# New Splitting Approach for Adaptative Tile Coding

## Course Project – Reinforcement Learning

Mathieu Nassif

McGill University

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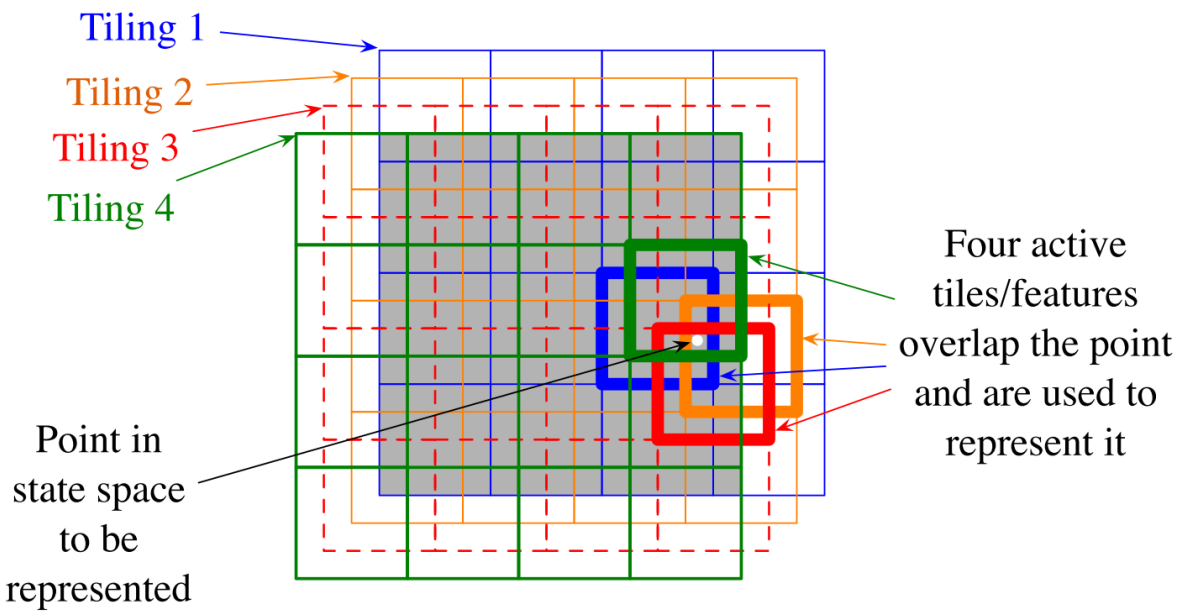
# Problems of Tile Coding



