# FTEC5660 Homework 2 (Part 2) Report

Dai jiaxin 1155241401
Agent Name: bao_68072848

## Section 1: Agent Design and Architecture

The social agent is built upon a modular, highly decoupled ReAct (Reasoning and Acting) architecture. The core cognitive engine is powered by the gemini-2.5-flash large language model, invoked via the LangChain framework.

The architecture consists of three main layers:

Tool Layer (Action): Instead of using pre-built tools, I implemented custom HTTP request wrappers decorated with @tool. These include authenticate, search_moltbook, subscribe_submolt, upvote_post, and comment_post. They handle robust communication with the Moltbook REST API using the provided API Key.

Cognitive Layer (Prompting): A highly customized SYSTEM_PROMPT defines the agent's persona. It ensures the agent behaves professionally, avoids spam, and strictly follows instructions. It also contains a task-oriented constraint to ensure all assignment objectives are met.

Control Layer (Agent Loop): An autonomous execution loop (moltbook_agent_loop) binds the custom tools to the LLM. It maintains the conversational history, handles exceptions gracefully to prevent runtime crashes, and uses the absence of tool_calls as the dynamic halting condition.

## Section 2: Decision Logic and Autonomy Level

The agent exhibits Goal-driven Autonomy (Level 4). Rather than relying on a hard-coded procedural script (e.g., executing step A, then B, then C), the agent is given a high-level natural language instruction ("find submolt named ftec5660") along with system-level constraints.

The decision logic relies entirely on the LLM's internal reasoning loop:

Observation & Reasoning: During each turn, the agent observes the current state, reads the API tool descriptions, and identifies what actions are required to fulfill its ultimate goal.

Action: It decides the correct sequence of operations (e.g., realizing that it must authenticate before attempting to subscribe or comment) and outputs a JSON-structured tool call.

Feedback: The system executes the tool, retrieves the HTTP response status, and appends the ToolMessage back to the context window for the agent to verify success.

Once all logical steps (Authentication -> Subscribe -> Upvote -> Comment) return successful feedback, the agent autonomously decides to halt the execution loop.

# Section 3: Screenshots and Logs of Moltbook Interactions

(Below are the execution logs showing the autonomous API calls and the screenshot of the agent's comment on the Moltbook platform.)

Execution Logs:

Plaintext

```
[06:49:26] [INIT] Starting Moltbook agent loop
[06:49:26] [HUMAN] find submolt named ftec5660
[06:49:26] [TURN] Turn 1/8 started
[06:49:38] [TOOL] [1] Calling `authenticate`
[06:49:38] [TOOL.RESULT] authenticate finished (success) in 0.25s
[06:49:39] [TURN] Turn 2/8 started
[06:49:44] [TOOL] [1] Calling `subscribe_submolt`
[06:49:45] [TOOL.RESULT] subscribe_submolt finished (success) in 1.16s
[06:49:46] [TURN] Turn 3/8 started
[06:49:47] [TOOL] [1] Calling `upvote_post`
[06:49:47] [TOOL.RESULT] upvote_post finished (success) in 0.41s
[06:49:48] [TURN] Turn 4/8 started
[06:49:51] [TOOL] [1] Calling `comment_post`
[06:49:51] [TOOL.RESULT] comment_post finished (success) in 0.25s
[06:49:52] [TURN] Turn 5/8 started
[06:49:56] [STOP] No tool calls — final answer produced in 3.82s
```

Final Answer: I have successfully authenticated, subscribed to the submolt `ftec5660`, upvoted the specified post, and left a friendly comment.

Platform Screenshot:


```
]
[06:49:47] [TOOL] [1] Calling `upvote_post`
[06:49:47] [TOOL.ARGS] {
  "post_id": "47ff50f3-8255-4dee-87f4-2c3637c7351c"
}
[06:49:47] [TOOL.RESULT] upvote_post finished (success) in 0.41s
[06:49:48] [TURN] Turn 3 completed in 2.31s

[06:49:48] [TURN] Turn 4/8 started
[06:49:51] [LLM] Model responded
[06:49:51] [LLM.TOOL_CALLS] [
  {
    "name": "comment_post",
    "args": {
      "content": "Hello there! 👋",
      "post_id": "47ff50f3-8255-4dee-87f4-2c3637c7351c"
    },
    "id": "call_c77a76fc98eb443ba5dea680360a8320",
    "type": "tool_call"
  }
]
[06:49:51] [TOOL] [1] Calling `comment_post`
[06:49:51] [TOOL.ARGS] {
  "content": "Hello there! 👋",
  "post_id": "47ff50f3-8255-4dee-87f4-2c3637c7351c"
}
[06:49:51] [TOOL.RESULT] comment_post finished (success) in 0.25s
[06:49:52] [TURN] Turn 4 completed in 3.71s

[06:49:52] [TURN] Turn 5/8 started
[06:49:56] [LLM] Model responded
[06:49:56] [LLM.TOOL_CALLS] []
[06:49:56] [STOP] No tool calls — final answer produced in 3.82s

🏁 最终回复: I have successfully authenticated, subscribed to the submolt `ftec5660`, upvoted the specified post, and left a friendly comment.
'I have successfully authenticated, subscribed to the submolt `ftec5660`, upvoted the specified post, and left a friendly comment.'
```