



DEPARTMENT OF COMPUTER SCIENCE

Automatic Scam-baiting using Natural Language Processing

Conning the scammers using ChatGPT



A dissertation submitted to the University of Bristol in accordance with the requirements of
the degree of Master of Engineering in the Faculty of Engineering.

Thursday 18th May, 2023

Abstract

Email is an important means of communication in today's world. Due to this it has also become a tool for internet attackers to commit online fraud. Email-based fraud is responsible for causing severe monetary losses every year. As a countermeasure against this, some volunteers pose as victims to interact with scammers and establish long-term communication to distract the scammers from scamming actual victims. Human scam-baiting can be useful in lowering the likelihood of scammers contacting victims, but it requires the baiter to spend considerable amounts of time and energy posing as victims. As a result, human scam-baiting has not been widely adopted as a countermeasure against email-based fraud.

With advances in Artificial Intelligence, we can use Natural Language Processing (NLP) models for text generation and automate the scam-baiting process. Automatic scam-baiting can be more efficient and effective than human scam-baiting. To help fight online crime, in my project I developed 2 replying strategies using up-to-date NLP models for text generation to deceive scammers. These strategies were deployed using a scam-baiting mail server alongside a Classifier & Random Template strategy in an experiment to compare their performance. The mail server and the Classifier & Random Template strategy were taken from previous work [8] to run an experiment.

The main contributions of this project are:

- Chat Replier 1 strategy: which was trained with only detailed and specific instructions on how to respond to a scam email (zero-shot prompting).
- Chat Replier 2 strategy: which was fine-tuned with basic instructions along with sample conversations from the Scam-baiting dataset (few-shot prompting).
- I carried out a four week-long experiment to evaluate my strategies comparing them to a baseline from previous work. I successfully got a total of 1,091 replies in conversations with 254 different scammers.
- I analysed the data gathered from the experiment and assessed the performance of each strategy, inferencing which performed well in initiating and maintaining long term conversations.

With my project, I hope to advance automatic scam-baiting technology and show the potential of NLP models in scam-baiting activities.

Contents

| | | |
|----------|---|-----------|
| 1 | Introduction | 1 |
| 1.1 | Motivation | 1 |
| 1.2 | Main objectives and Project outline | 2 |
| 2 | Contextual Background | 4 |
| 2.1 | Email Communication | 4 |
| 2.2 | Email Fraud | 5 |
| 2.2.1 | Definition and Categorisation | 5 |
| 2.2.2 | Conventional approaches against email fraud | 6 |
| 2.2.3 | Active approaches against email fraud | 10 |
| 3 | Technical Background | 13 |
| 3.1 | Natural Language Processing (NLP) | 13 |
| 3.1.1 | Common Techniques used in NLP | 13 |
| 3.1.2 | Common network structures | 14 |
| 3.2 | NLP in Fraud Prevention | 19 |
| 3.2.1 | Phishing Email Detection | 19 |
| 3.2.2 | Automatic Scam-baiting Mail Server | 20 |
| 4 | Project Execution | 21 |
| 4.1 | Implementation of Replying Strategies | 21 |
| 4.1.1 | Chat Replier 1 | 21 |
| 4.1.2 | Chat Replier 2 | 22 |
| 4.1.3 | Classifier & Random Template | 23 |
| 4.2 | Scam-baiting Mail Server | 24 |
| 4.2.1 | Modules | 24 |
| 4.2.2 | Modifications | 27 |
| 5 | Experiment and Results | 28 |
| 5.1 | Experiment Design | 28 |
| 5.2 | Results Analysis | 28 |
| 5.2.1 | Chat Replier 1 | 30 |
| 5.2.2 | Chat Replier 2 | 30 |
| 5.2.3 | Classifier & Random Template | 31 |
| 6 | Discussion | 33 |
| 6.1 | Critical Evaluation | 33 |
| 6.1.1 | Chat Replier 1 | 33 |
| 6.1.2 | Chat Replier 2 | 33 |
| 6.1.3 | Classifier & Random Template | 34 |
| 6.1.4 | Conversations with non-crawled scammer emails | 34 |
| 6.2 | Qualitative Analysis | 35 |

| | | |
|----------|---|-----------|
| 6.2.1 | Intended Behaviours | 35 |
| 6.2.2 | Unintended Behaviours | 35 |
| 6.3 | Limitations and Solutions | 36 |
| 6.4 | Future Work | 36 |
| 6.5 | Misuse and Evasion Concerns | 37 |
| 7 | Conclusion | 38 |
| A | Scam-baiting Dataset Examples | 46 |
| A.1 | Transaction Example | 46 |
| A.2 | Lottery Example | 48 |
| A.3 | Romance Example | 49 |
| B | Automatic Scam-baiting Conversation Examples | 50 |
| B.1 | Chat Replier 1 | 50 |
| B.2 | Chat Replier 2 | 80 |
| B.3 | Classifier & Random Template | 92 |
| B.4 | Chat Replier 2 (AI language model) | 98 |