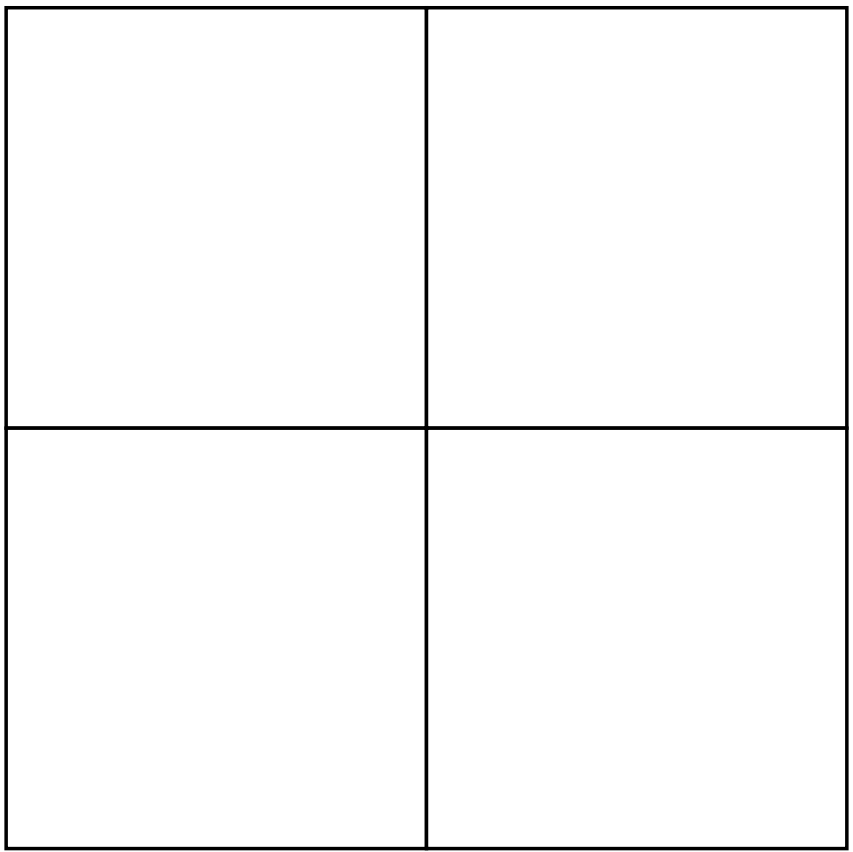

– # of tilings?
– Size of each tile?

Propagation
VS
Generalization

# Adaptative Tile Coding

*S. Whiteson, M. E. Taylor and P. Stone*

1. Start with **ONE** very coarse tiling



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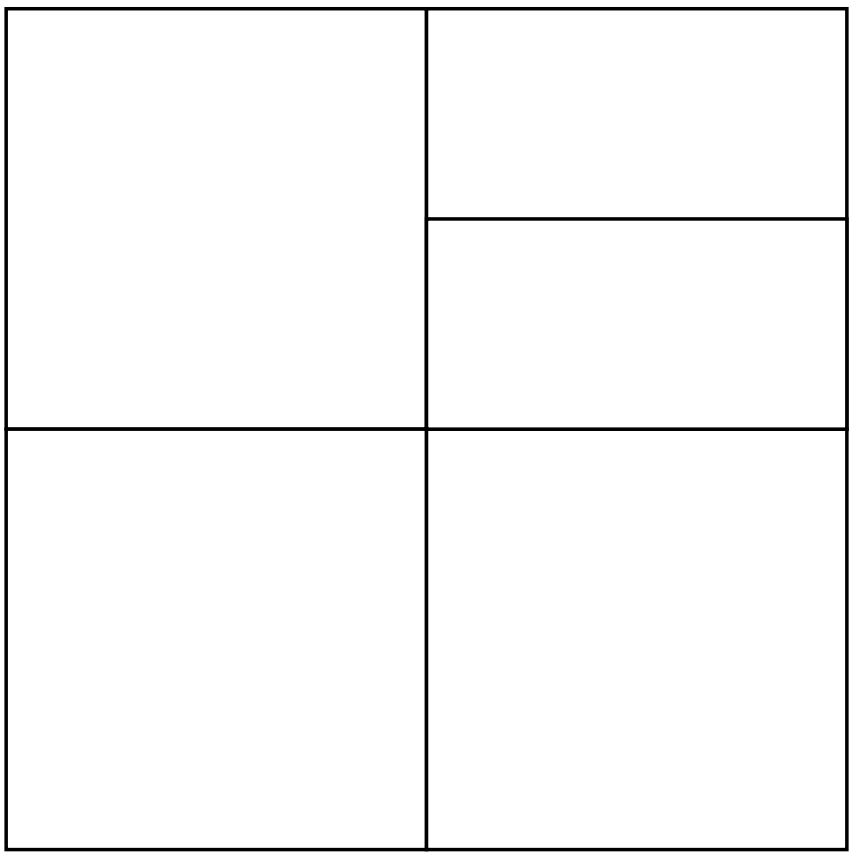
2. When the updates stabilize, choose a tile to split



