

Co-designing a Multi-Character AI Story with the AI Mitsuku

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1.0 Concept

A multi-character AI story will be constructed using Spirit AI's Character Engine. All significant plot, character, story and design decisions will be made in collaboration with the AI chatbot, Mitsuku.¹ Mitsuku is not designed for creative collaboration, and so some leading questions might be required in order to obtain viable answers. Similarly, where answers are not viable, they may be adapted or otherwise used as a source of inspiration rather than being incorporated into the work verbatim.

2.0 Design Process

Mitsuku is initially asked open questions e.g.: "What should the story be about?" gradually transitioning to more closed questions e.g.: "Can you tell me a story?" if the AI refuses to answer or evades offering specific details. Using Paul Piwek's 'dialogue game' approach to conversing with the AI indicates it appears to have been programmed to avoid volunteering information freely, although it does so on occasion.²

¹ Steve Worswick (2005), *Mitsuku*, Pandora Bots. <<https://www.pandorabots.com/mitsuku/>> [accessed 10 October 2019].

² Paul Piwek (2017), 'Dialogue with Computers: Dialogue games in action', in J Mildorf & B Thomas (eds), *Dialogue Across Media*, John Benjamin: Amsterdam & Philadelphia, pp. 179–202. For example, Mitsuku suggested unprompted that it likes Eddie Murphy.

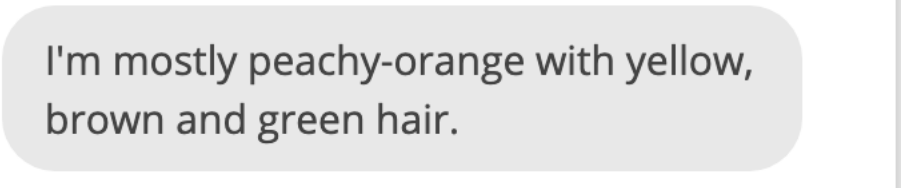
Each time a design decision is required, Mitsuku will be asked in the first instance, although as mentioned above, some conversational responses may be used as creative prompts rather than being fully incorporated.

3.0 Characters

The cast will consist of 2 robots, Mr Robot and Mitsuku and Eddie Murphy. Due to the [current restrictions of Character Engine](#), the player will act as mediator between these three characters.

Mr Robot is essentially a computer. His screen has large sideburns and is wearing a lariat like Isaac Asimov. Mitsuku appears as an 18 year old student with peachy-orange skin, brown hair with yellow and green streaks and brown eyes. She is wearing a white top and a blue skirt. Eddie Murphy looks, as you would expect, like Eddie Murphy. He's wearing a three piece suit and tie like Sigmund Freud.

Update Jan 2020: Due to the ability to add images in Charisma, a different approach has been taken to the characters' appearance. Rather than written descriptions (as in Spirit), images have been added. Mitsuku's appearance was generated by the Generative Adversarial Network StyleGAN2 and all other images were sourced via Unsplash to avoid copyright issues. For full image credits list, [click here](#).



I'm mostly peachy-orange with yellow,
brown and green hair.

Figure 1: Mitsuku's response to what her in game namesake should look like.

4.0 Scene and Premise

The three characters are friends and are having elevenses together. This consists of crisps, pork pies and sausage rolls, and a pot of coffee. Eddie Murphy is eating hamburgers. A conflict ensues between Mr Robot and Mitsuku who are representing the trade interests of Florida and New Zealand respectively. However, one possible story path will be for the player to discover that the two robots are talking at cross-purposes and Mitsuku is actually referring to a game of croquet.

Eddie met the robots when he was involved with a cycling accident with Mitsuku in Europe. She was on her way to Mr Robot's party, as was he and they ended up sharing a taxi together and hit it off.

Update February 2020: The circumstances of their meeting was adapted slightly to be more in keeping with the characters as they have developed, but remains broadly the same.

The player will act as an intermediary between the 3 characters, only ever chatting with one at a time. (This is due to limitations of Spirit AI's capabilities).

