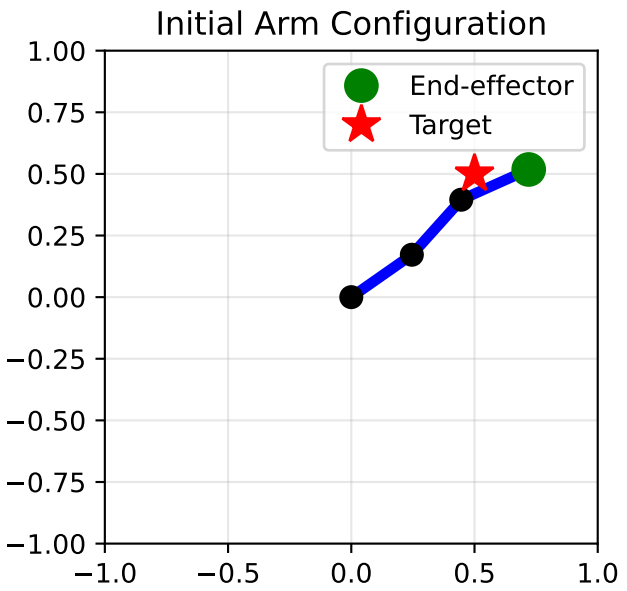
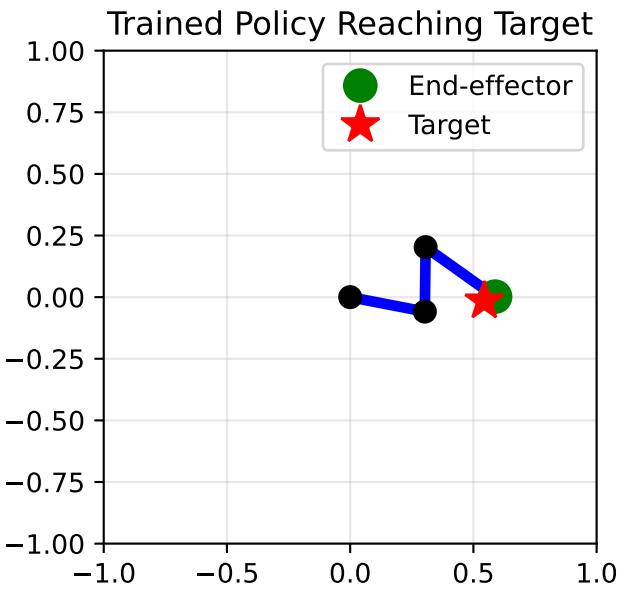
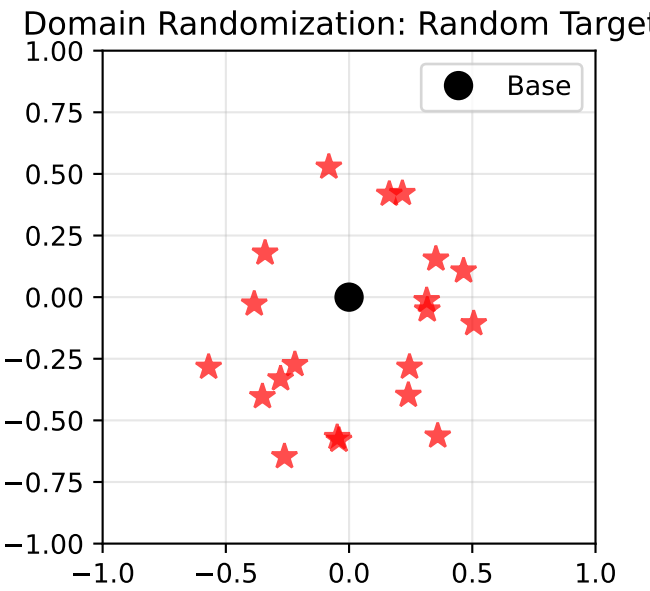
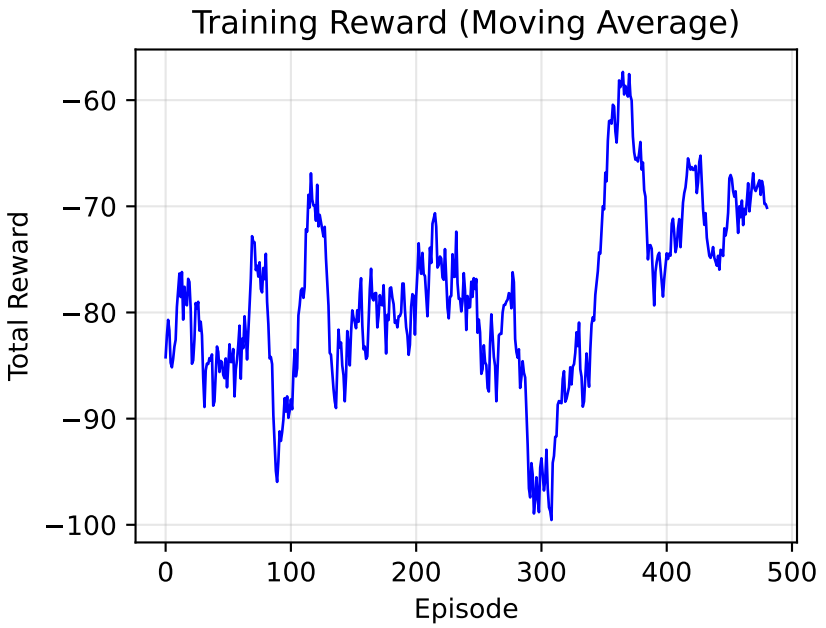
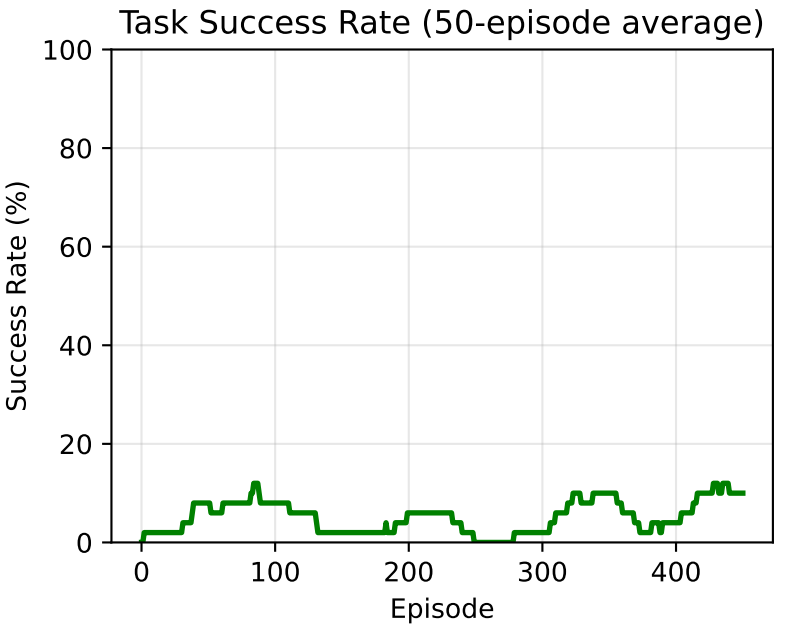
FlexBot MVP: Robot Arm Control with Domain Randomization
Training a Neural Network to Control a Simulated Robot Arm

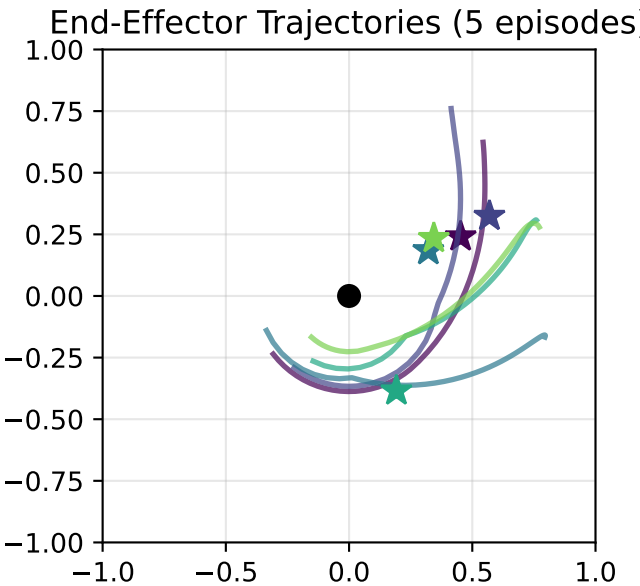













```
DOMAIN RANDOMIZATION
====================

Training with varied parameters:

• Target positions: Random locations
• Arm segment lengths: ±20% variation
• Initial joint angles: Random

Benefits:
✓ Better generalization
✓ Sim2Real transfer
✓ Robustness to noise
```

```
FLEXBOT PIPELINE
================

┌──────────────┐
│ GenAI Scene  │ ← Random environments
└──────┬───────┘
       ↓
┌──────────────┐
│  Simulation  │ ← Physics engine
└──────┬───────┘
       ↓
┌──────────────┐
│   Training   │ ← Policy gradient
└──────┬───────┘
       ↓
┌──────────────┐
│  Real Robot  │ ← Sim2Real transfer
└──────────────┘
```

```
RESULTS SUMMARY
===============

Environment:
• 3-segment planar arm
• Continuous action space
• Domain randomization ON

Training:
• 500 episodes
• Policy Gradient (REINFORCE)
• Neural Network (2 hidden layers)

Results:
• Final Success Rate: 10.0%
• Final Avg Reward: -69.918

This demonstrates:
✓ Synthetic data generation
✓ Domain randomization
✓ Policy learning
```