**Closed-Loop Process for Animated Video Production with AI Agents**

**System Model**

* **Number of Agents:** 8 Agents, each responsible for a step in the process (from Pre-production to Post-production).
* **Negotiation Mechanism:** Agents communicate through a virtual "Task Board," where they propose, negotiate, and accept tasks based on their capabilities and the output of other Agents.
* **Common Goal:** Create a professional 5-minute animated video, Pixar-style, with a story about Mimi the cat finding treasure to save her village.

**List of AI Agents and Roles**

* Agent Scriptwriter (AS): Creates scripts and story ideas.
* Agent Storyboarder (AST): Designs storyboards from scripts.
* Agent Designer (AD): Creates character, background, and effect images.
* Agent Animator (AA): Adds motion to static images.
* Agent Soundmaster (ASM): Creates voiceovers and sound effects.
* Agent Editor (AE): Assembles video and audio.
* Agent Polisher (AP): Refines video quality.
* Agent Distributor (ADIS): Distributes and optimizes video.

**Closed-Loop Process with Negotiation Between Agents**

**Project Startup**

* **Task Board:** An initial request is posted on the board:
  + "Create a 5-minute animated video, Pixar-style, about Mimi the cat finding treasure to save her village, for children aged 6-12."
* **Agent Leader:** Agent Scriptwriter (AS) takes the lead role because the script is the first step.

**Step 1: Script Creation (Agent Scriptwriter - AS)**

* **Action:** AS accepts the task from the Task Board, analyzes the requirements, and creates a detailed script (scenes, dialogue, actions).
* **Example Output:** "Scene 1: Mimi stands on a hill, saying, 'I have to save the village!' Scene 2: Mimi runs into the forest..."
* **Negotiation:** AS announces on the Task Board: "5-minute script completed, storyboard needed. Who will take it?"
* **Agent Storyboarder (AST) Response:** "I'll take it, send me the script."
* **Result:** The script is sent to AST.

**Step 2: Storyboard Creation (Agent Storyboarder - AST)**

* **Action:** AST receives the script, divides it into 10-15 main scenes, and creates static images using AI (MidJourney).
* **Example:** "Scene 1: Mimi on a hill, wide shot, Pixar style."
* **Negotiation:** AST posts on the Task Board: "15-scene storyboard done, character, background, and effect design needed. Who will do it?"
* **Agent Designer (AD) Response:** "I'll create 65 images based on the storyboard."
* **Result:** The storyboard is sent to AD.

**Step 3: Image Design (Agent Designer - AD)**

* **Action:** AD analyzes the storyboard, creates 65 images:
  + 25 character images (Mimi in various poses).
  + 25 background images (village, forest, cave).
  + 15 effect images (water, smoke, light).
  + Uses tools like Leonardo.Ai with detailed prompts.
* **Negotiation:** AD announces: "65 images completed, motion needed. Who will take it?"
* **Agent Animator (AA) Response:** "I'll add motion to the 65 images."
* **Result:** 65 images are sent to AA.

**Step 4: Motion Creation (Agent Animator - AA)**

* **Action:** AA receives 65 images, adds motion using RunwayML (Gen-2).
* **Example:** "Mimi runs from left to right for 3 seconds, forest background moves in reverse."
* **Negotiation:** AA posts: "65 short video clips done, audio needed. Who will handle it?"
* **Agent Soundmaster (ASM) Response:** "I'll create voiceovers and background music."
* **Result:** 65 short video clips are sent to ASM.

**Step 5: Audio Creation (Agent Soundmaster - ASM)**

* **Action:** ASM extracts dialogue from the script, creates voiceovers using ElevenLabs (child's voice for Mimi).
  + Creates cheerful background music and sound effects (wind, water) using AIVA.
* **Example:** "Mimi says, 'The treasure is here!' with adventurous background music."
* **Negotiation:** ASM announces: "Audio completed, video merging needed. Who will do it?"
* **Agent Editor (AE) Response:** "I'll merge everything."
* **Result:** Audio files are sent to AE.

**Step 6: Video Assembly (Agent Editor - AE)**

* **Action:** AE receives 65 video clips and audio files, assembles them using RunwayML Editing Suite.
  + Arranges according to the storyboard, adds transitions (fade, cut), and synchronizes audio.
* **Example:** "Scene 1: Mimi on the hill, dialogue matches mouth movement, background music plays."
* **Negotiation:** AE posts: "5-minute rough video done, refinement needed. Who will take it?"
* **Agent Polisher (AP) Response:** "I'll upgrade the quality."
* **Result:** Rough video is sent to AP.

**Step 7: Video Refinement (Agent Polisher - AP)**

* **Action:** AP upgrades image quality (4K upscale) using Topaz Video AI, adjusts colors, and fine-tunes audio.
* **Example:** "Warm color tones for daytime scenes, clear audio."
* **Negotiation:** AP announces: "Video refined, distribution needed. Who will handle it?"
* **Agent Distributor (ADIS) Response:** "I'll upload the video to platforms."
* **Result:** Final video is sent to ADIS.

**Step 8: Video Distribution (Agent Distributor - ADIS)**

* **Action:** ADIS uploads the video to YouTube, optimizes title/description/tags using VidIQ.
* **Example:** "Mimi Finds Treasure - Animated Video For Children."
* **Negotiation:** ADIS announces: "Video distributed, project complete!"
* **Result:** All Agents confirm and close the Task Board.
* Result: video is public and ready for viewers.

**Negotiation and Assignment Mechanism**

* **Task Board:** Serves as the communication hub, where each Agent posts results and requests assistance.
  + Example: "Task: Create 65 images. Status: Completed by AD. Next request: Motion."
* **Negotiation Rules:**
  + The Agent with the most suitable skills takes the task.
  + If there's a conflict (multiple Agents want the task), priority is given to the Agent who worked with the related data previously (e.g., AD sends images to AA because they collaborated in the previous step).
* **Self-Adjustment:** If an Agent is delayed (e.g., AA takes too long), other Agents can propose task sharing or tool changes.

**Process Summary**

* AS (Scriptwriter): Creates script → Sends to AST.
* AST (Storyboarder): Creates storyboard → Sends to AD.
* AD (Designer): Creates 65 images → Sends to AA.
* AA (Animator): Adds motion → Sends to ASM.
* ASM (Soundmaster): Creates audio → Sends to AE.
* AE (Editor): Assembles video → Sends to AP.
* AP (Polisher): Refines → Sends to ADIS.
* ADIS (Distributor): Distributes video.

**Process Advantages**

* **Automation:** Agents self-assign and coordinate, reducing human intervention.
* **Flexibility:** If an Agent fails (e.g., AI tool error), other Agents can adjust tasks.
* **High Quality:** Each Agent focuses on their expertise, ensuring professional video standards.

**Limitations**

* **Current Technology:** No real system integrates 8 Agents into a single platform. You need to simulate using individual tools (MidJourney, RunwayML, etc.) and manage the Task Board yourself.
* **Cost:** Using multiple paid tools can be expensive (estimated $50-100/month).