(Board 54/Work in Progress) Exploring How an Unofficial Discord Server Supports Undergraduate Learning in Computer Science

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Abstract

WIP: Discord, a social platform originally targeted for the videogame community, is becoming more and more popular as a tool for group projects, class discussions, and community for computer science (CS) students. At our university, a group of undergraduate CS students started a public, unofficial CS departmental server in 2017 where students can join and talk to others in their classes under a thin veil of anonymity. Through the years, this Discord server has grown, it now houses 2,353 current undergraduate and graduate students, current university professors, alumni working within the industry, and CS enthusiasts not related to the institution. In this work-in-progress paper, we explore how CS students at a 4-year institution in the Southeastern United States utilize their unofficial departmental Discord server to complement and enhance their education. We scraped four semesters' worth of general and upper-level course-related conversational data from this server to analyze how this long-standing community comes together to support one another in the journey to obtain their undergraduate degrees. Our content analysis is currently ongoing, but we generally expect to see alumni and professors providing advice and guidance in course channels, alumni providing their experience and insights into the job market, students providing feedback about course content and offerings, and students collaborating on projects and exam or quiz study guides. In addition, we expect to see students organizing class meet-ups and group study sessions inside and outside of the Discord server. However, more themes may emerge through our analysis. From this, we aim to show the benefits of non-institutionally organized, student-led communities and provide recommendations to help facilitate building an online Discord community.

Introduction

Discord, an instant messaging and voice over internet protocol (VoIP) platform, has increased in popularity since its creation in 2015. Discord provides voice, video, and text chatting to its users, which builds upon its predecessors (Skype, TeamSpeak, and Ventrilo) and provides competition to other similar software such as Microsoft Teams and Slack. Originally Discord was intended solely as a platform for gamers to talk to one another, however it has become a place where communities live in an online space. This growth, partially fueled by the COVID-19 pandemic lockdowns, has made Discord a place where anyone can go to find people with similar interests.

During the COVID-19 pandemic lockdowns, Discord was a popular tool that was used to maintain in-person communities while everyone was unable to meet in person. For example, libraries turned to Discord so they could continue to host their community enrichment programs [1]. Universities also turned to Discord to help engage their students and enhance the online learning environment they provided [2, 3, 4, 5].

As Discord becomes more prominent in students' day-to-day lives, we should aim to identify how Discord communities are impacting student success. We have scraped 4 semesters worth of conversational data from a college computer science Discord server to help identify Discord impacts on student success. In this work in progress paper, we propose an exploratory study to identify how an unofficial departmental computer science Discord server is impacting students' education, relationships, job prospects, and more. We welcome any comments and feedback from the community before we begin our analysis in earnest.

Background

During the height of the COVID-19 pandemic, the world saw a huge increase in remote learning due to the subsequent lockdowns. With this increase in remote learning, many organizations turned to online platforms (such as Facebook, Reddit, and Discord) to continue to host their organizational meetings and events in an online space. Even now, years after the height of the pandemic has passed, these online communities are still thriving.

For example, researchers at Mercer University have found Discord to be a useful tool in their biology classrooms [5]. They found that having a Discord server facilitated real-time communication between students, teaching assistants (TAs), and instructors inside and outside of scheduled class time, allowing students to stay engaged in the course content longer, leading to greater productivity and learning [5]. Others have also used Discord as an addition to traditional online learning tools, creating a sense of community surrounding their classes [6, 7].

A bonus for those using Discord for discipline-focused communities is the longevity of Discord servers. Discord servers can be home to a long list of rotating members, instead of needing to recreate a Discord server for each semester or year. For example, Heinrich and Carvalho investigated a Computer Science, Information Technology, and Mathematics-focused server that had been active for over three years [8]. They found that the server grew organically, with new students joining every semester and contributing to the community. Additionally, they found that students continue to communicate with past classmates, students in different years, and that it allows off-campus or distance students to still make friends and form study groups [6]. Finally, they found that this Discord server helped students make industry connections to help them with their future job hunts [8]. Overall, this server has made a lasting impact on the students that contribute to its community.

Unfortunately, not many of these case studies have been identified and examined within the literature. With our proposed study, we plan to add to the growing body of literature surrounding discipline-focused, educational communities by examining how an organically grown, Computer Science Discord server benefits its members.

Proposed Study Design

In this section, we describe our research questions and our proposed methodology for examining how students are supported by an unofficial Discord server. First, we will discuss our research questions (RQs) and the objectives of this research proposal.

The objectives of this research proposal are to evaluate one unofficial computer science department Discord server to identify the benefits and detriments of participating in this server during an undergraduate degree. We wish to understand:

RQ1: How are server members using this Discord server?

RQ2: What are the perceived benefits and detriments of the community within this Discord server?

