1 动环境 SLAM

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， 交 4J I J ß̈ ṣ4 [Simultaneous localization and mapping with detection
Chieh-Chih Wang,S. Thrun]SD$S \cup D$ ɔ 5 SDb0.9,

1.1

1.2

□ o_t t ， $P(S_t|o_1,,,o_t)$□ $P(D_t|o_1,,,o_t)$。 楚$P(S_t)$ $P(D_t)$
Ⅷ S_{t-1}, D_{t-1}□ D_{t-1} ， D_{t-1} 。即 $P(S_t|o_1,,,o_t,S_{t-1})$□ $P(D_t|o_1,,,o_t,S_{t-1})$ ｜

1.3 S

□□□□□ 公□ 楚

$$P(S_t|o_1,\cdots,o_t,S_{t-1}) = \frac{P(o_t|o_1,\cdots,o_{t-1},S_{t-1},S_t)P(S_t|o_1,\cdots,o_{t-1},S_{t-1})}{P(o_t|o_1,\cdots,o_{t-1},S_{t-1})}$$

$P(o_t|o_1,\cdots,o_{t_1},S_{t_1},S_t)$ S_{t-1},S_t □含 $\{o_1,\cdots o_t\}$ ，即 $P(o_t|o_1,\cdots,o_{t-1},S_{t-1},S_t) = P(o_t|S_{t-1},S_t)$，□□□□□ 公，

$$P(S_t|o_1,\ldots,o_t,S_{t-1}) = \frac{P(S_t|o_t,S_{t-1})P(o_t|S_{t-1})P(S_t|o_1,\cdots,o_{t-1},S_{t-1})}{P(S_t|S_{t-1})P(o_t|o_1,\cdots,o_{t-1},S_{t-1})}$$

$SP(\widetilde{S})$□

$$P(\widetilde{S}_t|o_1,\ldots,o_t,S_{t-1}) = \frac{P(\widetilde{S}_t|o_t,S_{t-1})P(o_t|S_{t-1})P(\widetilde{S}_t|o_1,\cdots,o_{t-1},S_{t-1})}{P(\widetilde{S}_t|S_{t-1})P(o_t|o_1,\cdots,o_{t-1},S_{t-1})}$$

，

$$\frac{P(S_t|o_1,\ldots,o_t,S_{t-1})}{P(\widetilde{S}_t|o_1,\ldots,o_t,S_{t-1})} = \frac{P(S_t|o_t,S_{t-1})}{P(\widetilde{S}_t|o_t,S_{t-1})}\frac{P(\widetilde{S}_t|S_{t-1})}{P(S_t|S_{t-1})}\frac{P(S_t|o_1,\cdots,o_{t-1},S_{t-1})}{P(\widetilde{S}_t|o_1,\cdots,o_{t-1},S_{t-1})}$$

$P(S) = 1 - P(S')$□

$$\frac{P(S_t|o_1,\ldots,o_t,S_{t-1})}{1-P(S_t|o_1,\ldots,o_t,S_{t-1})} = \frac{P(S_t|o_t,S_{t-1})}{1-P(S_t|o_t,S_{t-1})}\frac{1-P(S_t|S_{t-1})}{P(S_t|S_{t-1})}\frac{P(S_t|o_1,\cdots,o_{t-1},S_{t-1})}{1-P(S_t|o_1,\cdots,o_{t-1},S_{t-1})}$$

$P(S_t|S_{t-1})$ 不Ⅷt□ $P(S)$□ S^t 定 $o_1, \cdots, o_{t-1}, S_{t-1}$，不发

$$\frac{P(S_t|o_1,\ldots,o_t,S_{t-1})}{1-P(S_t|o_1,\ldots,o_t,S_{t-1})} = \frac{P(S_t|o_t,S_{t-1})}{1-P(S_t|o_t,S_{t-1})}\frac{1-P(S)}{P(S)}\frac{P(S_{t-1})}{1-P(S_{t-1})}$$

$P(S) = 0.5$,

$$\frac{P(S_t|o_1,\ldots,o_t,S_{t-1})}{1-P(S_t|o_1,\ldots,o_t,S_{t-1})} = \frac{P(S_t|o_t,S_{t-1})}{1-P(S_t|o_t,S_{t-1})}\frac{P(S_{t-1})}{1-P(S_{t-1})}$$

即

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1.5

□□ S趹

$$\frac{P(D_t|o_1,\ldots,o_t,S_{t-1})}{1-P(D_t|o_1,\ldots,o_t,S_{t-1})} = \frac{P(D_t|o_t,S_{t-1})}{1-P(D_t|o_t,S_{t-1})}\frac{P(D_{t-1})}{1-P(D_{t-1})}$$

D，ⅧD_{t-1}□ 不考 D ，考t Ⅶ$P(S_{t-1})$定Po_t，$P(D_t)$ 。[$MobileRobotSimultaneousLoc$

1.6 定

ⅧⅦ，□椒，。肪，定趹[$ASolutiontotheSimultaneousLocalizationandMapBuilding(SLAM$
[$DetectionandTrackingofPointFeatures,(TomasiandKanade$]，，还Ⅶ辅
定悻并，Ⅶ储慢，□动□，，□Ⅶ。