

## 1. Environment: Classic Platformer Game

**Genre:** Video Game

**Agent:** Game character

**Illustration:** - A side-scrolling level with platforms, enemies, coins, and a goal post at the end.

**States:**

1. Grounded (Character is on the ground)
2. Airborne (Character is jumping or falling)
3. Enemy Nearby (Hostile creature close)
4. Low Health (Character's health is low)
5. Obstacle Ahead (Block or gap in the path)
6. Power-Up Available (Boost item within reach)
7. Collectible Near (Coins or other collectibles near)
8. Boss Fight (Encounter with level boss)
9. Underwater (Portion of level submerged)
10. Level Completion (Near the goal post)

**Actions** and rewards for each state:

State	Action	Value (Reward)	Probability
Grounded	Walk Forward	+1	80%
Grounded	Stay Still	0	20%
Airborne	Land Safely	+1	90%
Airborne	Fall into Gap	-5	10%
Enemy Nearby	Attack	+3	60%
Enemy Nearby	Evade	+1	40%
Low Health	Find Health Item	+4	50%
Low Health	Avoid Danger	+2	50%
Obstacle Ahead	Jump Over	+2	70%
Obstacle Ahead	Destroy	+3	30%
Power-Up Available	Collect Power-Up	+5	90%
Power-Up Available	Ignore	0	10%
Collectible Near	Collect	+2	80%
Collectible Near	Ignore	0	20%
Boss Fight	Attack Boss	+10	50%

State	Action	Value (Reward)	Probability
Boss Fight	Dodge Attacks	+3	50%
Underwater	Swim Carefully	+2	80%
Underwater	Rush Through	-3	20%
Level Completion	Reach Goal	+10	100%

## 2. Environment: Autonomous Car Navigation

**Genre:** Simulation

**Agent:** Autonomous car

**Illustration:** - A city map with various roads, traffic lights, and obstacles.

**States:**

1. Green Light (Traffic light is green)
2. Red Light (Traffic light is red)
3. Pedestrian Crossing (Pedestrians crossing the road)
4. Highway Driving (High-speed driving)
5. Traffic Jam (Congested traffic)
6. Parking (Finding a parking spot)
7. Emergency Vehicle (Ambulance or fire truck approaching)
8. Roadworks (Construction on the road)
9. Sharp Turn (Sharp curve ahead)
10. Intersection (Crossroads)

**Actions** and rewards for each state:

State	Action	Value (Reward)	Probability
Green Light	Accelerate	+1	90%
Green Light	Maintain Speed	+0.5	10%
Red Light	Stop	+1	100%
Pedestrian Crossing	Stop	+2	100%
Highway Driving	Maintain Speed Limit	+1	70%
Highway Driving	Change Lane	+0.5	30%
Traffic Jam	Wait	+0.5	80%
Traffic Jam	Reroute	+1	20%
Parking	Park in Lot	+2	50%
Parking	Park on Street	+1	50%
Emergency Vehicle	Yield	+2	100%
Roadworks	Slow Down	+1	100%
Sharp Turn	Slow Down	+1	90%
Sharp Turn	Maintain Speed	-2	10%
Intersection	Go Straight	+0.5	40%

State	Action	Value (Reward)	Probability
Intersection	Turn Left	+0.5	30%
Intersection	Turn Right	+0.5	30%

### 3. Environment: Stock Market Trading

**Genre:** Financial

**Agent:** Stock trader

**Illustration:** - A graph showing stock prices over time.

**States:**

1. Bull Market (Rising prices)
2. Bear Market (Falling prices)
3. Sideways Market (Stagnant prices)
4. High Volatility (Large price swings)
5. Low Volatility (Small price swings)
6. Overbought Condition (Potential for reversal)
7. Oversold Condition (Potential for reversal)
8. Earnings Report (Company financials release)
9. Economic News (News impacting the market)
10. Technical Breakout (Price breaks a pattern)

**Actions** and rewards for each state:

State	Action	Value (Reward)	Probability
Bull Market	Buy Stock	+3	60%
Bull Market	Hold Position	+1	40%
Bear Market	Sell Stock	+2	50%
Bear Market	Short Sell	+3	50%
Sideways Market	Hold Position	+0.5	100%
High Volatility	Trade Derivatives	+4	50%
High Volatility	Hold Position	-1	50%
Low Volatility	Sell Options	+2	70%
Low Volatility	Hold Position	+0.5	30%
Overbought Condition	Sell Stock	+3	70%
Overbought Condition	Hold Position	-2	30%
Oversold Condition	Buy Stock	+3	70%