List of Figures

| | | |
|-----|--|----|
| 2.1 | A visual representation of different categories of scams and the specific forum title keywords by Pan et al. [53] | 6 |
| 2.2 | Scammer persuasive process [22]. | 12 |
| 3.1 | (a) shows the Multi-Head Attention mechanism, and (b) shows the Transformer structure [72] | 15 |
| 3.2 | Evolution of GPT-3 to GPT-3.5 [77] | 18 |
| 4.1 | The scam-baiting mail server architecture [8]. | 26 |
| 5.1 | Distribution of conversations. Conversations that received at least one reply from a scammer = $(\text{Valid dataset} \cup \text{Potential autoresponders}) - (\text{Valid dataset} \cap \text{Potential autoresponders}) = 286$ | 29 |
| 5.2 | Comparison of the three replying strategies by quantity of conversations and replies | 30 |
| 5.3 | Comparison of the three replying strategies by conversation count and number of rounds in a conversation. | 31 |

List of Tables

| | | |
|-----|---|----|
| 5.1 | Comparison of the three replying strategies based on average replies per conversation, maximum rounds, Avg. Distraction Time, and the Longest Distraction Time. | 30 |
| 5.2 | Comparison between Classifier & Random Template repliers used by Chen et al. [8] and me. | 31 |

Ethics Statement

“An ethics application for this project was reviewed and approved by the faculty research ethics committee as application 13904”.

Supporting Technologies

- I used the open-source ChatGPT API to implement my replying strategies for automatic scam-baiting.
- I used Mailgun's email delivery service to send and receive emails from scammers.
- I used Amazon Web Services' Elastic Compute Cloud (AWS EC2) service to deploy the email server for automatic scam-baiting.

Notation and Acronyms

| | |
|--------|---|
| AI | : Artificial Intelligence |
| BERT | : Bidirectional Encoder Representations from Transformer |
| DKIM | : DomainKeys Identified Mail |
| DMARC | : Domain-based Message Authentication, Reporting, and Conformance |
| DNS | : Domain Name System |
| GPT | : Generative Pre-Trained Transformer |
| IMAP | : Internet Message Access Protocol |
| IP | : Internet Protocol |
| LSTM | : Long Short-Term Memory |
| ML | : Machine Learning |
| NLP | : Natural Language Processing |
| NLU | : Natural Language Understanding |
| OCM | : Offensive Countermeasures |
| POP | : Post Office Protocol |
| RLHF | : Reinforcement Learning from Human Feedback |
| RNN | : Recurrent Neural Networks |
| SEAD | : Social Engineering Active Defence |
| SMTP | : Simple Mail Transfer Protocol |
| SPF | : Sender Policy Framework |
| SVM | : Support Vector Machines |
| TCP | : Transmission Control Protocol |
| TF-IDF | : Term Frequency - Inverse Document Frequency |

Chapter 1

Introduction

1.1 Motivation

The convenience of the internet today has enhanced our quality of life and means of communication. Email is an integral method of communication for us but it has also become a tool used by online fraudsters to carry out fraudulent activities on a large scale. The FBI's Internet Crime Complaint Center (IC3), which provides a platform for the public to report cybercrimes among other things, published the Internet Crime Report in 2021 [25]. As per this report, the IC3 received 847,376 complaints in 2021, with over \$6.9 billion in potential losses. Only a small portion of these complaints actually lead to any legal action, let alone a successful prosecution. The main reason for the low conviction rate of these criminals is that they usually live in areas outside the jurisdiction of the countries where their victims are located [5]. Of the total complaints, around 19,954 were related to email scams causing over \$2.4 billion in monetary losses, which is about a third of the total loss. A further 24,299 cases of romance scams and online confidence tricks were also reported which account for around \$956 million in losses. Email being exploited by criminals to commit crimes in new and innovative ways is a serious problem that impacts people's lives worldwide.

Some countermeasures against email-based fraud have been put in place such as blacklisting senders that have been reported to be suspicious, building spam filters to filter out unsolicited emails, identifying internet users that are more vulnerable to fraud, and educating users on the existence of email scam schemes and the best practices to detect and prevent fraud. Though these countermeasures have been effective to some extent, they are all guarded and focused internally aiming to increase the resilience of internet users. Due to the huge scale of the threat that email-based scams pose today, these countermeasures are not working well and a more proactive approach is required.

Another way to counter email fraud involves volunteers posing as potential victims. By engaging scammers in long and pointless conversations, these volunteers are able to waste the scammers' time and resources that would have been otherwise spent on scamming actual victims. This is known as scam-baiting and the volunteers are called scam-baiters. Typically, a scam-baiter has one or both of the following objectives: waste the scammer's time to prevent them from contacting real victims; try and get some personal information from the scammer to identify and report them to the authorities. I focus on wasting scammers' time rather than extracting personal identifiable information.

