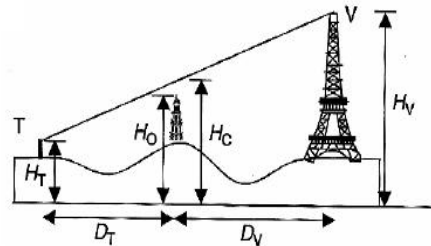


Viewshed analysis

point-to-point (area) visibility

Scott Montegna

LoS: Intervisibility between two points



Line of Sight: Point-to-Point Visibility

$$h_{\text{Crit}} = \frac{D_T h_T + D_V h_V}{D_T + D_V}$$

Lets say the target is 5 feet, the viewpoint is 100 feet and the distance from the obstacle to the target is 15 feet and the distance from obstacle to the viewpoint is 15 feet. What is the critical height?

h_{Crit} : critical height

D_T : distance between the target and the obstacle

D_V : distance between the viewpoint and the obstacle

h_T : height of the target

h_V : height of the viewpoint

Line of Sight: Point-to-Point Visibility

$$h_{\text{Crit}} = \frac{D_T h_T + D_V h_V}{D_T + D_V}$$

Lets say the target is 5 feet, the viewpoint is 100 feet and the distance from the obstacle to the target is 15 feet and the distance from obstacle to the viewpoint is 15 feet. What is the critical height? **52.5 feet**

h_{Crit} : critical height

D_T : distance between the target and the obstacle

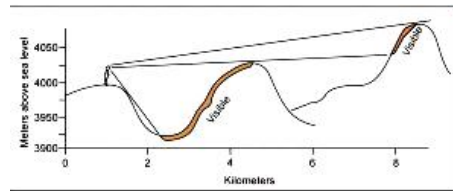
D_V : distance between the viewpoint and the obstacle

h_T : height of the target

h_V : height of the viewpoint

Viewshed

- Regions that are visible from a viewpoint



- 2-D extension of Line-of-Sight (LoS)

The Length of the Invisible Area

$$D_T = \frac{h_o \times D_v}{h_v - h_o}$$

D_T : distance between the target and the obstacle

h_v : height of the viewpoint

h_o : height of the obstacle

D_v : distance between the viewpoint and the obstacle

Questions:

- ❑ True or False: In grid based algorithms each grid point is recorded as either visible or invisible.
- ❑ When the distances involved become greater than around ____km, the curvature of the earth should be taken into account.
- ❑ What are some examples for needing to perform a viewshed analysis?
- ❑ True or False: If the height of the obstacle is higher than the critical height, then the target is visible.