

Data Input

```
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/E盘/backup 2/AI&机器人论文/多场景推理/Data Input.py =====
Synchronizing sensor data...
Normalizing data...
Parsing instructions...
Calibrating data...
Processed Data: {'camera': [0.1, 0.6, 1.1], 'lidar': [0.1, 0.6000000000000001, 1.1], 'microphone': [0.1, 0.6000000000000002, 1.1]}
Parsed Instructions: [{'command': 'move', 'context': 'forward', 'weight': 1.2}, {'command': 'rotate', 'context': 'left', 'weight': 1.0}, {'command': 'stop', 'context': '', 'weight': 0.8}]
>>>
```

Scenario Processing

```
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/E盘/backup 2/AI&机器人论文/多场景推理/Scenario Processing.py =====
Unified Data: [0.7300000000000001, 0.67, 0.73]
Semantic Representation: {'feature_0': 0.73, 'feature_1': 0.67, 'feature_2': 0.73}
Feature Maps: [0.4819089900902024, 0.5117085777865424, 0.4819089900902024]
Hypothetical Scenarios: [[([0.5265753896096494, 0.5951363543995629, 0.4616587903596876], 1.5833705343689), ([0.3919608454243013, 0.5353305149848654, 0.5745771613770805], 1.501868521786247), ([0.5217471031158387, 0.4353193166362245, 0.44348713045029553], 1.4005535502023587)]
>>>
```

Attention-Based Prioritization

```
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
=== RESTART: C:/E盘/backup 2/AI&机器人论文/多场景推理/Attention-Based Prioritization.py ===
Utilities of Top Scenarios: [7.550000000000001, 7.4, 7.25]
Refined Top Scenarios: [[8.5, 7, 8, 9.5, 5], [10.5, 6, 10, 3.5, 10], [10.5, 5, 4, 8.5, 6]]
>>>
```

Memory-Augmented Reasoning (with Test Cases)

```
IDLE Shell 3.13.0
File Edit Shell Debug Options Window Help
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/E盘/backup 2/AI&机器人论文/多场景推理/Memory-Augmented Reasoning.py =====
LTM Updated: ['Historical Scenario 0']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1', 'Historical Scenario 2']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1', 'Historical Scenario 2', 'Historical Scenario 3']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1', 'Historical Scenario 2', 'Historical Scenario 3', 'Historical Scenario 4']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1', 'Historical Scenario 2', 'Historical Scenario 3', 'Historical Scenario 4', 'Historical Scenario 5']
LTM Updated: ['Historical Scenario 0', 'Historical Scenario 1', 'Historical Scenario 2', 'Historical Scenario 3', 'Historical Scenario 4', 'Historical Scenario 5', 'Historical Scenario 6']
Processing Query: Example Scenario from Part 3
STM Updated: ['Example Scenario from Part 3']
Relevant LTM Retrieved: Historical Scenario 4
Prioritized Memories: ['Historical Scenario 6', 'Historical Scenario 3', 'Historical Scenario 5']
Final Output: {'query': 'Example Scenario from Part 3', 'relevant_ltm': 'Historical Scenario 4', 'prioritized_memories': ['Historical Scenario 6', 'Historical Scenario 3', 'Historical Scenario 5']}

Processed Output:
Query: Example Scenario from Part 3
Relevant LTM: Historical Scenario 4
Prioritized Memories: ['Historical Scenario 6', 'Historical Scenario 3', 'Historical Scenario 5']
>>>
```

