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Robotics Sensing and Navigation

Homework 3 Reading

There are numerous different ways to create maps, each with its own advantages as well as drawbacks. Although there are definitely certain groups of map projections that are a better fit for certain applications, it is never guaranteed that you can be using the absolute best map projection, simply due to the sheer amount of different projections. The only similarity between all projections is the fact that there are always latitude lines and longitude lines. Latitude lines are the horizontal lines, and longitude lines are the vertical lines.

When choosing which map projection to use, there are generally six different characteristics that must be taken into account. These characteristics are area(equal area vs other), shape(conformal or orthomorphic), scale(minimizing the error due to scale by carefully choosing the few lines which remain true), direction(how accurate local directions are with respect to other locations or the center of the map), special characteristics(such as which specific subset of lines happens to be straight), and method of construction(not as significant due to rise of computers). Furthermore, while these characteristics are regularly used in the construction of a map, they are significantly more difficult to recognize in existing maps.