**Annie: Anime Assistant Deep Learning AI**

**A Capstone Project Proposal**

**Presented to the Faculty of the Information and Communications Technology Program**

**STI College Lipa**

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**Project Context**

In today’s day and age, there have been a lot of innovations and existing techonologies that can help us to improve your life and make your tasks easier. One of these innovations is the rise of artificial intelligence and bots, and this technology holds a lot of promise and the researchers think that it would be really helpful to find a way to utilize this technology to make the lives or tasks of people easier or atleast the proponents could get a target demographic and the proponents can figure out a project that would specifically help that demographic.

Another technological advancement that is observed nowadays is the rise of social media, social networking sites and just general messaging platforms like facebook, twitter, discord, instagram and many other platforms, these techonologies are quickly gaining traction and popularity which makes it more promising and interesting. One specific platform that caught the interest of the proponents is discord. It is a huge messaging platform geared toward online communities with a lot of possible integrations and it also has a publicly available API that could be used for free. Which is why the proponents intend to take advantage of this.

As for the main topic of this project. Through the years, anime has been making its way to the mainstream media. In fact, many anime titles today have even surpassed several live action movies in terms of revenue and popularity. One of the most recent and certainly hyped series today, “Demon slayer” even made it’s way to the box office top grossing films with its 495 million USD worldwide gross making it the highest-grossing film of 2020 According to Kyodo in his article in thejapantimes.co.jp (2021), not to mention it was released in the middle of the pandemic during which many other films barely even made any success because of the economic recession and quarantine. This goes to show how much traction the anime community is gaining and how large the community itself has become overtime.

One common problem for anime fans online is the fact that there are so many shows out ther and sometimes it can be difficult to find the shows that they like. Another problem that the anime community often complains about is the difficulty in finding the titles of the shows that they see online. A lot of people post memes or anime images online without including the title for the anime that are in the image that they posted. Because of this, many people who are interested in the show struggle in finding the title of the show. Lastly, Finding shows to watch every season can be tedious and keeping track of their airing dates can also be a hassle. This system can help alleviate these problems.

**Purpose and description of the project**

To take advantage of the popularity of the online messaging platforms and social media, as well as the current popularity of anime and the advancements that society have had with artificial intelligence. The proponents intend to make an artificial intelligence bot that also serves as an assistant for anime fans. The goal of the project is to make a bot that will help anime fans to find anime series that they love or to discover series they might enjoy through recommendations.

The core functionality of the bot will be a reverse image search which uses computer vision to help the bot recognize the title of an anime using a screenshot of the anime, this could help users to identify the title of any anime or manga as long as they have a screenshot of it, another core functionality of the bot is anime recommendations, by giving the bot information of what animes the user likes as well as the genres they they like, the bot can curate a list of recommendations that it thinks the user will like as well. And since this is an assistant bot, it will also have the ability to track the schedules of airing shows that the user wants to watch. This way, the user can easily see the release schedules for the anime series that they are watching.

Since many anime fans nowadays are trying to learn japanese as well as to make the interactions of the user with the system more enjoyable for the users, There will also be a mini game that users can play. There will be a kanji quiz feature where the bot can send kanji characters and the users will have to identify them, this could help people to learn japanese easier, There will also be kana quizzes to help users learn hiragana and katakana. For context, Kanji are japanese symbols that represent words and it is also the most complicated in all three of japanese writing systems namely hiragana, katakana and kanji.

**Objectives of the study**

* **To help anime fans to find anime series that they love or to discover series they might enjoy through recommendations using data analysis.**

The bot will have the ability to create a list of recommendations by analyzing the watchlist and watch history of the user.

* **To help anime fanse recognize anime shows by analyzing screenshots of it through computer vision.**

The bot will have the ability to recognize anime titles based on screenshots provided by the users. This way, the bot can help the users to find the anime that they are looking for.

* **To provide a calendar for seasonal animes that the users want to watch.**

The system can automatically create a calendar for all the airing shows for the season and plot all of the series that the users want to watch. This way the users can easily keep track of the shows that they love almost effortlessly.

* **Help anime fans to learn more about kanji and kana.**

Since many anime fans out there wants to learn japanese, the system will also have a little mini-game that let’s them take quick quizzes to help them recognize and understand japanese characters.

**Scope and Limitations of the Study**

The project will be an Artificial Intelligence assistant meant for anime fans, and it will have features such as anime screenshot recognition, anime recommendations, anime seasonal schedule/calendar and manga code vault. In addition, the system will also have a mini-game called kanji-kana quiz where the users can take quizzes where they will have to recognize kanji and kana characters so that they can learn more about japanese writing systems.