Action Decision Modeling

```
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/E盘/backup 2/AI&机器人论文/多场景推理/Action Decision Modeling.py =====
Task: Deliver Package to Location A
Subtasks: ['Subtask 1', 'Subtask 2', 'Subtask 3']
Context Scores: [0.312565170680301, 0.9119285121560631, 0.04591338879317297]
Selected Subtask: Subtask 2
Utility Optimization - Subtask: Subtask 2
Predicted Outcome: 0.6968985963288667
Historical Feedback: 0.982030652771501
Utility Score: 0.6843757834683798

=== Output Integration ===
Task ID: 2
Priority Level: 0.6241017899739596
Context Summary: {'Selected Subtask': 'Subtask 2', 'Utility Score': 0.6843757834683798, 'Context Scores': [0.312565170680301, 0.9119285121560631, 0.04591338879317297]}

Final Output for Simulation Environment:
{'Task ID': 2, 'Priority Level': 0.6241017899739596, 'Context Summary': {'Selected Subtask': 'Subtask 2', 'Utility Score': 0.6843757834683798, 'Context Scores': [0.312565170680301, 0.9119285121560631, 0.04591338879317297]}}
```


Sim2Real

```
Python 3.13.0 (tags/v3.13.0:60403a5, Oct 7 2024, 09:38:07) [MSC v.1941 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\E盘\backup 2\AI&机器人论文\多场景推理\Sim2Real.py =====
=== Sim2Real Execution ===
Simulated Scenarios: ['Task-001-Priority-High-Environment-A-0', 'Task-001-Priority-High-Environment-A-1', 'Task-001-Priority-High-Environment-A-2', 'Task-001-Priority-High-Environment-A-3', 'Task-001-Priority-High-Environment-A-4']
Randomized Scenarios: ['Task-001-Priority-High-Environment-A-0-Randomized', 'Task-001-Priority-High-Environment-A-1-Randomized', 'Task-001-Priority-High-Environment-A-2-Randomized', 'Task-001-Priority-High-Environment-A-3-Randomized', 'Task-001-Priority-High-Environment-A-4-Randomized']
Trained Policy Model: {'Task-001-Priority-High-Environment-A-0-Randomized': 0.8199698708107198, 'Task-001-Priority-High-Environment-A-1-Randomized': 0.95274985012453, 'Task-001-Priority-High-Environment-A-2-Randomized': 0.9110061095300088, 'Task-001-Priority-High-Environment-A-3-Randomized': 0.8885887672740209, 'Task-001-Priority-High-Environment-A-4-Randomized': 0.9235067174717547}
Adapted Policies: {'Task-001-Priority-High-Environment-A-0-Randomized': 0.6963137308426651, 'Task-001-Priority-High-Environment-A-1-Randomized': 0.8067651254282052, 'Task-001-Priority-High-Environment-A-2-Randomized': 0.7407175344515013, 'Task-001-Priority-High-Environment-A-3-Randomized': 0.804132182247039, 'Task-001-Priority-High-Environment-A-4-Randomized': 0.7990068927103953}
Execution Results: {'Task-001-Priority-High-Environment-A-0-Randomized': 'Executed', 'Task-001-Priority-High-Environment-A-1-Randomized': 'Executed', 'Task-001-Priority-High-Environment-A-2-Randomized': 'Executed', 'Task-001-Priority-High-Environment-A-3-Randomized': 'Executed', 'Task-001-Priority-High-Environment-A-4-Randomized': 'Executed'}
Feedback Scores: {'Task-001-Priority-High-Environment-A-0-Randomized': 0.8906000902667088, 'Task-001-Priority-High-Environment-A-1-Randomized': 0.5185205573678748, 'Task-001-Priority-High-Environment-A-2-Randomized': 0.7033781347533106, 'Task-001-Priority-High-Environment-A-3-Randomized': 0.8968106300119895, 'Task-001-Priority-High-Environment-A-4-Randomized': 0.5922431683736324}
Optimized Policy: {'Task-001-Priority-High-Environment-A-0-Randomized': 0.7153737398693361, 'Task-001-Priority-High-Environment-A-1-Randomized': 0.7886171811649927, 'Task-001-Priority-High-Environment-A-2-Randomized': 0.7410553479268324, 'Task-001-Priority-High-Environment-A-3-Randomized': 0.823813245248238, 'Task-001-Priority-High-Environment-A-4-Randomized': 0.7882312095477585}
>>>
```

Ln: 13 Col: 0