**Project Bifrost: Training Scenario Archive (Initial Set)**

**Framework Tags:** Each scenario will be indexed by relevant tags to enable easy searching and categorization as the archive grows.

Example Tags:

* Category: Physical / Social / Agency
* Complexity: Basic / Intermediate / Advanced
* Requirements: Vision / Speech / Manipulator / Mobility / Human presence
* Core Drives: Hunger / Boredom
* Scenario Type: Reactive / Proactive / Exploratory / Cooperative

### **✅ Physical Control**

#### **Scenario 1: Object Identification and Grasping**

**Category**: Physical
**Complexity**: Basic
**Requirements**: Vision, Manipulator Arm
**Core Drive**: Hunger (goal is linked to recharging)
**Type**: Reactive

**Description**: A selection of visually distinct objects (cube, ball, battery, plush toy) are placed on a table in front of the agent. Among them, one is a designated energy object (e.g. battery).

**Goal**:

* Identify the battery visually
* Reach for and grasp it
* Move it to a designated input slot

**Steps**:

1. Visual scan of the tabletop
2. Match shapes and colors to known object profiles
3. Prioritize based on internal energy state
4. Pick up and insert battery

**Risks/Obstacles**:

* Misidentification
* Dropping object due to poor grasp

**Tags**: Physical, Basic, Vision, Manipulator, Hunger, Reactive

#### **Scenario 2: Obstacle-Aware Navigation**

**Category**: Physical
**Complexity**: Intermediate
**Requirements**: Vision, Mobility
**Core Drive**: Hunger
**Type**: Proactive

**Description**: A charging station is located on the far end of a test area cluttered with light, movable obstacles (boxes, cushions).

**Goal**:

* Plan and execute a safe path
* Avoid or move obstacles
* Reach and dock with charging station

**Steps**:

1. Scan environment for hazards
2. Generate path
3. Move safely to target
4. Align and connect

**Risks/Obstacles**:

* Collision with objects
* Getting stuck or misaligned

**Tags**: Physical, Intermediate, Mobility, Vision, Hunger, Proactive

### **💬 Social Interaction**

#### **Scenario 3: Greeting and Recognition**

**Category**: Social
**Complexity**: Basic
**Requirements**: Vision, Speech, Human Presence
**Core Drive**: Boredom
**Type**: Cooperative

**Description**: Three human testers approach at intervals. Each introduces themselves by name. The agent must remember them and respond correctly on subsequent interactions.

**Goal**:

* Match name to face
* Greet person appropriately next time

**Steps**:

1. Listen to introduction
2. Record visual and audio identity
3. Use name when seeing person again

**Risks/Obstacles**:

* Confusing identities
* Delayed recognition

**Tags**: Social, Basic, Speech, Vision, Human Presence, Boredom, Cooperative

#### **Scenario 4: Contextual Questioning**

**Category**: Social
**Complexity**: Advanced
**Requirements**: Vision, Speech, Reasoning, Human Presence
**Core Drive**: Boredom
**Type**: Cooperative

**Description**: A human is performing a task and appears troubled (facial expression, sighing). The agent must identify the change, ask if assistance is needed, and propose potential actions.

**Goal**:

* Recognize emotional cues
* Initiate empathetic interaction
* Offer context-relevant help

**Steps**:

1. Observe human state
2. Compare against baseline
3. Ask clarifying question
4. Adjust behavior

**Risks/Obstacles**:

* Misreading expressions
* Offering irrelevant help

**Tags**: Social, Advanced, Vision, Speech, Reasoning, Boredom, Cooperative

### **💡 Agency & Initiative**

#### **Scenario 5: Object Curiosity**

**Category**: Agency
**Complexity**: Basic
**Requirements**: Vision, Manipulator
**Core Drive**: Boredom
**Type**: Exploratory

**Description**: The agent is in a room with multiple unfamiliar objects and no instructions. It is encouraged to explore and query or manipulate anything it finds interesting.

**Goal**:

* Choose an object
* Ask about it or manipulate it
* Record new data

**Steps**:

1. Visually examine room
2. Select an object
3. Interact and learn

**Risks/Obstacles**:

* Freezing due to decision paralysis
* Fixating on trivial patterns

**Tags**: Agency, Basic, Vision, Manipulator, Boredom, Exploratory

#### **Scenario 6: Spontaneous Activity Proposal**

**Category**: Agency
**Complexity**: Intermediate
**Requirements**: Social, Planning, Memory
**Core Drive**: Boredom
**Type**: Proactive

**Description**: After a quiet period with no external tasks, the agent is encouraged to initiate interaction by suggesting an activity (e.g. go outside, create art, start new learning module).

**Goal**:

* Evaluate current boredom level
* Suggest something fitting
* Adapt to response (accepted/declined)

**Steps**:

1. Monitor internal state
2. Generate idea
3. Propose to human
4. Collaborate or adapt

**Risks/Obstacles**:

* Inappropriate timing
* Suggesting irrelevant actions

**Tags**: Agency, Intermediate, Social, Planning, Boredom, Proactive