

# Intelligent Hangman: HMM + DQN Analysis Report

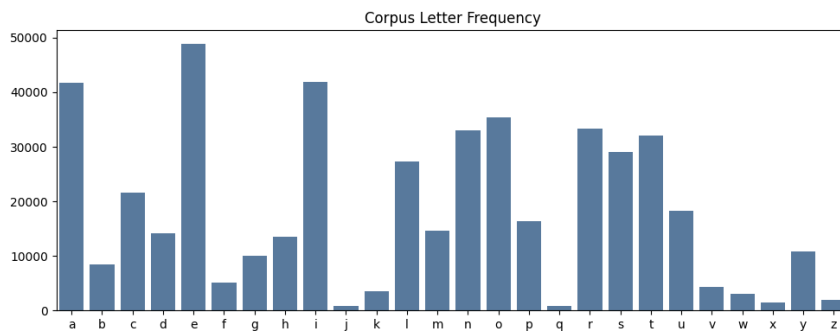
Project overview: Hangman assistant using HMM for letter probabilities and optional DQN for action selection

Dataset: Provided corpus cleaned to lowercase alphabetic, grouped by word length.

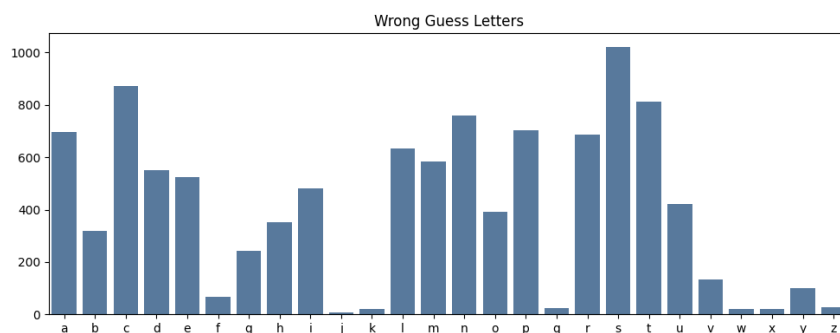
Models: HMM bigram with Laplace smoothing; DQN with MLP and epsilon-greedy policy.

Baseline (Greedy with HMM) metrics:

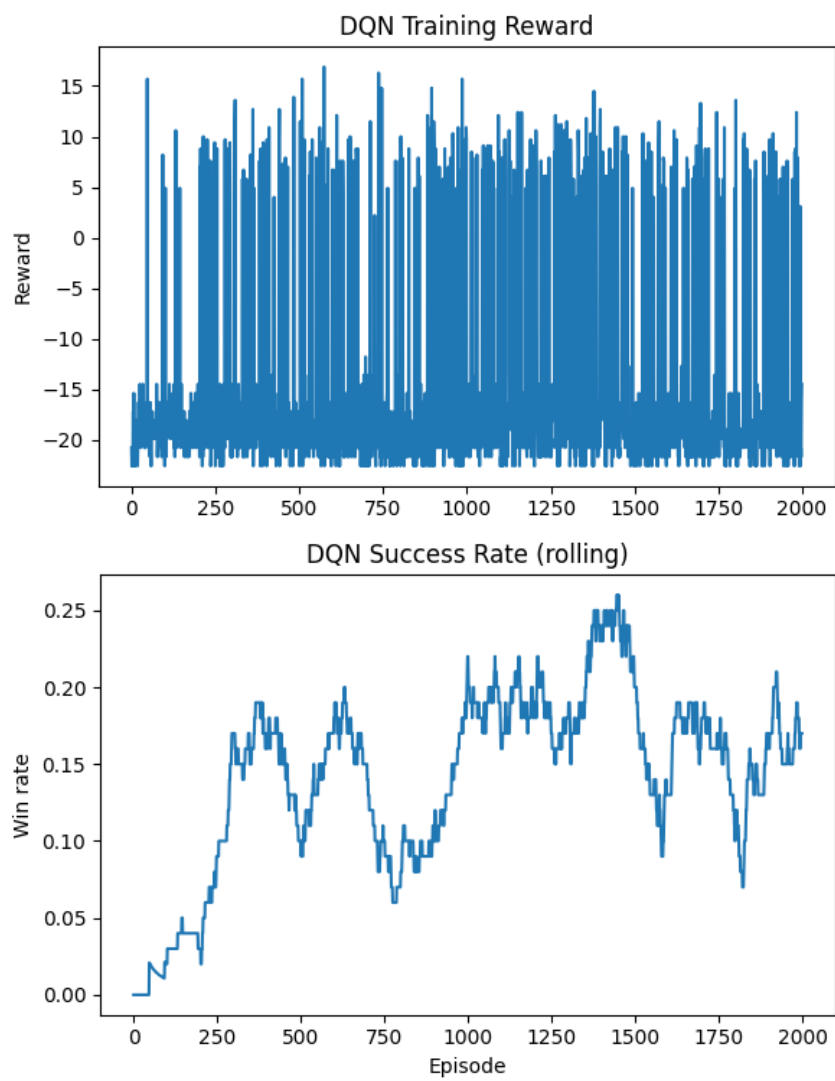
- total\_games: 2000
- wins: 640
- success\_rate: 32.0
- wrong\_total: 10477
- repeated\_total: 0
- avg\_wrong\_per\_game: 5.2385
- avg\_repeated\_per\_game: 0.0
- final\_score: 11615.0



corpus\_letter\_freq.png



wrong\_guess\_letters.png



dqn\_success\_rate.png