iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** IV **Month of publication:** April 2022

DOI: https://doi.org/10.22214/ijraset.2022.41774

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue IV Apr 2022- Available at www.ijraset.com

Hideout: The Socializing App

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Abstract: Advances in communication technologies offer new opportunities for the conduct of qualitative research. Among these, Hideout—an innovative video conferencing platform—has a number of unique features that enhance its potential appeal to qualitative and mixed-methods researchers. Hideout has become nearly synonymous with office meetings and socializing as people around the world have adapted to life at home amid the coronavirus outbreak. That has put the roughly 9-year-old company in the spotlight more than ever before - for both the good and the bad, as an onslaught of security issues have come to light. As the coronavirus pandemic forced millions of people to stay home over the past month, Hideout suddenly became the video meeting service of choice. It encourages users to connect with friends and familyMany Cybersecurity research companies research says that it found security flaws in video conferencing platforms. While Hideout has addressed the issue, the report raises deeper concerns about the safety of video-conferencing apps that require access to microphones and cameras.
Keywords: video conferencing, communication, community building.

I. INTRODUCTION

Education has been highly affected during the current Covid-19 pandemic. From one day to another, from kindergartens to universities, everyone involved in education, both individually and collectively, has struggled to keep it going despite all the difficulties and restrictions. In our department, we coordinate two study programs in Computer Science (bachelor and master level). More than a year ago, we started to use the Hideout communication platform to keep in touch in real time with both our current students and alumni. Our initial goal has been to create a strong ever growing community, in which our students, their former colleagues, and faculty can communicate easily and, therefore, can truly keep in touch. When the lockdown started, it was obvious for us both that continuing to build and expand this community was the way to go and that using a Hideout-based platform for both formal and informal learning could be really useful both for students and faculty. Hideout is a platform specifically built to enhance communications. This article is free to access and download, along with rights for full text and data mining, re-use and analysis. other areas as well, from study groups to other specific communities (art, hobby, application development, home improvement, and so on). The platform allows its users to communicate via voice, video, and text chat features. They can share various items either through specific community servers, private messages, or group messages. Hideout is available on a variety of hardware and software, from desktops and laptops to mobiledevices, and has a very intuitive user interface, which makes it really easy to use by anyone interested. In 2018, they added two more appealing features, i.e. video calling and screen sharing. There are similar tools that enable online communication, such as Google Classroom and Microsoft Teams, but, in our view, they have major drawbacks. First, all the documents must be stored on their cloud repositories, which raises issues with respect to local accessibility, digital continuity, and copyright. Also, they are CPU-intensive, unlike Hideout. Moreover, both systems lack the intuitive features of Hideout that are essential in developing a close-knit user community. Furthermore, neither chat or bot functionality is provided in Google Classroom API, while the Microsoft API for developing bots requires using their development framework, which would have been really difficult to integrate with our existing GNU/Linux based educational infrastructure. Consequently, we have decided to continue developing our Hideout-based platform and to enhance its functionality towards the accomplishment of our educational needs by adding a comprehensive set of in-house developed scripts. Thus, the last semester and the current one, we have been using Hideout to communicate with the students, to keep going with both classes and laboratories according to the schedule, to have both the semester exams and the graduation ones, and so on. Now we are preparing for our software development team competition to be held also via this Hideout-based educational platform. In this paper, we present this approach of continuing education during the pandemic (both requirements and solutions), and the lessons learnt during this experience.

II. EASE OF USE

A. High Quality Screen Sharing

With the ever increasing use of internet & introduction of 5G the demand for high quality screen sharing 720p 30fps unlike other apps which offer laggy experience.

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B. User Friendly UI

Simple yet functional layout is our goal so that the user can easily navigate through the app.

C. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

D. Units

1) Use either SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses). An exception would be the use of English units as identifiers in trade, such as "3.5-inch disk drive".

2) Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.

