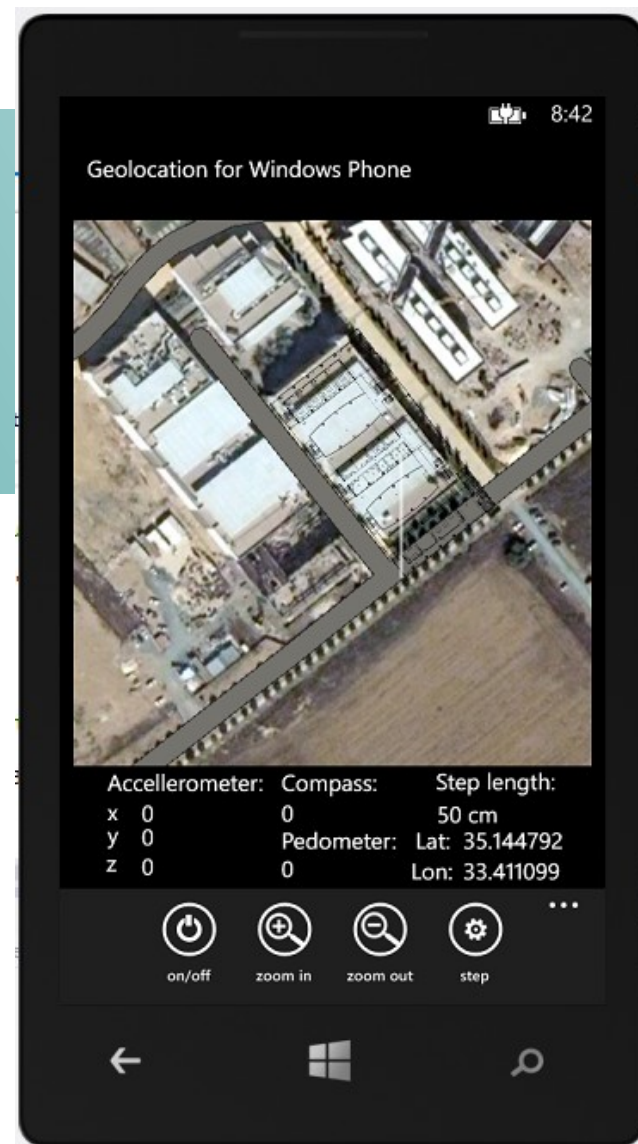


Project Anyplace Indoor Navigation for Windows Phone 8

[Philippos slides]



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Converting step length to degrees

- With the compass functionality we get the bearing of a step from North Pole
- We detect a step using a maximum value for accelerometer readings
- And using a constant step length (eg. 50 cm), we find changes in degrees (Long/ Lat) using the

Cosine Rule

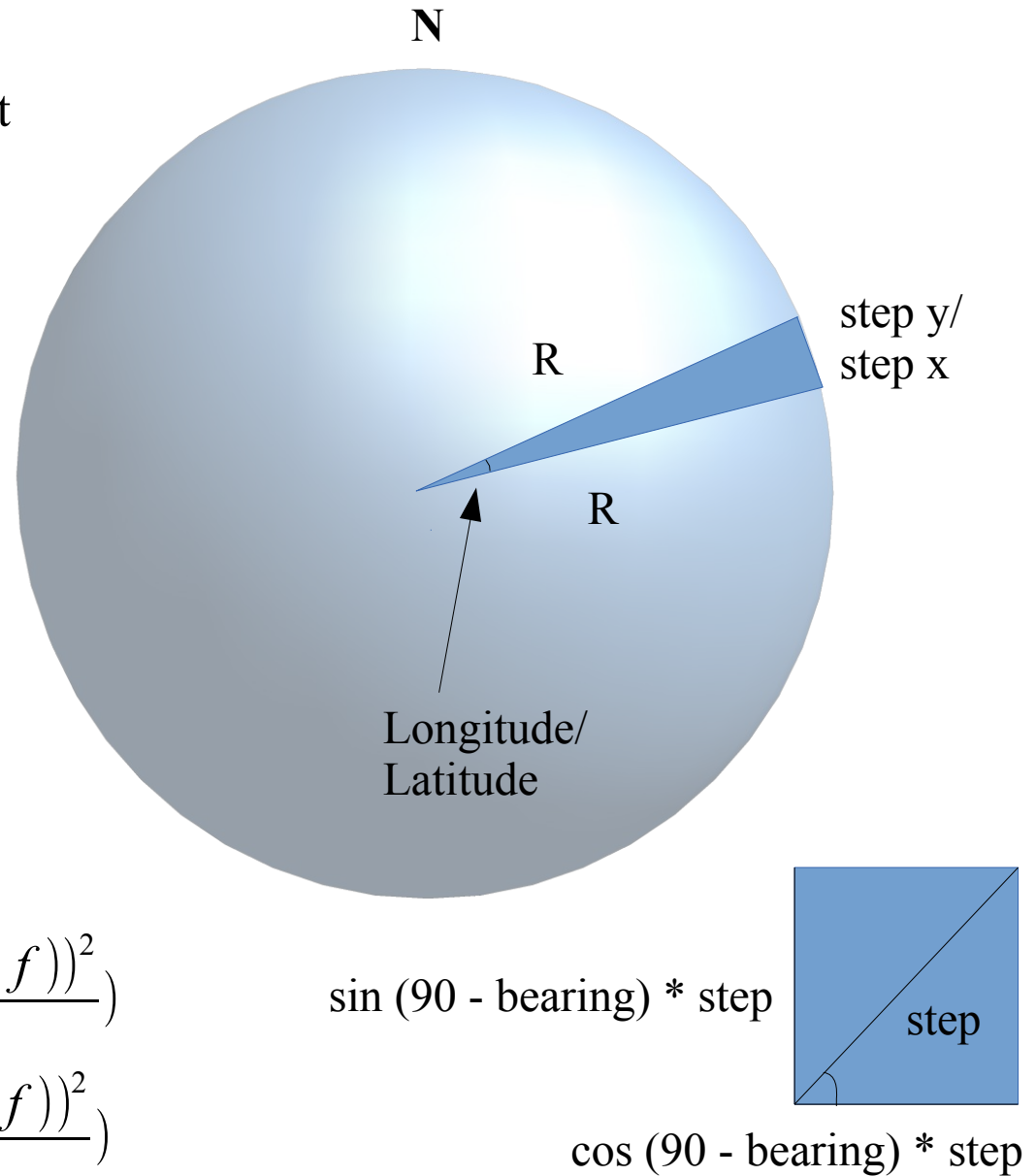
$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

Radius of Earth

$$R = 6.371 \text{ Km}$$

$$\text{Longitude} = \arccos\left(1 - \frac{(\text{step} * \cos(f))^2}{2R^2}\right)$$

$$\text{Latitude} = \arccos\left(1 - \frac{(\text{step} * \sin(f))^2}{2R^2}\right)$$



Drawing path

- In each step the previous and the current standing points are connected using a visible line
- The points contain the Longitude and Latitude (degrees) where the user is standing
- The resulting connected line now looks like a curve showing the overall path

