Real Characters NPC & Player Interactions

By

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# Assigned Tasks

* Ryan Johnson
  + Upload current working program on GitHub for collaborative design (in progress)
  + Refine Working Design Document (in progress)
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* Tasks not taken up yet
  + Add JSON file system to project capable of holding "Character” class data.
  + Modify Character Class to be more complete
    - Include a place to hold character descriptions
  + Create default Characters for bar Scene
  + Describe each of the “Locations” in the bar.

# High Concept

Have you ever played a game where you have a dialog option and thought, none of these dialog options really are any good? Tired of not actually effecting the story? What I want to build is a means to make NPC and player characters interactions feel much more real and meaningful. The goals are simple, be able to type whatever you want to say to any NPC and get responses based on who that NPC is. The system will track what they know about and what they think of you. NPC will have skills and personality that drive how they talk and what they are doing from moment to moment. They will have jobs, hunger, and needs that they will automatically try to manage them. Quests can be derived from these needs when they ask you for help. Quests will be based on information they have about problems they know something about. Some NPCs may know more than others on subjects. How you talk to them will matter and some people will respond better to threats then kind words for instance. The NPCs do not just sit there and hand out pre-determined text.

# Who is the Customer

Gaming companies who want to have a new way to generate story. Most importantly Interactive stories.

# How It Might Work, and Why?

There is several AI driven API’s out there that are language based for chat bots and other tools. Games have yet to really take advantage of it. The tech is impressive though. Google’s Duplex is a good example of audio chat with AI that could be game conversations if customized. Text options like [pandora bot](https://www.pandorabots.com/docs/aiml-fundamentals/) have Live training options that are also interesting providing improvement over time options also. Conceptually, in game skills would be given one-time descriptors that may be several paragraphs long. How much of that information that is available would be determined by an overall level of skill providing gradation of skill knowledge.

The AI would be trained to recognize how much skill an NPC has on a subject and then based on the text provided and the initial training data provide conversational responses to anything the player asked about the subject. Skills would be assigned to NPC’s either randomly or by a content creator to emulate specific jobs, and traits. For personality and tone the NPC would have traits describing their base personality so that when a conversation happens on any subject the tone is correct for that character. Most APIs on language models are trained millions to billions of, books, journals, and conversations from all over the world. Allowing for believable responses to lots of different subjects including Science Fiction, Fantasy, and current world topics. The smaller skill-based content combined with the individual character descriptions will be used to narrow the NPC’s actual knowledge base hopefully making characters feel unique and different.

Lastly what the Player does matters. Where are you, what have you done that matters to the local NPC’s? Are you famous? Did you kill the main boss? Do you look like a bum? The first impression you make should affect all conversations. It may change over time as you do more are behave and dress differently, but first impressions should be considered. Quests status and how you look, and dress should provide some sort of first impression ending in some sort of modifier to NPC responses. An Innkeeper likes having well-dressed people enter the inn because it implies, they have money to spend. They would be less enthused or calm if you enter covered in blood.

# Project Goal

A text-based sandbox game located in a Tavern/Inn. The Tavern/inn will have locations within it such as rooms, a bar, kitchen, bathroom, tables, game area and stage and NPC’s will occupy some of those areas at any given time. NPC would include a bartender, cook, server, and a diverse set of patrons. Should run like a bar joke. A sailor walks into the bar kind of thing. Each NPC will be different but use the same conversation AI. Each NPC will have a couple of goals while at the bar and have individual skills and personality. How you interact with them will be up to the player. Time will pass and some customers will come and go during various times and staff will do different tasks at various times. NPC will move through the Tavern/Inn performing the tasks they need/want while they are in the tavern such as playing a game, ordering a drink, singing/dancing or whatever else might drive them. They will take breaks to go to the restroom or sleep when tired. They may get drunk and pass out or start a fight all based on how they behave and the player interactions with them.

# Create List

(Working list, trying to keep in simple for now Green important I think though) Keep in mind each bullet point has a description that the AI will reference and combine with training data to generate speech and descriptions when a player looks at something or speaks to them. Anything with a nonvalue will be ignored as if the NPC has no knowledge or only general knowledge on the subject.