3) Do not mix complete spellings and abbreviations of units: "Wb/m2" or "webers per square meter", not "

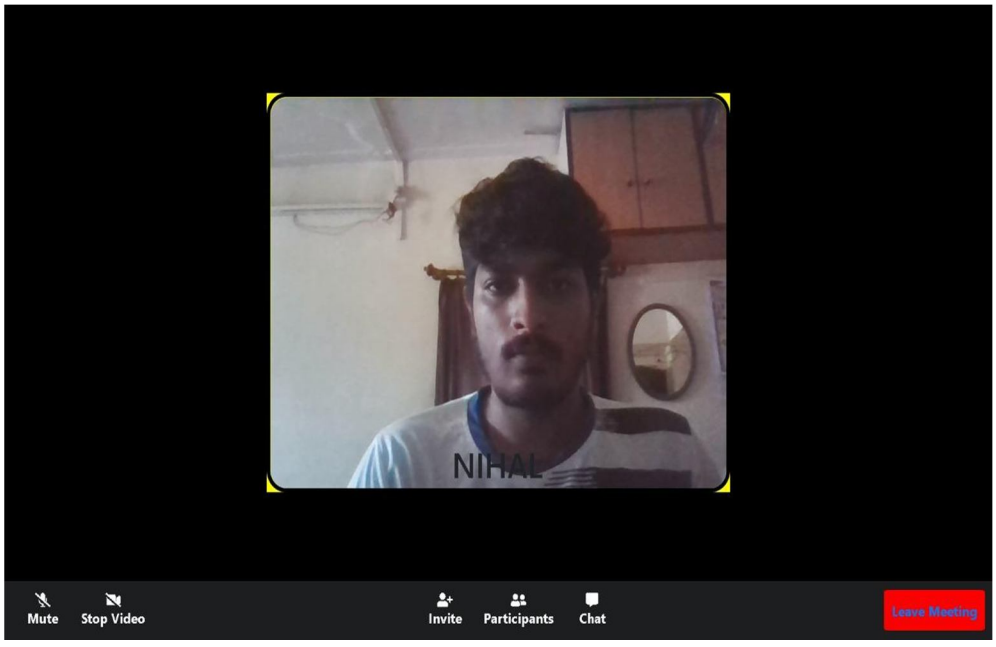
E. Unique Roles & Mention System

Hideout provides a system where every user can be given a distinguished role & there's also a feature wherein the user can specifically mention the said role or user which helps in better communication.

III. BACKGROUND

A growing number of messaging applications provides criminals with additional means to perform malicious acts whilst remaining hidden, by being part of closed communities or via the use of less popular applications. Digital forensics is a branch of forensic science that tries to tackle this problem. With everyday social activities becoming more device and application centric it has become apparent that attackers can take advantage of this popularity and use digital devices and software with criminal intent. As a result, increasing cybercriminal activity has led to the emergence of new subbranches of digital forensics focused solely on research and development of tools needed for the recovery of evidence from new sources of data. "Application-specific forensics" is one of them, and as the name suggests, it is concentrated on recovery, analysis and presentation of data from various applications. Although there are many means of research and ways of recovering information, the ultimate objective of obtaining admissible evidence in court remains unchanged.

*ActualUI



A. Cache

Resource content describes any file stored in cache in the form of a stream of bytes, and this includes files generated by Hideout, as well as files directly uploaded by Hideout users.. Generated files include JavaScript files, chat logs (generated from content posted by users) and other files that contain other application content such as emoticons, app images etc. All content uploaded by users includes text messages, images, audio, and video files as well as linked attachments. The application generates separate json files storing 50 messages of each conversation viewed by the user. If a user views more than 50 messages posted on one channel, new files are created to store additional messages (50 per file). As Discord is a messaging app the most interesting data can be found in chat logs stored in a JSON format, As attachments are parts of many messages they are also stored in cache and can be recovered. While attachments are stored separately from the chat logs, they can be traced back using attachment URL which can be also found in cache entry

B. Figures and Tables

1) Activity Log: The log file is comprised of sections that store recorded information about the user's recent activity on Hideout. Some sections of the file cannot be decrypted with ASCII or UTF-8 but most of the information is stored in clear text. Our analysis of activity log entries shows that the log file stores lists of servers and channels that the user joined


```
{
  "id": "674343679355256863",
  "type": 0,
  "content": "",
  "channel_id": "631148747493212173",
  "author": {
    "id": "631086781009362954",
    "username": "forensictesterben",
    "avatar": null,
    "discriminator": "8466"
  },
  "attachments": [
    {
      "id": "674343679296798760",
      "filename": "TextFile.vb",
      "size": 63,
      "url": "https://cdn.discordapp.com/attachments/631148747493212173/6743436
        /TextFile.vb",
      "proxy_url": "https://media.discordapp.net/attachments/631148747493212173
        /674343679296798760/TextFile.vb"
    }
  ],
  "embeds": [],
  "mentions": [],
  "mention_roles": [],
  "pinned": false,
  "mention_everyone": false,
  "tts": false,
  "timestamp": "2020-02-04T20:01:01.858000+00:00",
  "edited_timestamp": null,
  "flags": 0
},
```


