**Sampling Based Path Planning**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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|  | **①** |  |  |  | **④** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | **②** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **③** |  |  |  | **⑤** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | B |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | check current robot location (M) and target (N) | | | | | | | | | | | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Make direct movement: | | | | | | | if M  ①or④ and N  ①or④ | | | | | | | |  |  |  |  |
|  |  |  |  |  |  |  |  | elseif M  ①or②or③ and N  ①or②or③ | | | | | | | | | | | |
|  |  |  |  |  |  |  |  | elseif M  ③or⑤ and N  ③or⑤ | | | | | | | | |  |  |  |
|  | Pass point A only: | | | | |  |  | if M  ④ and N  ②or③ | | | | | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  | elseif M  ②or③ and N  ④ | | | | | | | |  |  |  |  |
|  | Pass point B only: | | | | |  |  | if M  ⑤ and N  ①or② | | | | | | |  |  |  |  |  |
|  |  |  |  |  |  |  |  | elseif M  ①or②and N  ⑤ | | | | | | | |  |  |  |  |
|  | Pass point A then point B: | | | | | | | if M  ④ and N  ⑤ | | | | | |  |  |  |  |  |  |
|  | Pass point B then point A: | | | | | | | if M  ⑤ and N  ④ | | | | | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |