

Planning in Dynamic Environment with Conditional Autoregressive Models

Abhinav Madahar

Rutgers, the State University of New Jersey

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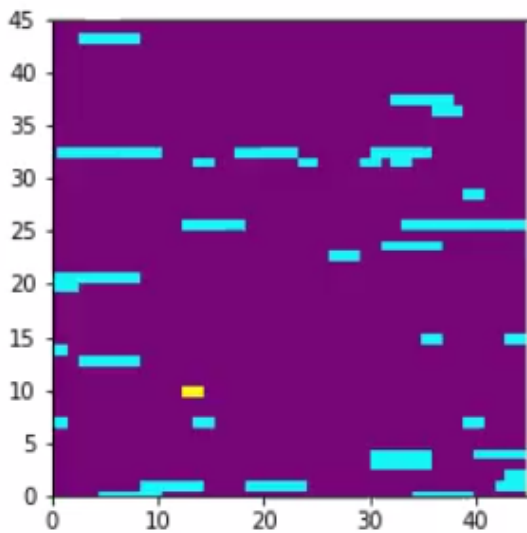
About Me

- ▶ 2nd year undergraduate
 - ▶ Mathematics and Computer Science major
 - ▶ Biology minor
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- ▶ PhD in machine learning
 - ▶ Machine learning for medicine

Problem

- ▶ Autonomous agent (“person”)
- ▶ Move to goal (“dog”)
- ▶ Person lost their dog in a field of crocodiles
- ▶ Person cannot touch the crocodiles, but the dog can
- ▶ Predict other objects’ positions

Game



Planning Agent

- ▶ We can use a model-free agent or a planning agent
- ▶ Model-free agent: does not explicitly predict the future (faster)
- ▶ Planning agent: explicitly predicts the future (more reliable)

Overall model

for each frame:

 consider the past few frames

 predict many frames in advance

 decide where to move

Future Predictor

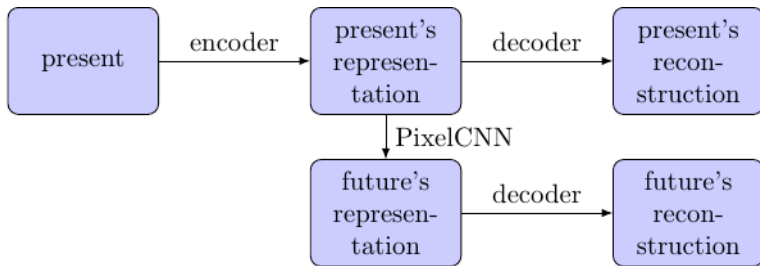


Figure 1: Future Predictor