Fig. 1.Hideout Log Structure

The main characteristic of application-specific forensics is that it deals with large numbers of various file types and their structures. In order to read often dispersed data from proprietary formats new tools are required. Therefore, the goal of DiscFor is to automate the process of evidence collection and presentation from local Hideout directories. While there are solutions available for Hideout data recovery, most of them do not acquire complete data. The reason for DiscFor creation was to tackle this issue and develop a robust software solution capable of extracting all information stored on Hideout local files that might be of forensic value and presenting them to the application user. In this section we present an overview of the architecture used in fig.2 . The preservation of data is the first phase of the digital forensic investigation. One of DiscFor's options allows for the creation of a logical copy of the source material. This ensures that data is not being altered by Hideout during further examination, and provides a backup of the original data for further use. Prior to backup creation the user has the option to either search a file system for the Hideout directory or provide an exact path to the target folder.

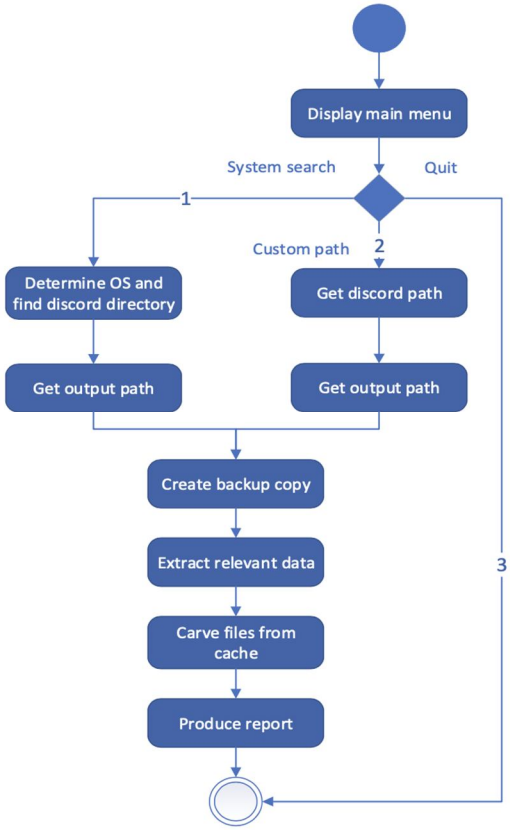


