celestial body during an astronomical observation I developed a device capable of pointing an average power green laser for a chosen star, which was selected in the application that I developed on the Android platform. The user selects a star in the application, with the sky modeled in 3D graphical interface done in Java and using OpenGL, and through celestial coordinate calculations and sideral time we got to know the direction of the star relative to the ground position of the observer. Those coordinates are immediately sent to the pointing device via Bluetooth and the Microcontroller device, an Arduino I programmed in a language derived from C, receives the information and moves the motors to position the laser in the direction of the star. After positioning, relevant information are shown to the user about the star. In order to facilitate the location of the stars, I used a computational apparatus that helps both lay and professionals in astronomical observation, being low cost and very usable. It is an innovative idea from the apparatuses of an astronomer, for portability, usability and low cost, also aiming to spread the teaching of astronomy to the lay public through ease of location and consistency of information provided.

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