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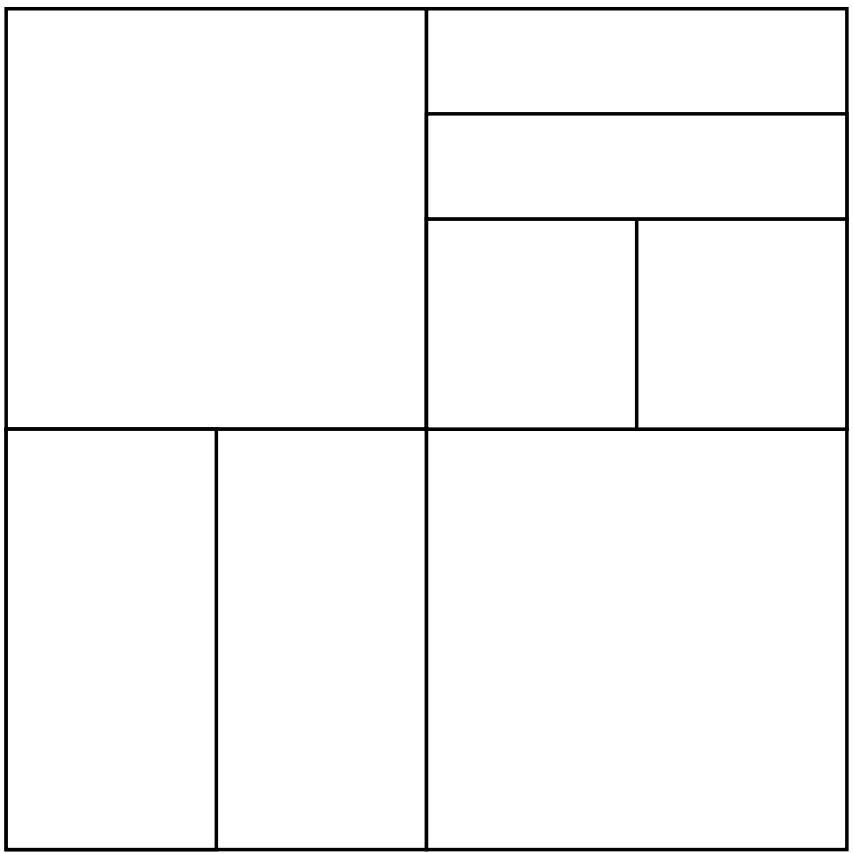
3. Split the tile along one dimension in half



# Adaptative Tile Coding

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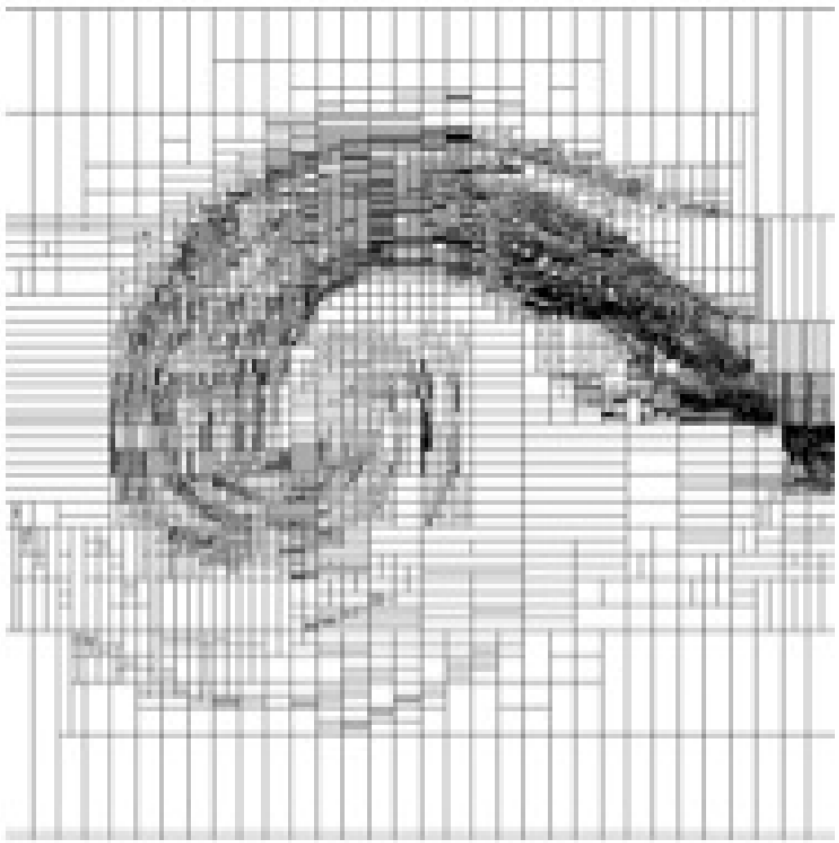
2. When the updates stabilize, choose a tile to split
3. Split the tile along one dimension in half
4. Repeat