Due to the differences in image qualities as well as image resolutions, it is near impossible to get 100% simillarity on screenshots. This shouldn’t be problem though since even if the simillarity isn’t 100% it is still likely that the results will be accurate since the bot will choose the results that have highest similarity. Atleast 80% or above similarity guarantees accurate results. Another limitation is the fact that the bot will inevitably struggle to recognize screenshots which have really low resolution, as well as images that have been cropped, filtered, or edited in anyway. Furthermore, the bot will also struggle to recognize fan-arts of animes and will likely return incorrect results. To increase probability that the bot will give correct results, the user needs to make sure that the image is not edited, not a fan-art or has atleast 360p quality.

Another limitation that needs to be mentioned is the mini-game “kanji-kana quiz”, to keep the game simple and easy to understand, as well as to prevent needless complexity since it’s meant only as a mini-game. The quiz will only be a simple kanji-kana character recognition quiz.

Due to the fact that there is a time difference between when the show is aired in Japan and when it is released for international viewers, which may be delayed by licensing and translations or adding subtitles. There may be instances where the bot says that the episode has been aired but it is still not available on international streaming platforms depending on which streaming platform the user is using and how long the delay is between the releases of the streaming platform and the release in Japan.

**Review of Related Literature**

According to Viet Le, Tej Bhadur, et al., (2020). Customers should be informed that they are being tracked. Conversing with an AI who isn't human by demonstrating that CAs can send compelling messages, they found that deceiving customers into thinking they're talking with a human isn't always essential or desired. The focus should be on using anthropomorphism to achieve better human similarity by signaling things like identity, small conversation, and empathy, all of which have been demonstrated to increase user compliance. Providers should design dialogs as carefully as they design the user experience when using CAs, especially chatbots. Apart from focusing on dialogs that are as near to human-to-human as feasible, providers can use and test a range of additional tactics. AI-based CAs are becoming increasingly popular in a variety of scenarios, and they have the potential to provide significant benefits. There are numerous chances to save time and money. Many users, however, continue to have problems. Interactions with chatbots that were disappointing (e.g., high failure rates), which could lead to skepticism, hostility to technology, which could inhibit users to comply with it. The chatbot makes suggestions and requests. In the research, the researchers created a web-based AI application to demonstrate how Machine Learning, Python, and JavaScript. Approaches may improve user experience. Adherence to a chatbot's request for customer service feedback As a result, our research is just the beginning. ln order to gain a better grasp of how AI-based CAs may improve user compliance by employing machine learning and emphasizing the purposes of machine learning and artificial intelligence, such as the necessity to maintain consistency in the context of internet commerce customer service and markets.

In the article How an AI-based “Super Teaching Assistant” could revolutionize learning, Sachin Waikar (2020) Stated that while significant technological advancements may favor those with the most access, his team anticipates a far more inclusive process for developing their system, one that involves specific design for students from various backgrounds and locations. "The system can assist train new teachers, amplifying its effects and lowering the barrier to creating scaled human-centered education," he argues. As a result, the tool may contribute to a more equitable world in which more students have access to high-quality, skills-focused education.

According to Sudhakar Reddy M, et al. (2020) An intelligent virtual assistant (IVA) or intelligent personal assistant (IPA) may be a software agent which will perform tasks or services for a private supported commands or questions. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically accessed by online chat. In some cases, online chat programs are exclusively for entertainment purposes. Some virtual assistants are ready to interpret human speech and respond via synthesized voices. Users can ask their assistants questions, control home automation devices and media playback via voice, and manage other basic tasks like email, to-do lists, and calendars with verbal commands. The world's digitalization ensured that humans don't need to rely on others for assistance; instead, they can rely on a device that is significantly more efficient and trustworthy and Can meet their day-to-day requirements like computers, mobile phones, and other electronic device. Laptops and other electronic devices have become an integral part of our daily lives. To minimize the complexity of large programs by doing simple computations.