Fig 2. Main Functionalities

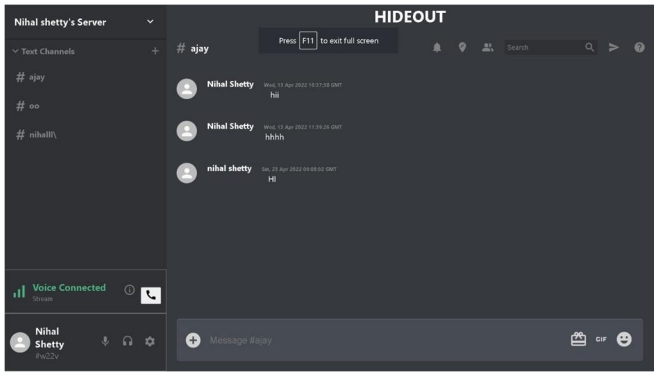


Fig 3. Sample UI

IV. CONCLUSION

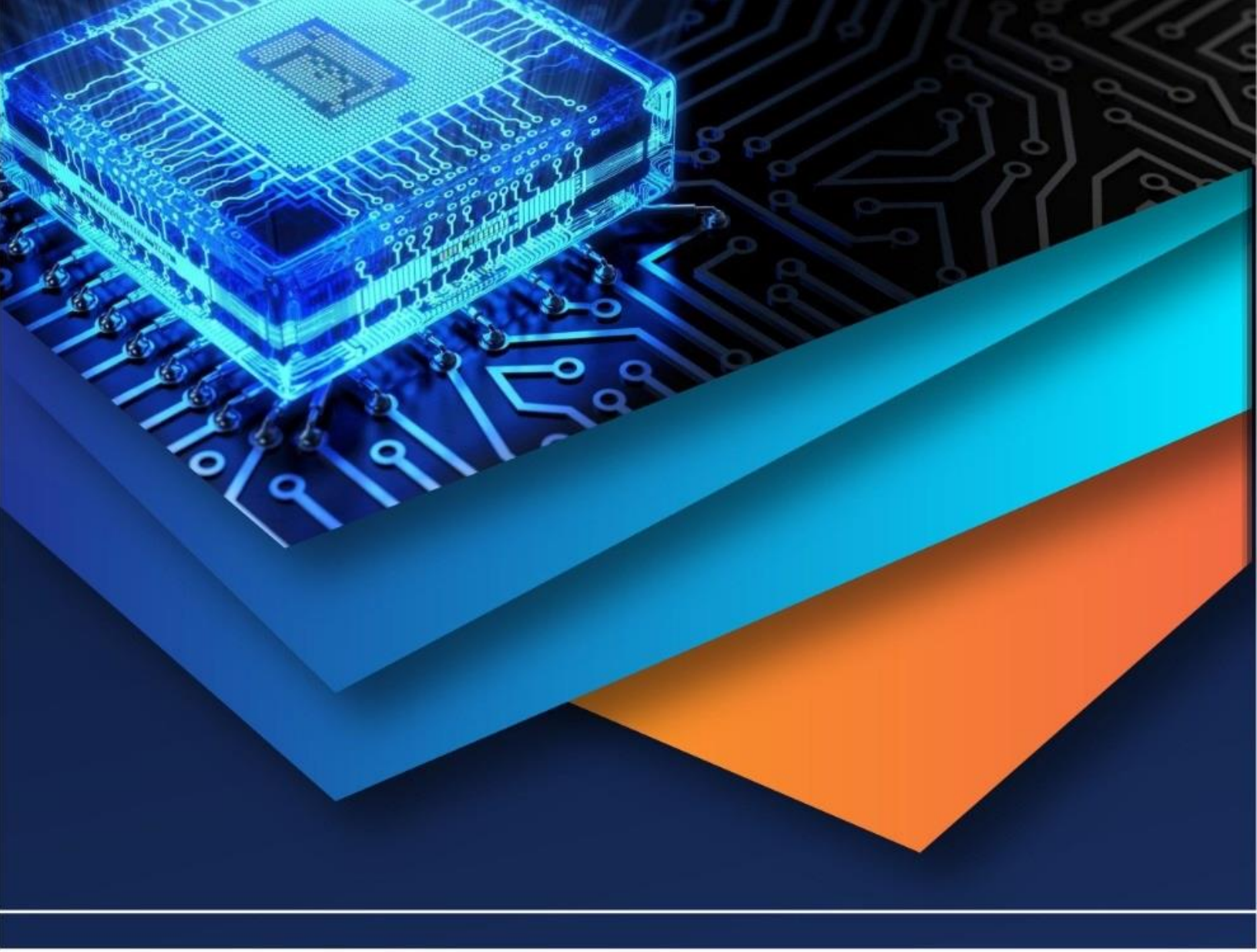
Communication applications like hideout will be experiencing increasing popularity with the rise in the number of internet users worldwide. The use of IM applications offers potentially rich sources of data, which if properly recovered and preserved may become an admissible and invaluable source of evidence in forensic investigations. We have discovered that recent messages can be extracted without accessing a person's account, with the use of tools capable of decoding data stored in cache. Considering that most of the data is kept in the cache memory for 30 days prior to deletion the potential amount of evidence available to forensic investigators is vast. The main advantage of DiscFor lies in its ability to recover important data accurately and in a timely manner from all Hideout sources. Moreover, DiscFor can be run either as a Python script without the need for any external modules, or as an executable file on any system which can be extremely important in a digital forensic investigation. Reporting features allow the investigator to find relevant data quickly without the need to manually view cache or JSON files.

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