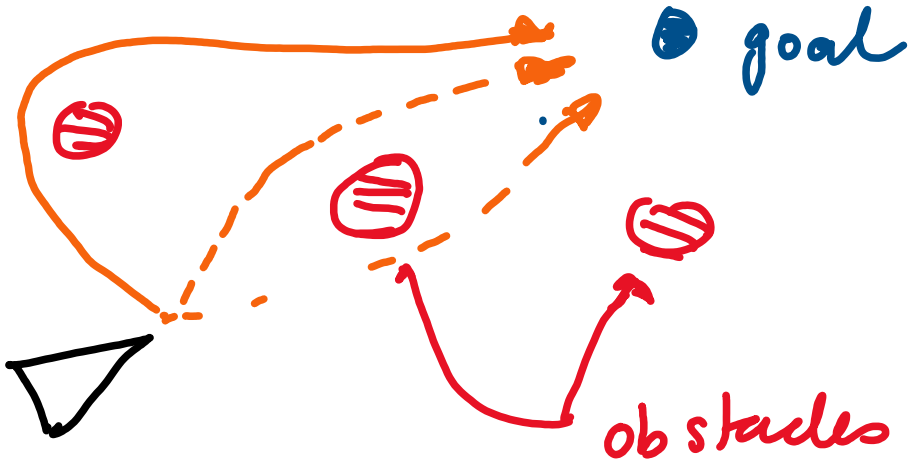
# Motion planning

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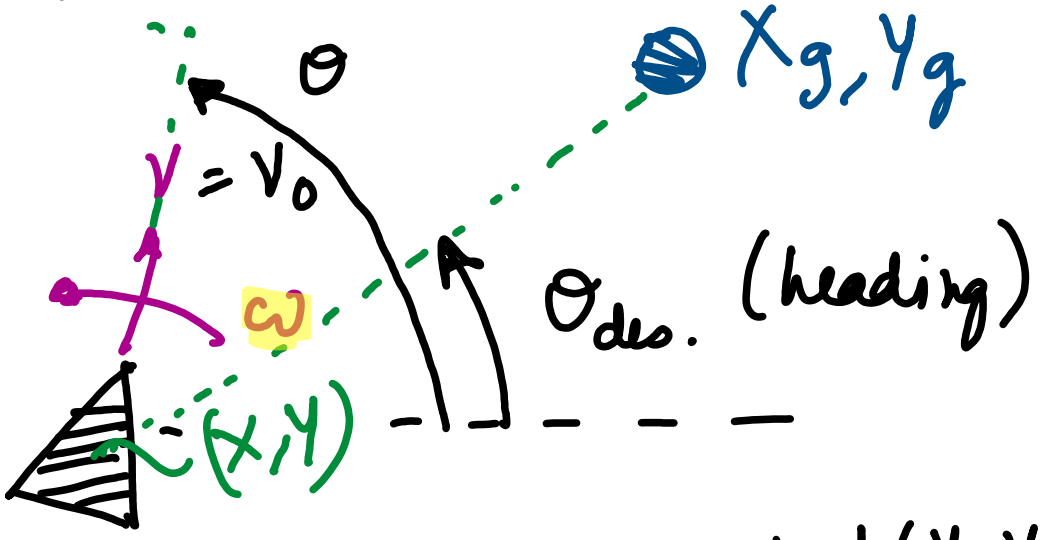
## ① Go-to-goal & Obstacle avoidance

### ⓐ Go-to-goal

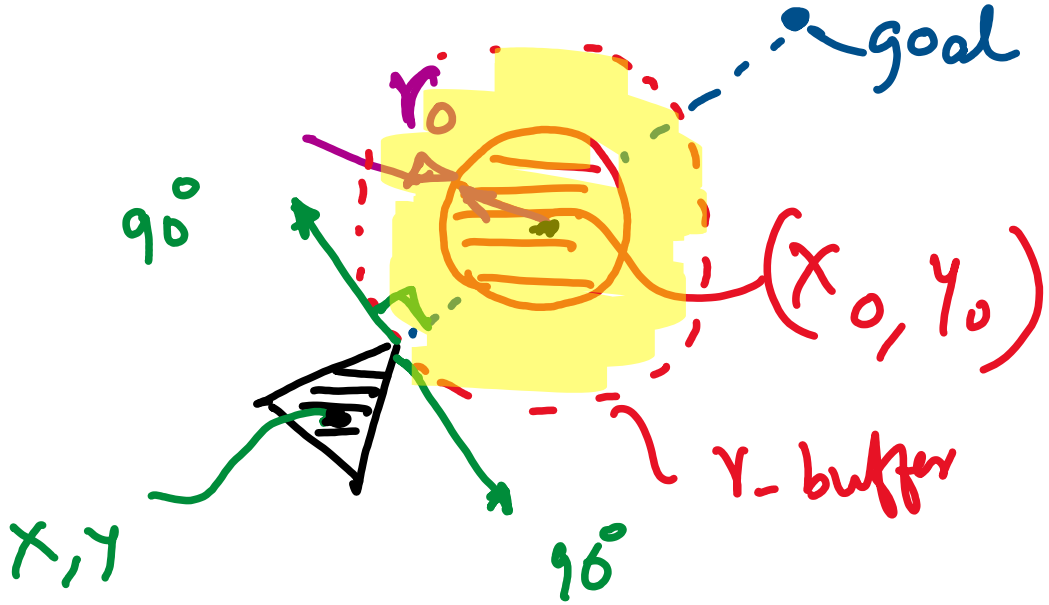



Diff. drive car

$$\omega = K(\theta_{des} - \theta)$$

$$\theta_{des} = \tan^{-1}\left(\frac{y - y_G}{x - x_G}\right)$$

$\omega = K(\vartheta_{des} - \vartheta)$




if $\left(\sqrt{(x-x_0)^2 + (y-y_0)^2} - r_{buffer} < 0\right)$:

$$\theta_{des} = \tan^{-1}\left(\frac{y-y_0}{x-x_0}\right) + \pi/2$$