LIFE OF A COMPUTER SCIENTIST

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CLAM ARM
PR2 VIDEOS

- Scooper
  http://www.youtube.com/watch?v=3q4cLRBaDvg

- Bowls
  http://www.youtube.com/watch?v=t_xStL51ftk
VISIBILITY GRAPH

2 DIMENSIONAL PATH PLANNING
THE PROBLEM:

https://www.youtube.com/watch?v=7iLDyvCXIFM&feature=fvwrel
CONSTRUCTING A VISIBILITY GRAPH
Slope Formula:

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]

Find the y-intersect:

\[ b = y - mx \]

Point-Slope Form:

\[ y = mx + b \]

Determine the x coordinate of where two lines A and B intersect:

\[ m_A x_A + b_A = m_B x_B + b_B \]

Check if two line segments A and B intersect:

1. Convert each line segment to point-slope form
2. Find the two line segments’ x-point of intersection \( (x_{\text{intersect}}) \)
3. Determine if \( x_{\text{intersect}} \) is within bounds of the two line segments
TURN-IN QUESTIONS

Determine if the following line segments intersect. Show the formulas you used to decide if they are in “collision”.

1. A: [ (4,2), (6,-2) ]
   B: [ (0,1), (8,0) ]

2. A: [ (40,52), (2,3) ]
   B: [ (-20, 40), (20, 40) ]

Cheat Sheet:

Slope Formula:
\[
m = \frac{y_2 - y_1}{x_2 - x_1}
\]

Find the y-intersect:
\[
b = y - mx
\]

Point-Slope Form:
\[
y = mx + b
\]

Determine the x coordinate of where two lines A and B intersect:
\[
m_Ax_A + b_A = m_Bx_B + b_B
\]

Check if two line segments A and B intersect:

1. Convert each line segment to point-slope form
2. Find the two line segments’ x-point of intersection (\(x_{intersect}\))
3. Determine if \(x_{intersect}\) is within bounds of the two line segments