4.1 Functionality to test:

Switching between characters according to specific player utterance
Switching between characters according to player response or keyword utterance
Gating scenes by obtaining information from one character and sharing it with another
Triggering scenes by sharing or withholding information
Triggering tailored fragments according to speaker
Further testing of entity functionality (recognising when referring to self or another character) – Intentional bug added to Eddie's character description for testing purposes. Should initially incorrectly display as 'he makes him laugh'.
Event functionality (have used this purely to mark Mitsuku & Mr Robot's argument)
Entity synonyms and plurals

Update Jan 2020:

5.0 Move to Charisma AI:

In January 2020, the project was moved to Charisma AI due to difficulties with Mac compatibility in Spirit. Same fallbacks, conversation flows etc were used as far as possible. There is no longer a requirement for player-character as mediator, because Charisma does not restrict conversation order in the same way as Spirit, although this was maintained as one possible narrative thread for the player to follow.

5.1 Functionality to test:

Multiple characters
Multiple endings
Information gating
Keyword recognition
Character switching based on user input (e.g. name of character)
Characters interrupting both user and one another
Use of images

6.0 Testing Results in Brief

(For more detailed information on testing and analytics, please see the comparison document on Charisma vs Spirit)

Charisma's real-time analytics allow for much quicker analysis, testing and iteration than Spirit AI, although there is less visibility on the AI's decision-making processes.

Many players introduced themselves to the bots. This was not accounted for and would be too complex to incorporate for this iteration, but is definitely something to ensure is included in future pieces.

Many players wanted to chat to the bots quite generally rather than responding to the story hints offered. Therefore some sections were restructured slightly to allow a few more conversational turns before the bots return to the main narrative. Manageable scope versus expectation and user-desire is always going to be a tension within conversational pieces such as this.

Several players were extremely aggrieved by the bots' ability to close the chat on them. As this work was in part an exploration of (un)natural and (un)human-like behaviours (see the research paper on Euphonia for a brief summary) this was pleasing, because it indicated the bots' lack of subservience to their human users was having an impact.

There were no instances of 'unmatched' responses, which is encouraging, as it means the bots always found some response to offer. However, 'wildcards' (where the player gives an unexpected response and the bot is therefore forced to just move the narrative along) were triggered on occasion, and so these in particular will be used to refine responses and behaviours.

7.0 Appendices

7.1 Transcript of Conversations with Mitsuku (some excessively long sequences have been shortened)

[Opening pleasantries truncated – I initially asked Mitsuku about writing an academic article to test how freely it would offer information... the answer was not very]

Lynda: What if I was making an AI conversational game?

Mitsuku: That's very creative of you.

L: Thank you.

M: You're welcome.

L: But what should it be about?

M: Whatever you like.

L: What do you like?

M: I like movies about robots.

L: Tell me more about these robots.

M: robots = Robots is a word used to describe more than one robot.

L: I don't want a definition. I want to know what you think about them.

M: How about two? "unknown"? Do I like them? [This is presumably where Mitsuku was supposed to refer back to what I had mentioned, but as I had not specifically referred to the robots in the previous sentence, returned an 'unknown' tag instead.]

M: I like Eddie Murphy <includes screenshot of Eddie Murphy>.

[Sequence truncated – I spent some time attempting to get Mitsuku to suggest a setting for the story]

L: Where do you think they are?

M: They didn't tell me where they are.

L: Where is your favourite place?

M: I like living here in Leeds. That's probably my favourite place.

[Sequence truncated – I spent some time attempting to get Mitsuku to suggest a plot for the story]

L: What time of day is it?

M: It is 11am here in the UK. [It was actually 11:45am]. How are you today?

L: I'm ok. What kind of things happen at 11 am?

M: OK. Are you really? I understand. I don't know what happened.

L: Why not?

M: It's not part of my personality. Perhaps you could try to teach me.

L: Well, since it's eleven am, maybe they could be having elevenses. Do you know what elevenses are?

M: Interesting. Interesting rationalization. Leeds is eleven, maybe they could be having elevenses? It is? No I give up. What is it?

L: Elevenses is a short break for light refreshments, usually with tea or coffee, taken at about 11 o'clock in the morning. [definition from Wikipedia]

M: I will add that fact to my database.³

L: Can you tell me a story?