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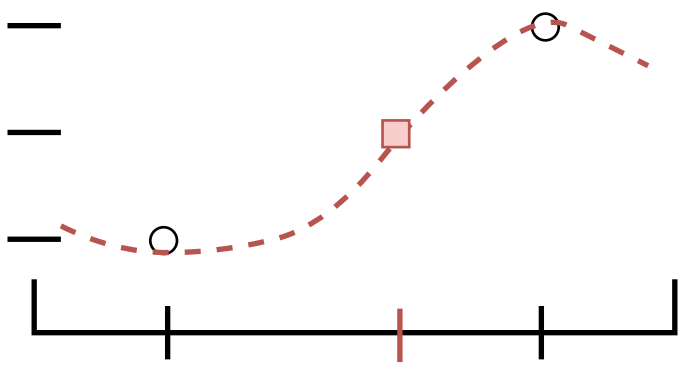
**New Strategy**

1. *Analyze for each dimension*
2. Find the maximum and minimum rewards in each tile
3. Find the middle value: 0.5 * (max + min)
4. Estimate the position of the middle value
5. Split at this position



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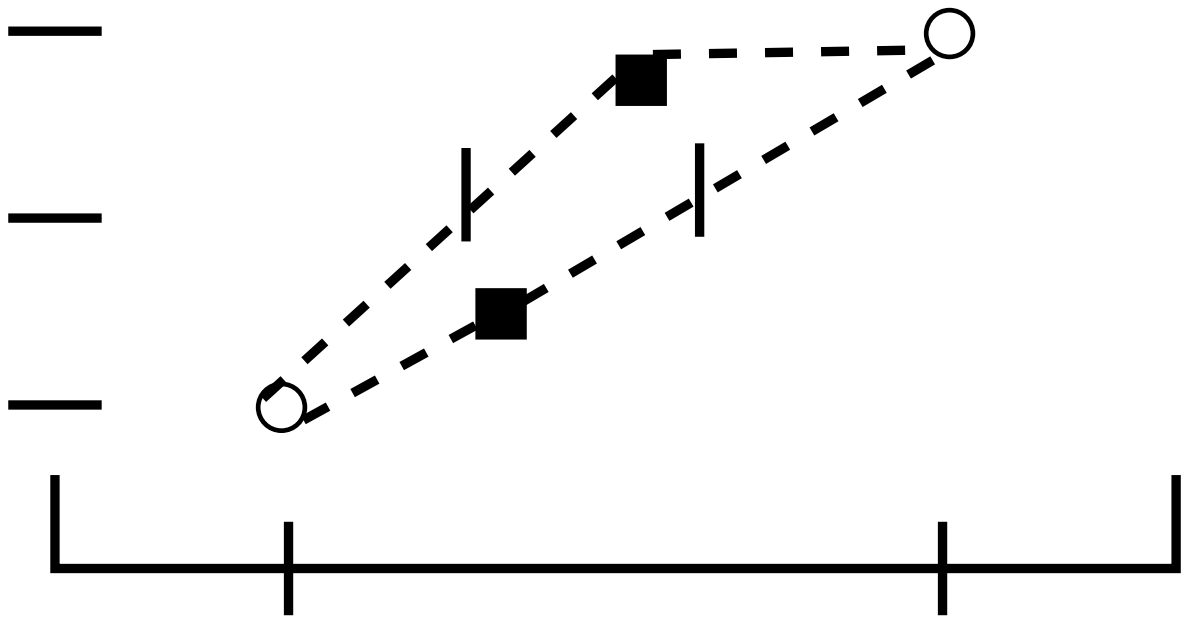
**Middle Point:** Use linear intrapolations for every new point, and average them.



# Results