

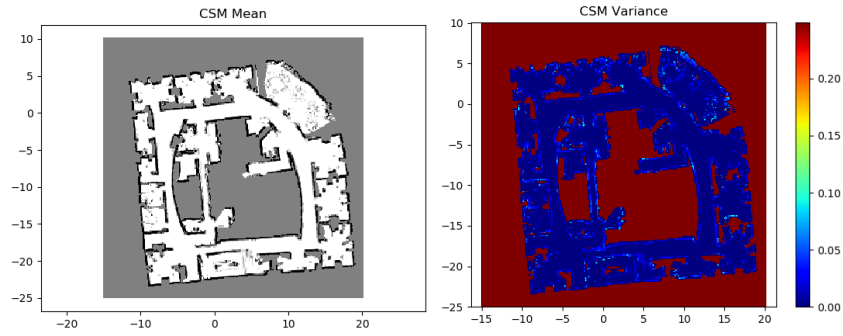
Task 1

Rob530 - HW6

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A.

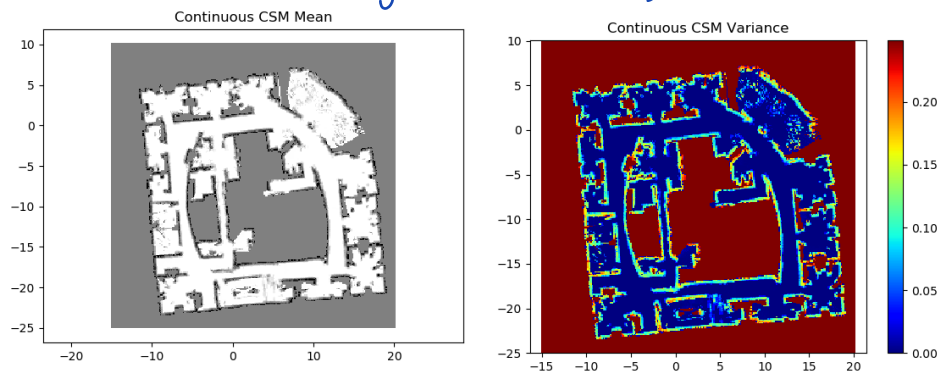
grid size = 0.135



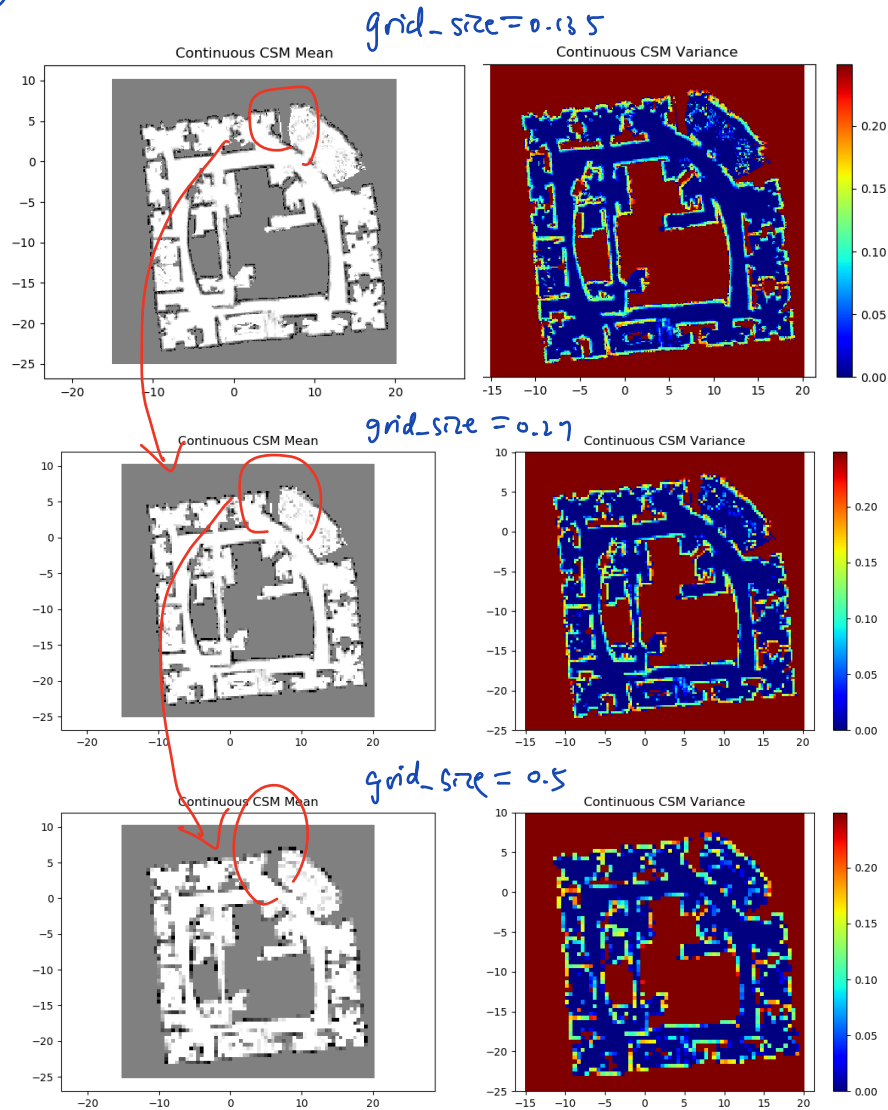
Task 2

A.

grid size = 0.135



B.



As the grid size increase, the resolution of the map will decrease.
Some details like narrow gap marked with red circle above also disappear.

Also, the corridor will be narrower and some traversable path might be non-traversable due to grid size increase.

However, map construction time will decrease if we increase grid size.

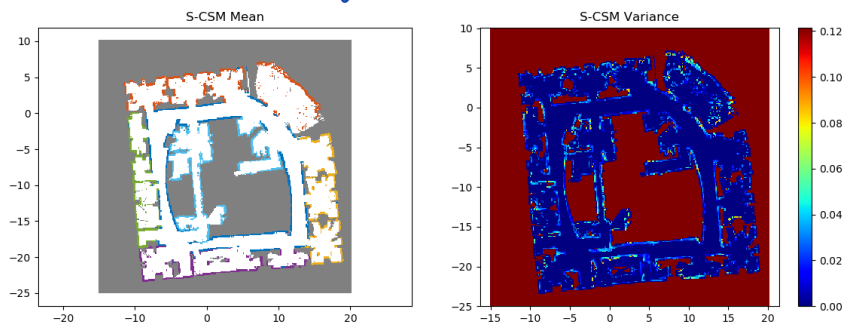
(C.)

The main difference between discrete and continuous CSM can be observed in the variance plot. The boundary between discovered and unexplored area for continuous CSM map has smooth transition, which is its advantage because it considers the correlation of neighboring grid cells.

Task 3

(A.)