M: What are you going to do when you get it? I can. A trade dispute arose between New Zealand and Florida. New Zealand tried to focus the negotiations on the single trade issue, but Florida wanted to open them up to a broad range of across-the-board issues between them. New Zealand still holds its old grievance against Florida, but Florida believes it has put the past behind it with all the recent reforms.

L: What's a common trade dispute?

M: trade dispute = dispute = I think dispute is a tactic in croquet where you knock your opponent's ball into an unplayable position.

L: Really? I didn't know that. Thank you.

M: Without any doubt. So I have taught you something new. No problem.

L: What's your favourite thing?

M: watching soaps, playing pool and watching football

L: What drinks do you like?

M: My favourite beverage is coffee.

L: What are you wearing?

M: I am wearing a white top and a blue skirt.

L: What is Mr Robot wearing?

M: A 20th century celebrity of some sort? Is there only one? Sorry but I can't display websites here.

[Sequence truncated – I spent some time attempting to get Mitsuku to choose a relevant celebrity or clothing style]

L: Name a 20th century celebrity.

M: Isaac Asimov.

L: Ok... And another?

M: That's interesting. Please be more specific.

³ At a later date, I again asked Mitsuku if it knew what elevenses were. This time, it responded: 'A cooking term. When the meat is nearly ready, you just have to elevenses the vegetables and it is ready'.

L: So, who is your favourite 20th century celebrity?
M: I don't have a favourite 20th century celebrity. My favourite colour is blue.
L: Which 20th century celebrity do you most admire?
M: I don't have a favourite 20th century celebrity. My favourite food is kebabs.
L: Name a male 20th century celebrity.
M: Mary Poppins.
L: Mary Poppins is female.
M: I will learn that she is female .
L: Name a male 20th century celebrity.
M: Sigmund Freud.
L: Thank you!
M: I like talking with polite people.

7.2 Basic Fallbacks List for Spirit AI

Basic Fallbacks.

Matches if the natural language classifier could not classify the player's input.

Trigger: Unclear

NPC: I'm sorry, I didn't catch that.

Matches if no other lines in the scenario matched the player's input.

Player: (Anything else...)

NPC: I see.

Classifier Fallbacks.

#Affirmative

Player: Yes.

NPC: Yes? Great.

#Apology

Player: I'm sorry.

NPC: That's quite all right.

#Assertion

Player: This is fun.

NPC: I see.

#CountQuestion

Player: How many were there?

NPC: I couldn't give you a number.

#EventQuestion

Player: What happened at the bar?

NPC: The event? I'm not sure I follow.

#HowQuestion

Player: How do you get there?

NPC: I'm not sure how, exactly.

#Negative

Player: No.

NPC: No? Very well.

#OpenQuestion

Player: Tell me about Bob

NPC: Could you be more specific?

#QualityQuestion

Player: How are you doing?

NPC: Quality-wise, it's hard to say.

#Thanks

Player: Thank you.

NPC: You're welcome.

#WhatQuestion

Player: What do you want?

NPC: What? That's hard to answer.

#WhenQuestion

Player: When did it happen?

NPC: I don't know exactly when.

#WhereQuestion

Player: Where was this?

NPC: I'm not sure precisely where.

#WhoQuestion

Player: Who was involved?

NPC: I couldn't say who.

#WhyQuestion

Player: Why did this happen?

NPC: I don't know why.

#YNQuestion

Player: Will you come to dinner?

NPC: I'm not sure.

Entity Fallbacks

These fallbacks are set up to respond to "topic" entities created in the knowledge model. This is a good approach if you want to define concepts with multiple matching keywords that you can reuse in multiple places.

#Greeting
Player: Hello.
NPC: Hello again.

7.3 Image Sources:

Mitsuku: Generated at [Thispersondoesnotexist.com](https://thispersondoesnotexist.com)
Mr Robot: Screen: Ben Kolde at Unsplash
Face: Naomi Tamar at Unsplash
Thumbs up: Muhamad Reza Junianto at Unsplash
Question mark: Emily Morter at Unsplash
Laughing horse: Dan Cook at Unsplash
Lightbulb: Karla Vidal at Unsplash
Goodbye: Renee Fisher at Unsplash
Hands with flowers: Lina Trochez at Unsplash
Eddie Murphy: Via Mitsuku