In an article published in June 2019 entitled “AI-Based Digital Assistants: Opportunities, Threats, and Research Perspectves, Alexander Maedche, et al. (2019) emphasized that. Artificial intelligence (AI) is becoming increasingly pervasive in our professional and personal lives. AI-based digital assistants, which are already available in large numbers and for a wide range of uses, are an important field of application. AI-based digital assistant research dates back to Joseph Weizenbaum's well-known ELIZA in 1966. Parallel to this, major technology corporations like Microsoft, IBM, Google, and Amazon have been working on AI-based digital assistants for decades and have lately made them fit for the mass market. Empowered by recent advances in AI, these assistants are becoming part of our daily lives. AI-based digital assistants offer considerable benefits, but they also pose a risk. On the one hand, they are projected to replace humans in ordinary jobs, freeing up time and resources for more difficult tasks. According to IBM (2017), chatbots can help companies save 30% on customer support expenditures. On the other hand, because to its human likeness, Google's newly revealed advanced AI-based digital assistant, Duplex (Google AI Blog, 2018), has sparked a debate regarding potential misuses for deception and fraud. While AI-based digital assistants are becoming more common, most individuals are oblivious to their underlying design and algorithms (Frey & Osborne, 2017), resulting in serious issues and user aversion to their use (Dietvorst, Simmons, & Massey, 2015, 2018).

According to Regina Gubareva and Rui Pedro Lopes, (2020) in their paper “Virtual Assistants for Learning: A Systematic Literature Review”. Virtual assistants are becoming increasingly popular and practical. Technology contributes in a variety of ways, each with its own set of benefits. Virtual assistants are usefull for task automation and offering assistance to students in time management, information access, and other areas. Facilitation of communication The technology is still being developed. It is still in its infancy. There are numerous factors that must be improved in order for virtual assistants to be effective in motivating and engaging students.

In a Study submitted in November 2019 entitled “Voice Assistants and Smart Speakers in  
Everyday Life and in Education”, George Terzopoulos and Maya Stratzemi (2019), explained that Immersive learning technologies have the potential to modernize the educational system. New learning experiences can be provided by virtual reality, augmented reality, and voice assistants. Since voice assistants and smart speakers are only recently becoming more popular, research on this topic is limited. As smart speakers and voice assistants become more common in households, they will be the focus of attention in the next years. Because there are so many challenges, researchers are looking into how they might be employed effectively in the learning process. Because there are so many challenges, researchers are looking into how they might be employed effectively in the learning process. One of these issues is the lack of a wide range of languages, as voice assistants do not speak all of them. Furthermore, voice assistants lack many of the required security precautions and protection filters that students might employ in class. Teachers must be educated and motivated about the benefits of these gadgets before they can be used in the classroom. Although favorable outcomes for kids and instructors have been recorded in the majority of situations, the data is limited, fragmentary, and disorganized.

**Related Studies and/or System**

Karuta (2022) is a collectible card bot powered by Discord that currently features more than 70,000 anime characters. It’s similar to bots such as Mudae, Pokécord, and WaifuBot, but offers many more features to keep your server addicted for months to come. The bot is currently in its beta phase, and its developers are working every day to improve it. There are plans to eventually add expansions, possibly featuring huge lists of video game and manga characters, new editions of existing cards, and much more.

Dank Memer (2021) The Dank Memer is a multipurpose bot that adds a set of functions to your server. Though the list keeps going on, the Dank Memer Discord bot can do music, moderation, currency, and of course, memes. Like [Rhythm Bot](https://thesmartcoder.dev/rythm-bot/), the average bot is known to perform only one function — in this case, just music. Plenty of users tend to identify multipurpose bots as annoying and understandable harmful add-ons to the server. However, that is simply not the case, at least for most multipurpose bots; these bots can prove to be really neat, especially if the owners invest some time in customizing the bots accordingly.

Dank Memer is the best Discord meme bot. The meme bot let you pull up the right meme in any conversation. For example, if you need a meme of an owl, just type “pls hootyboi” and a meme of an owl will appear. You can also generate your own memes. Finally, Dank Memer offers a “currency system” that lets you earn coins in the server by stealing from other users, gambling, and more. You can then use these coins to “buy” special items from the meme bot Discord shop that you can use to play more games or show off to other users.

Tofu Bot (2022), The Tofu bot deals with heroes from almost all the virtual world we have witnessed in our childhood. Adding much more excitement to its services, the bot attracts more and more players by giving custom features such as allowing players to customize cards with the help of cosmetics. Users can come up with amazingly attractive cards with the help of cosmetics such as Frames, Hexes, Auras, and stickers. Users can get access to all of these within the bot itself. Also, the bot doesn’t let its users get bored playing alone all day long, rather it has the concept to create teams of their favorite characters and level them up to make them more powerful and fun. More powerful heroes equip powerful gears and rapidly conquer and expand the kingdom. Along with all these exciting features, the bot also has an alternate feature of playing minigames for its users. There are attractive and simple minigames that can be enjoyed while relaxing throughout. The bot also offers a complete pack of cards to be accessed by players and gain command over multiple heroes together. Players can also decide to have a fusion of their cards to combine the ability of multiple heroes and this unique feature of the bot is the one that takes it forward that the rest. Players can also send gifts to other players and receive the same. This feature helps build a friendly relationship among the players worldwide. Thus, the Tofu bot is a must-recommended one to try out on your server. Invite the bot today, and enjoy its amazing features with friends.