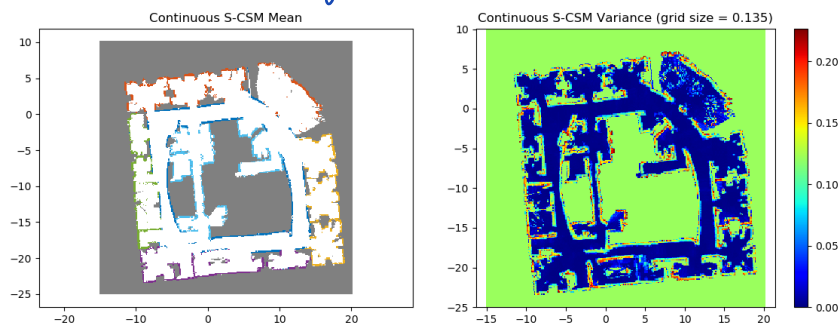
grid_size = 0.135



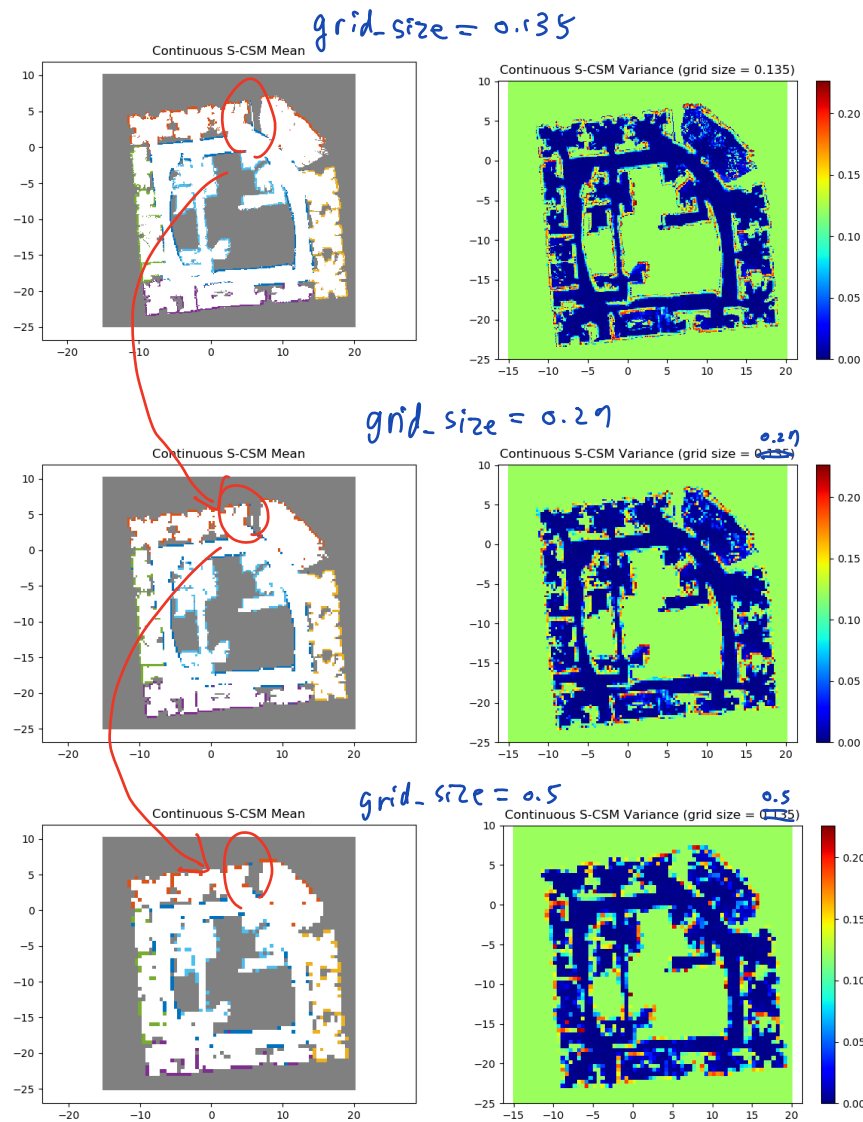
Task 4

(A.)

grid_size = 0.135



(B.)



As the grid size increase, the resolution of the map will decrease.
Some details like narrow gap marked with red circle above also disappear.

Also, the corridor will be narrower and some traversable path might be non-traversable due to grid size increase.

However, map construction time will decrease if we increase grid size.

(c.)

The main difference between discrete and continuous CSM can be observed in the variance plot. The boundary between discovered and unexplored area for continuous CSM map has smooth transition, which is its advantage because it considers the correlation of neighboring grid cells.

Task 5