State	Action	Value (Reward)	Probability
Oversold Condition	Hold Position	-2	30%
Earnings Report	Buy Stock	+5	Variable
Earnings Report	Sell Stock	-3	Variable
Economic News	Adjust Portfolio	+2	Variable
Economic News	Hold Position	+1	Variable
Technical Breakout	Buy Stock	+4	60%
Technical Breakout	Sell Stock	-2	40%

#### 4. Environment: Space Exploration

**Genre:** Adventure

**Agent:** Spacecraft

**Illustration:** - A spacecraft navigating through a star system with planets, asteroids, and space stations.

**States:**

1. Safe Orbit (Stable orbit around a planet)
2. Asteroid Belt (Navigating through asteroids)
3. Planetary Landing (Descending onto a planet)
4. Resource Scarcity (Running low on fuel or supplies)
5. Alien Encounter (Meeting an unknown entity)
6. Space Anomaly (Encountering a space phenomenon)
7. Distress Signal (Receiving a call for help)
8. Space Battle (Engaging with hostile forces)
9. Black Hole Proximity (Near a black hole)
10. Discovering a New Planet (Finding an uncharted world)

**Actions and rewards**

for each state:

State	Action	Value (Reward)	Probability
Safe Orbit	Conduct Research	+3	80%
Safe Orbit	Restock Supplies	+2	20%
Asteroid Belt	Navigate Cautiously	+2	90%
Asteroid Belt	Accelerate Through	-3	10%

State	Action	Value (Reward)	Probability
Planetary Landing	Land Safely	+5	70%
Planetary Landing	Abort Landing	-1	30%
Resource Scarcity	Conserve Resources	+2	60%
Resource Scarcity	Seek Resources	+4	40%
Alien Encounter	Communicate	+3	50%
Alien Encounter	Flee	-2	50%
Space Anomaly	Investigate	+4	50%
Space Anomaly	Avoid	+1	50%
Distress Signal	Provide Assistance	+5	70%
Distress Signal	Ignore	-3	30%
Space Battle	Engage Enemy	+5	50%
Space Battle	Retreat	-2	50%
Black Hole Proximity	Study Black Hole	+10	40%
Black Hole Proximity	Escape	+1	60%
Discovering a New Planet	Explore Planet	+10	70%
Discovering a New Planet	Document Discovery	+5	30%

## 5. Environment: Restaurant Management

**Genre:** Business Simulation

**Agent:** Restaurant manager

**Illustration:** - A restaurant with customers, staff, and kitchen.

**States:**

1. Opening Hours (Restaurant is open)
2. Peak Dining Time (High customer influx)
3. Low Customer Turnout (Few customers)
4. Food Shortage (Running low on ingredients)
5. Staff Shortage (Not enough staff)
6. Health Inspection (Restaurant being inspected)
7. Customer Complaint (Unhappy customer)
8. Equipment Malfunction (Kitchen appliance breakdown)
9. High Expenses (Costs exceeding budget)
10. Menu Update (Introducing new items)

**Actions** and rewards for each state:

State	Action	Value (Reward)	Probability
Opening Hours	Greet Customers	+1	100%
Peak Dining Time	Expedite Orders	+3	70%
Peak Dining Time	Hire Temporary Staff	+2	30%
Low Customer Turnout	Offer Discounts	+1	50%
Low Customer Turnout	Close Early	-2	50%
Food Shortage	Restock Ingredients	+2	90%

State	Action	Value (Reward)	Probability
Food Shortage	Simplify Menu	+1	10%
Staff Shortage	Hire New Staff	+3	60%
Staff Shortage	Offer Overtime	+2	40%
Health Inspection	Maintain Cleanliness	+5	100%
Customer Complaint	Offer Apology	+2	80%
Customer Complaint	Ignore	-5	20%
Equipment Malfunction	Repair Equipment	+3	70%
Equipment Malfunction	Use Alternative	+1	30%
High Expenses	Reduce Costs	+4	80%
High Expenses	Increase Prices	-2	20%
Menu Update	Promote New Items	+3	60%
Menu Update	Gather Customer Feedback	+2	40%

