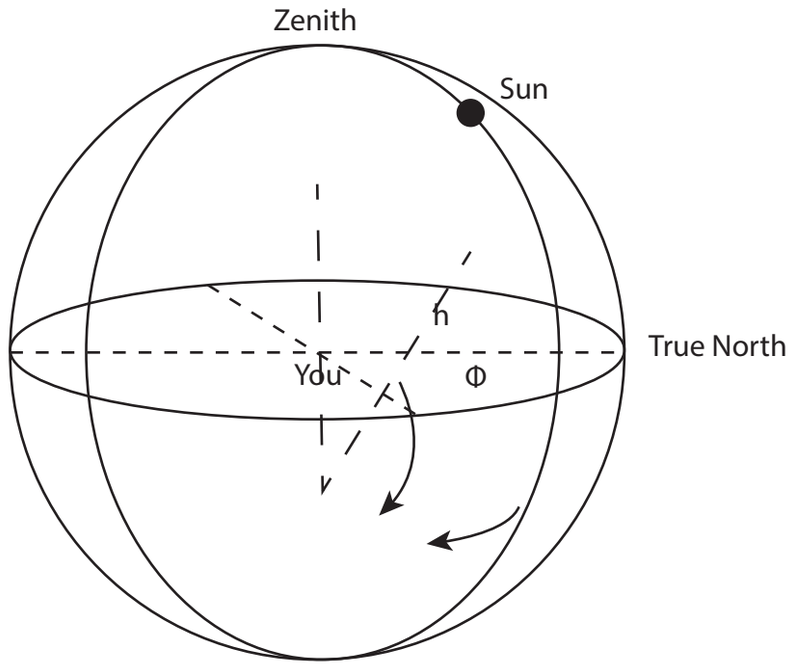
While Aweigh's hardware is inspired by insect vision, the algorithm used to calculate latitude and longitude are modelled off ancient navigation techniques and their use of a celestial sphere to position oneself.

In astronomy and celestial navigation, the relationship between the observer's position and solar angles are:

h = solar altitude
Φ = solar azimuth



The solar altitude is the angle of the sun relative to the Earth's horizon. This angle varies based on the time, the day, and is related to latitude. The solar azimuth angle is the horizontal angle that defines the Sun's relative direction along the local horizon.

The polarisation analysers allow you to obtain these two angles, which are the two angles essential to determine the "coordinates" of the Sun. Once you are able to locate the Sun, you can locate yourself.

Algorithm Flow Chart