Hydra (2018) Hydra is a music bot with an easy-to-use reaction-based menu and a unique way of showing the current song and queue (optional). The perfect discord music bot with an extensive dashboard! Feature rich with high quality music from Spotify, Deezer, SoundCloud etc.!

Among Discord bots, MEE6 (2020) is one of the best for moderation. The MEE6 bot can be used to automatically scan the chat on your Discord server for rule violations such as foul language, spam, spoilers, and outside links. You can configure MEE6 bot commands to either mute, kick, or permanently ban a user after they commit a certain number of infractions over a given period of time. In addition to moderation, MEE6 can be used to play music on your servers and “level up” users. Users with a higher “level” of server participation unlock access to exclusive server roles with the premium MEE6 bot. The premium MEE6 bot also includes custom commands, timed messages, and custom branding for the bot. Pricing for premium MEE6 starts at $11.95/month, though you can save money with a $89.90 lifetime purchase for one server.

Helper.gg (2020) Helper.gg provides a ticketing system for Discord. This is perfect for businesses and customer service teams that use Discord to plan projects or help clients. These tickets are optimized for Discord–creators can choose to tag certain channels or server roles to bring the issue to the right team. Tickets can then be organized, responded to, and closed by team members. All of the above features come for free, though a $4/month premium plan can be purchased to unlock more customization of tickets and translation features. The $6/month supreme plan adds in a custom bot username, icon, application, and playing status so that you can promote your brand with the bot. Helper.gg is the best Discord bot for teams that use Discord to reach out to clients.

IdleRPG (2020) IdleRPG is one of the best Discord RPG bots. It brings the enjoyment of a text-based roleplay game to your server. You can create your own character, go on quests, buy and trade items, battle, join guilds, interact with Gods, and get married to other players. Build your own narrative tale and interact with the larger world of the RPG with hundreds of different bot commands.

Medal Bot (2020) Medal’s Discord bot, Medal Bot, lets you create and view Medal video game clips from within Discord. When you upload a new clip to Discord, you can also upload it directly to Medal.tv. Additionally, Medal Bot lets you view any Medal clips from within Discord. You can search for clips based on game or another theme or look up the most viewed clips to date. Finally, you and other members of your server can upvote Medal clips from within your Discord server.

You can also use Medal Bot for moderation, server upkeep, and music. Medal Bot can detect spam and mute, kick, or ban offenders. It can also blacklist certain words, auto-assign roles, and delete messages. Medal Bot’s music feature can play songs from YouTube. All of the above features are completely free, though you do need to create a free Medal account to access them.

Xenon (2020) Xenon can be used to back up your Discord server, upload a server template, and transfer messages between multiple channels. These features can help you structure your server and restore it if anything ever goes wrong. Xenon has templates for gamers, education, and fan communities in several languages. These templates include the structure for channels, categories, roles, and more. For backups, you can perform either manual backups or automatic backups after a certain time interval. Xenon’s free Discord bot can be used for up to 15 backups and 1 automatic backup per server. Premium plans run from $4.99-$14.99/month and unlock message saving and transferring, role and nickname backups, and more manual and interval backups.

Apollo (2020) Apollo is the best scheduling bot for Discord. You can create an event from within Discord, and members can click on the check mark, x button, or question mark to mark whether they’re attending. You can delete the event post whenever you want or configure it to delete automatically at a certain time. Apollo can also send automatic private messages to remind attendees of the event. It can even create automated recurring events so you don’t have to recreate the event every time.

Tip.cc (2020) Tip.cc lets you send cryptocurrency tips on Discord. There are no minimum or fees on tips, and you can tip whoever you like, even if they don’t yet have a cryptocurrency wallet. You can also tip multiple users at the same time. The tip.cc bot also lets you make withdrawals and deposits from within Discord. Tip.cc supports over 316 cryptocurrencies such as Bitcoin, Ethereum, and Tether. Tip.cc is completely free.

**Synthesis**

The bot’s purpose is to make it more convenient for anime fans to keep track of the shows they love and discover shows they might love. And because the bot is crossplatform, it will have clients that support windows, linux, web and mobile both Android and IOS it will be more accessible for anyone who wants to use it. Specifically the bot will help users to get the title of anime shows just by providing a screenshot of the anime. The bot can also automatically generate a calendar for the user and automatically update it by analyzing data from different anime sources online and at the same time the bot can also manage the user’s watchlist. In addition to this, the bot can analyze the user’s watchlist and watch history to create a list of recommendations for shows that the user might like depending on the user’s watchlist and history, there will also be a mini game that will help users to learn the japanese writing system. Lastly, there will be a feature that helps users keep track of manga’s from amateur manga authors.