## 6. Environment: Disaster Management

**Genre:** Strategy

**Agent:** Disaster response team

**Illustration:** - A city facing various natural disasters.

**States:**

1. Flood Alert (Rising water levels)
2. Earthquake Aftermath (City damage post-earthquake)
3. Hurricane Warning (Impending hurricane)
4. Wildfire Spread (Fire approaching city)
5. Power Outage (Electricity failure)
6. Evacuation Order (Need to evacuate citizens)
7. Search and Rescue (Finding survivors)
8. Resource Allocation (Distributing aid)
9. Infrastructure Repair (Fixing damaged structures)
10. Public Panic (Citizens in fear)

**Actions** and rewards for each state:

State	Action	Value (Reward)	Probability
Flood Alert	Strengthen Levees	+4	70%
Flood Alert	Evacuate Areas	+3	30%
Earthquake Aftermath	Search and Rescue	+5	80%

State	Action	Value (Reward)	Probability
Earthquake Aftermath	Assess Damage	+2	20%
Hurricane Warning	Evacuate Areas	+5	90%
Hurricane Warning	Secure Buildings	+3	10%
Wildfire Spread	Create Firebreaks	+4	70%
Wildfire Spread	Evacuate Areas	+3	30%
Power Outage	Restore Power	+3	90%
Power Outage	Provide Generators	+2	10%
Evacuation Order	Organize Transport	+4	80%
Evacuation Order	Set Up Shelters	+3	20%
Search and Rescue	Deploy Teams	+5	100%
Resource Allocation	Distribute Food and Water	+3	70%
Resource Allocation	Distribute Medical Supplies	+4	30%
Infrastructure Repair	Fix Roads	+3	50%
Infrastructure Repair	Restore Communication	+4	50%
Public Panic	Broadcast Calm Messages	+2	80%
Public Panic	Ignore	-5	20%

### Images

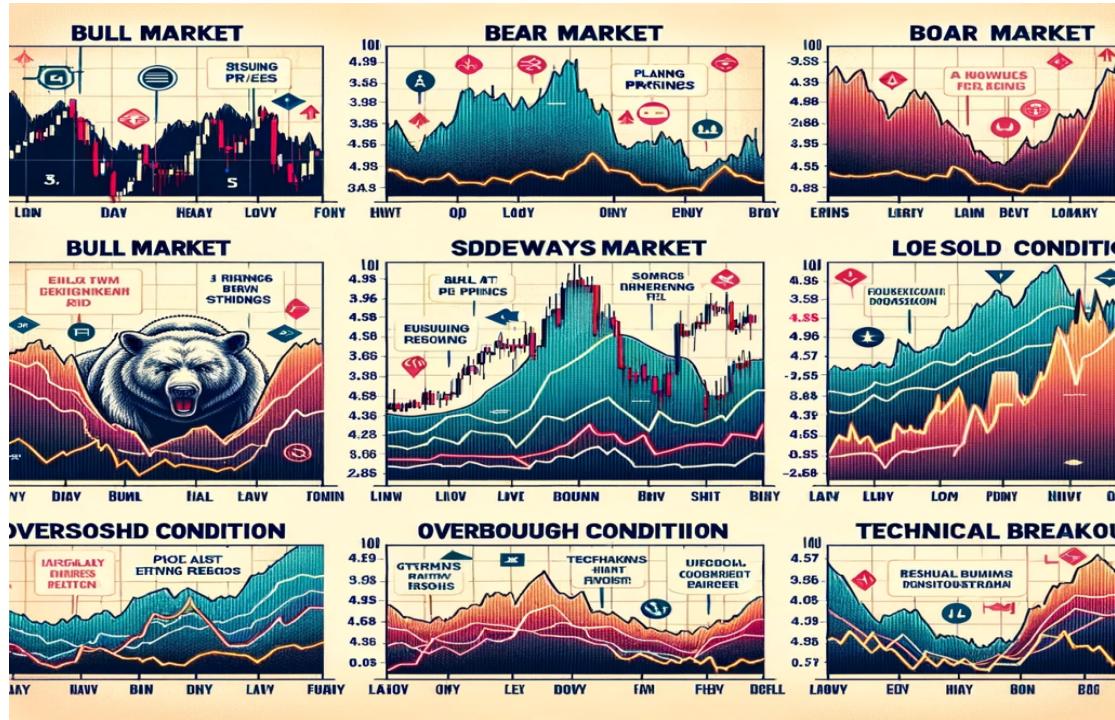
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