



CSE 574 Planning and Learning Methods in AI

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Imitation Learning
(IL)

Learning from
Demonstrations (LfD)

Behavioral Cloning (BC)

Apprenticeship
Learning via IRL

Inverse Reinforcement
Learning (IRL)

Human-in-the-Loop
Reinforcement
Learning (HiL-RL)

Reinforcement
Learning with Human
Feedback (RLHF)

Behavioral Cloning (BC)

ALVINN: AN AUTONOMOUS LAND VEHICLE IN A NEURAL NETWORK

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Learn state to action mapping in a supervised fashion.

Beware! **Compounding errors.**

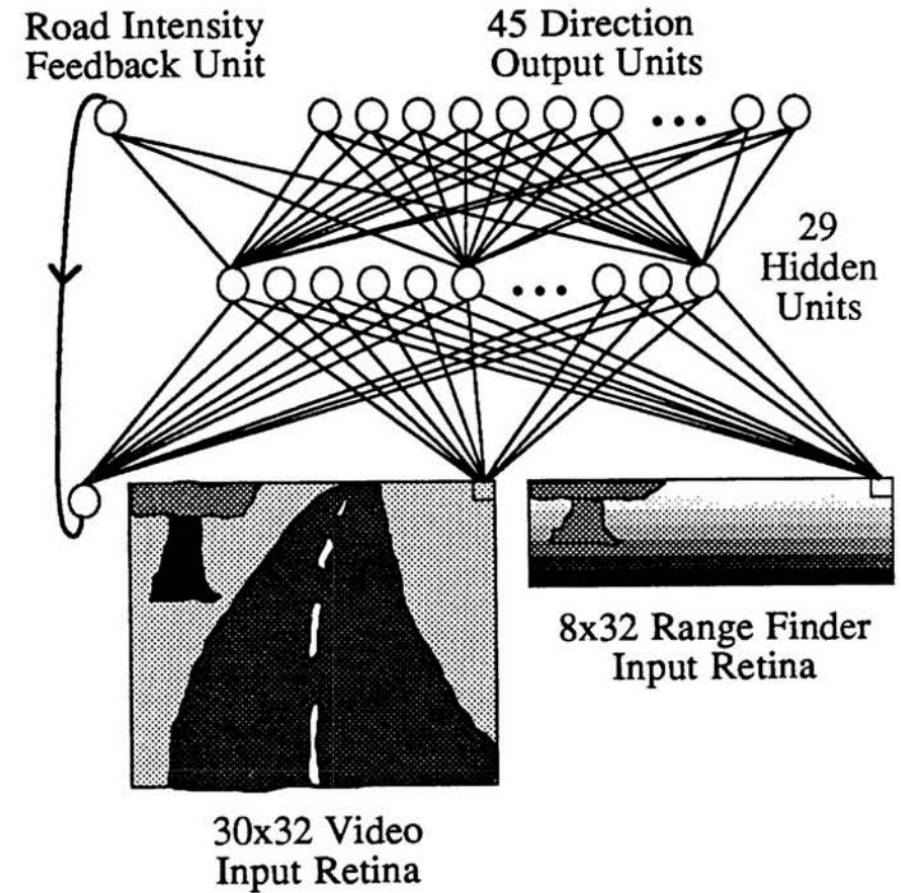
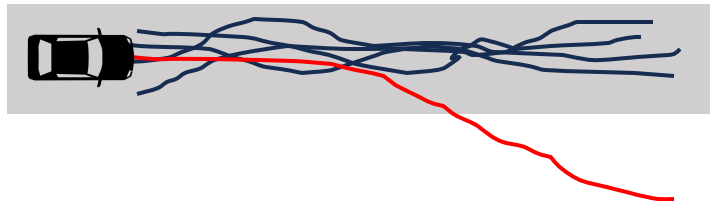


Figure 1: ALVINN Architecture

Dataset Aggregation (Dagger)

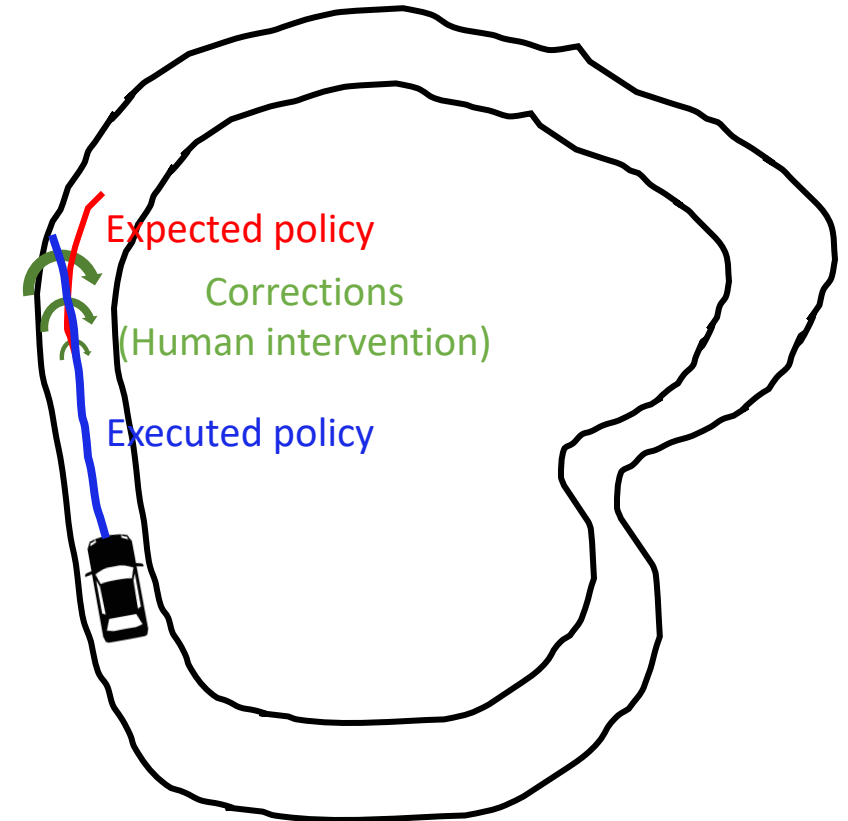
Have an initial policy from BC
for

Roll out the current policy trained using D

Collect human correction data D_{cor}

Update the dataset $D \leftarrow D \cup D_{cor}$

Retrain the policy using D



Limitations? Are these human interventions pragmatic? (e.g., naturalistic? cheap?)

Apprenticeship Learning via IRL

- <https://www.youtube.com/watch?v=M-QUkgk3HyE>