## **Overview of Current Technologies to be Used in the System**

## A big part of the system especially the backend will be written using machine learning and artificial intelligence, the programming languages that will be used for the AI will be python. The API will be written in typescript and will be running on NodeJs and the database that will be used is PostGreSQL. The backend will be deployed in Microsoft’s Azure Cloud server.

As for the front-end clients, the discord bot will be written in python, the web app will be written in Typescript using React framework and will be styled using scss, the mobile apps for both android and IOS will be written in dart using the flutter framework. The desktop client for windows will be written partly in C# and the same client will be made available to linux using proton.

## **Calendar of Activities**

In the 1st week of Capstone activities (February 14 -18), after we created a group, we conducted a brainstorming session in which we discussed various subjects for the Capstone activities. Each person contributes suggestions to the research that we were doing. We came up with a tree title after brainstorming ideas, and each participant prepared a presentation for the title proposal with the thesis supervisor. 

The first meeting of team members with the thesis supervisor took place during the second week of Capstone activities (February 21 –25). Members offered the three titles that they had agreed on. Lalunio, Jerome presented this Annie’s bot idea which is the first title that been agreed of the panels. It must be the first propose that is being agreed without any hesitation because it has a wholesome idea.

They discussed their chosen study subject throughout the 3rd week (February 28 – March 4). After that, we established a research approach for the panels. They also prepared a letter of consent for the system's chosen recipients. Lastly, they proposed the finalized research title and website name, and the contributors.

On the 4th week of doing a Capstone activity (March 7 – 11), they started to divide chapter 1 which is the Introduction, project context, purpose and the description, objectives of the study, and the scopes and delimitations of the study. They divided the portion of Chapter 1 so that each of the members contributed to making the documents. This week our leader gives us tasks so we can work together all the thing that must have been done.

They began working on Chapter 1, which is the introduction, during the 5th week of conducting a Capstone project (March 14–18). This week, they'll also hold a meeting to discuss potential features and the language they'll use to build the system

On the 6th week (April 19- April 24) of activities, each proponent has their own designated activities in creating the Chapter 2-Review of Related Literature/System. Proponents collect all the links of the articles and journals they have researched. Proponents also made some improvements with regards to their modules in Scope and Limitations of the study. Throughout the week, proponents spend time in reading the articles, and others are busy studying the language that they will be using.

 For the 7th week of the activities (April 26 – May 01), proponents continued the Chapter 2 – Review of Related Literature/System, while creating the Chapter 3 – Technical Background. The main programmer of the proponents did the Resources, others did the Overview, and the group did the Calendar of Activities and Gantt Chart. 

Proponents had the meeting with the thesis adviser on the 9th week (April 26 – May 01) for the checking of the two chapters which are the Chapter 1 – Introduction and Chapter 2 – Review of Related Literature/System. Thesis adviser finally approved the Chapter 1, but proponents must provide a short description with their objectives of the study, and proponents must provide an additional study with their Chapter 2.

Gant Chart

**Resources**

* **Hardware**
  + **Development**
    - **CPU**: AMD Ryzen 3 3200GE (4) @ 3.300GHz
    - **GPU**: AMD ATI Radeon Vega Series / Radeon Vega Mobile Series
    - **Memory**: 16 GB ram
    - **Storage**: 100 GB rom
  + **Deployment – Microsoft Azure Bs-series Virtual Machine**
    - **Ram**: 0.5 GiB ram
    - **Temporary** **Storage**: 4 GiB rom
    - **Number** **of** **Cores**: 1
    - **Instance**: B1ls
* **Software**
  + **Operating system**
    - **OS**: Arch Linux x86\_64
    - **Kernel**: 5.17.3-arch1-1
    - **Shell**: bash 5.1.16
    - **Desktop Environment**: Plasma 5.24.4
    - **Window Manager**: Kwin
    - **Terminal**: Konsole
  + **Development**
    - Python
    - Javascript
    - Typescript
    - Scss
    - NodeJS
    - Dart
    - Flutter
    - C#
    - .Net Framework
    - Electron
    - Git
    - Github
    - Vim
    - VsCode
    - Visual Studio
  + **Deployment**
    - Microsoft Azure
    - Discord
    - Replit
    - Github Pages