The rationale behind RQ1 is first to identify how this Discord server is being used by its server members. Since this server is open to the public, anyone can find and join the server to contribute their knowledge. Additionally, former students, graduate students, and professors make up part of the server's membership, so identifying their contributions to the server will help us further understand the nature of the server, which will help us answer RQ2.

Once we identify who is contributing to the channels we have scraped and what they are contributing, we can then identify the perceived benefits and detriments to current students' education by exploring their conversations from different channels. Additionally, we will be able to provide recommendations to help facilitate building a successful Discord community surrounding an educational department or major.

Before we describe our proposed methodology, we will first describe our Discord server's setup. There are different roles within the server, the server staff (also known as moderators) are composed of current and former students at our institution. Other roles are self-attributed, so every server member can choose to identify their class year or not. Additional roles include those of alumni, graduate students, and professors. The server itself has a server information channel for the server staff to post important information, there are 16 different general chatting channels, each with their own topic. The server also has course channels, where every semester students taking courses can create a new channel where all students in that particular course can come and discuss the content, homework, studying, etc. Lastly, there are two Discord bots that the members of this Discord server maintain and there are three channels for bot discussion.

Next, we will describe our proposed methodology to answer our RQs. We have already gathered four semesters' worth of conversational data posted in our public Discord server of interest.

For each channel scraped, we plan to identify the chatters and their self-selected roles (if any) to quickly determine if they are students. For those who have elected not to select roles, we will then determine whether they identify as a student in the class, current students not in the class, teaching assistants (TAs), alums, or non-students.

Once we have identified all the speakers and their roles, we will then analyze their conversations to further understand how different roles are using the server (RQ1). To do this, we plan to assign each conversation a code based on its overall theme. For example, if multiple students are discussing a homework problem and a student previously in the class helps them understand something, it would be coded as "Homework Discussion w/ Help (former student in course)." We plan to generate a list of codes before we start our analysis and add more as we sift through our data in an iterative process. This thematic analysis will then help us identify the benefits and detriments of how the server is currently being utilized (RQ2) so we can then provide recommendations for those wishing to start their own departmental Discord server.

Next, we will discuss our data collection strategies. Due to the server and its content being public, we have already collected four semesters worth of individual course channel conversations. These semesters include Spring 2022, Summer 2022, Fall 2022, and Spring 2023. Discord does not allow user accounts to scrape data automatically, so we created a bot that was added to our server of interest and automated scraping conversations from all the server's class channels. We used a free, open-source tool called DiscordChatExporter[1] as the basis for our bot.

Our participants will include current undergraduate and graduate students, faculty, alumni and former students from our institution in addition to others with no connections to our academic institution. As of writing this paper, there are 2,353 members in the server. Unfortunately, due to the vast amount of people in the server and the anonymity of Discord accounts, we will not be able to gain insight into the overall demographics of the server.

Potential Outcomes

Through our analysis, we expect to see similar results to Heinrich and Carvalho's investigation of their Computer Science, Information Technology and Mathematics-focused Discord server [6]. Our Discord server of interest is also organically growing, with more students joining each semester. Additionally, our server of interest has been around since 2017, leading to it having over 2,000 members that include alumni, graduate students, undergraduate students, professors, and Computer Science enthusiasts unaffiliated with the university.

We anticipate identifying students helping one another understand course content, alumni helping students with their job/internship hunts, students continuing to communicate with classmates, allowing non-traditional students a chance to keep connected with their courses and classmates, and students forming study groups, which were all identified in Heinrich and Carvalho's investigation [6]. In addition to these topics, we also expect to identify undergraduate TAs, graduate TAs, and professors interacting with their courses to help their students, people unaffiliated with the university asking for help, and students scheduling in-person social meetups on and off campus. Lastly, this server also has two in-house automated Discord bots that the students maintain, so we expect to see bot contributors encouraging other students to add features to the bots.

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[1] https://github.com/Tyrrrz/DiscordChatExporter

Limitations

We acknowledge that there may be limitations to this proposed project. First, the anonymity of Discord profiles and our server of interest being open to the public obscures our population demographics, making it difficult to identify who exactly is affiliated with our institution and who is just a Computer Science enthusiast. Second, since we are analyzing data that is multiple years old, our participants potentially have graduated and may no longer be active members of the Discord server, making it difficult to follow up with them if we have questions. Also, we have no intention of surveying or interviewing current, active members of the Discord server and plan to conduct this project solely on the data we have scraped.

Conclusion

This work in progress paper presented a proposed investigation of an organically growing Discord server focused on a Computer Science department at a 4-year institution in the southeastern United States. We have scraped 4 semesters worth of conversational data and plan on evaluating the themes that emerge to identify the benefits and detriments of this server on students' educations. We propose to thematically analyze the scrapes conversations to identify the different conversational topics that arise between various server member roles. Additionally, through our analysis we plan to provide recommendations for those seeking to start their own departmental Discord server. We welcome any feedback or comments on the proposed study before we begin our analysis.

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