* Log on so users is tracked and their characters are saved for them. Ideal for preventing overuse of the number of tokens I will by purchasing.
* Text based Tavern/Inn with multiple rooms the player can navigate through with descriptions for each room or location within the tavern.
  + Overall Tavern Description
    - Entrance
    - Table Area
    - Bar
    - Dance Floor
    - Stage
    - Kitchen
    - Male Bathroom
    - Female Bathroom
    - Storage/Basement
    - Stairs Up
    - Room Hall
    - Each Room (say 4 different rooms high/low end)
* NPC with descriptions and names
  + Owner
  + Bartender
  + Waiter
  + Server
  + Cook
  + Singer
  + Card Dealer
  + Jester
  + Guard
  + Priest
  + Mr./Ms Sticky Fingers
  + Sailor
  + Tailor
  + Grizzled Warrior
  + Wizard
  + Barbarian
* Interaction ideas
  + Cards
  + Pool
  + Darts/Axe Throw
  + Arm wrestle
  + That game with the knife and your hand stabbing between fingers
  + Fight (Keep this SIMPLE!! Not the point of project)
  + Dance
  + Perform
  + Talking
  + Helping/serve clean/bounce
* Skills/Traits
  + Physical
  + Intellect
  + Appeal
  + Perception
  + Drunkenness
  + Fatigue
  + Health
  + Fighting
  + Law
  + Magic
  + Crime/theft/sneak
  + Sailing
  + Crafts
  + Cooking
  + Alcohol
  + Age (may be covered by description)
  + Gender (may be covered by description)
  + Race (may be covered by description)
  + Religion
  + Performance
  + Luck
  + Job/Craft i.e., Tailor (may be covered by description)
  + Money
* Personality, can have more than one (this is still up in the air for balance)
  + Gruff
  + Senile
  + Honorable
  + Friendly
  + Greedy
  + Flirty (avoiding for ethical reasons)
  + Drunkard
  + Pushy
  + Helpful
  + Rude
  + Mean
  + Polite
  + High Society
  + Gutter mouth
* Knowledges/Quests/wants
  + Jokes
  + Local rumors
  + Local Battles
  + History
  + Best things to eat/drink
  + Sea Monsters
  + Looking for work
  + Looking to hire
  + Hungry
  + Thirsty
  + Bathroom
  + Rest
  + Play
  + Money
* Objects/Stuff
  + Pool Ball or Cue
  + Darts
  + Drinks
  + Food
  + Weapon (stretch goal can be handled in description for now possibly)
  + Armor (stretch goal can be handled in description for now possibly)
  + Money
  + Cards

# Data and Programming

* Languages (will be based on API functionality really)
  + C++ (fast but slightly more is required)
  + Java (easy but less powerful, easy to implement This is a small program so it may not matter though)
  + Python (do not know it will have to learn it)
* Data:
  + JSON files (should be good to store all character/NPC data and update it as needed.)
  + SQL Server although this would work, I would like to avoid needing the internet to make this function. I would prefer a standalone product. Although if multiplayer or a much larger game it could become necessary.
* Character Creator for Player (should just be a simple series of questions for now followed by saving to a JSON file with the option to load or create a program startup.

# Implementation Plan

1. Learn more about Language API’s and implementation/limitations and determine feasibility
   1. Pandora
      1. Pros
      2. Cons
   2. GTP-3
      1. Pros <https://beta.openai.com/overview>
      2. Cons
   3. Others
2. Build Bar fill in descriptions
3. Be able to navigate bar and get updated general description of what you are seeing (No AI yet just printing out what is in the descriptions)
4. Build Character Creator
5. Implement JSON file for saving and loading characters
6. Have NPC’s starting locations in the bar with them in place.
   1. Generic description of present NPC’s added to room description
   2. Be able to look at them to get better description
7. Try to tie together with API
   1. Have API generate an “at a glance” description of each location to include who is present and what they are doing in relevance to where the player is located.
   2. Have API generate a detailed description of NPC’s when player tries to inspect them.
      1. This should be affected by Player skills in some way (perception and or drunk).
      2. This should be affected by NPC skills and traits
   3. Be able to converse with each NPC
      1. Consider NPC skills and traits
      2. Consider Description of NPC
      3. Consider Personality traits
8. Add in Games
   1. First Make Games Work
   2. Intermix Conversation and what is going on around player into the game.