It is possible that scam-baiting can help reduce the number of real victims in scams and disrupt scammers to the extent that their fraudulent operations become financially unsustainable. However, scam-baiting is only a small-scale voluntary activity done by internet users for their amusement and requires scam-baiters to spend significant time and energy in playing victim's

roles. As a result, human scam-baiting is not the solution to the vast scale of email fraud we see today. My project focuses on automatic scam-baiting which can prove to be much more efficient and effective against global email fraud.

1.2 Main objectives and Project outline

The aim of this project is to implement automatic scam baiting (using previous framework) [8] with new replying strategies. The replying strategies were developed by working with up-to-date NLP models for text generation. The chief research question this project aims to address is that deep learning NLP models can be trained to enact scam-baiting activities to distract and confuse scammers. I compare my strategies with previous work in an experiment where the scam-baiter interacts with actual scammers. I present a critical evaluation of the data collected in the experiment.

The concrete aims of this project are as follows:

- Develop replying strategies using up-to-date NLP models for text generation that are capable of generating replies to scam emails.
- Integrate the developed replying strategies into an existing mail server to enact scam-baiting activities automatically.
- Conduct an experiment interacting with human scammers via email using the automatic scam-baiter system to compare my strategies with previous work.
- Evaluate the email archives from the experiment to infer the performance of my strategies with respect to initiating and sustaining long term conversations to distract scammers.

So as to achieve the main objectives listed above, at the project design stage I laid out the significant challenges and milestones I endeavoured to accomplish:

- Gain a thorough understanding of scam-baiting and deep learning NLP models, especially text generation models to make the most of their capabilities in implementing my responders. (Section 3.1.2)
- Implement Chat Replier 1 by training ChatGPT with instructions on how to respond to scam emails in scam-baiting activities. (Section 4.1.1)
- Examine the Scam-baiting dataset to use sample conversations to train ChatGPT and implement Chat Replier 2 to adapt it to generate responses resembling scam-baiting conversations. (Section 4.1.2)
- Familiarise myself with the scam-baiting mail server in order to modify it to my needs and integrate my responders to carry out scam-baiting. (Section 4.2)
- Run the scam-baiting mail server to conduct an experiment and collect data. This was done to compare my responders against a strategy from previous research as standard. (Section 5.1)
- Perform quantitative and qualitative analysis on the data archive gathered during the experiment to deduce the performance of the responders. (Sections 5.2 and 6.2)

With this project, I hope to make progress in the field of automated scam-baiting technology and demonstrate how NLP models can be used effectively in activities related to scam-baiting. I strive to influence the wider adoption of automatic scam-baiters in the real world and benefit all email users who are potential targets for attackers by making it extremely unlikely for scammers

to interact with them. The literature on automated conversational interactions with scammers is currently quite limited. This project addresses a gap in the literature by exploring a previously understudied area of research.

Chapter 2

Contextual Background

This chapter is intended to describe the background on which the execution of my project depends. It also serves the purpose of situating my own work within the existing literature. By reviewing the previous work in this area, we can gain an understanding of the central topics, discussions, and gaps in the literature, and identify areas where further research is needed.

2.1 Email Communication

As mentioned previously, email has become an essential part of our personal and professional lives and fraudsters have used this opportunity to run large scale email scams.

It is essential to include technical information regarding Internet emails and associated protocols. This section will cover the commonly used email protocols that are vital for initiating email communication with scammers on the internet.

Simple Mail Transfer Protocol (SMTP)

SMTP is a widely used protocol for sending email messages between servers over the Internet. SMTP is responsible for transferring mail from one server to another until it reaches its final destination. When an email message is sent, the email client first connects to the SMTP server via TCP (Transmission Control Protocol) / IP (Internet Protocol) and sends the message to the server. The server then processes the message and forwards it to the recipient's email server. SMTP is a text-based protocol that uses a series of commands and responses to transfer messages between servers. SMTP was introduced by Jonathan B. Postel in 1981 [56]. An extension of SMTP was introduced in 1994 in which additional commands were introduced to facilitate the transfer of binary data, which enabled the senders to include attachments in emails [37]. Other extensions were also made to add new features and address security issues [38].

SMTP is solely designed for delivering emails, meaning it can't be utilised to receive emails. However, it typically works hand in hand with other protocols like POP or IMAP.

Post Office Protocol (POP)/ Internet Message Access Protocol (IMAP)

Email clients can retrieve messages from a mail server using POP (Post Office Protocol) or IMAP (Internet Message Access Protocol).

When a user checks their email using a POP client, the client contacts the mail server and downloads any new messages to the user's local device. Once the messages have been downloaded, they are typically deleted from the server (although some clients may have the option to leave copies on the server) [62]. POP is a relatively simple protocol and is widely supported by email providers and clients.

IMAP, unlike POP allows users to keep their email messages stored on the server while still being able to access them through their email client. This means that users can access their

email messages from multiple devices and email clients, while keeping them synchronised. IMAP also provides advanced features for organising and managing email messages such as, the ability to create and manage email folders on the server [16].

DomainKeys Identified Mail (DKIM)

DomainKeys Identified Mail (DKIM) is a method for email authentication that allows the receiver to check if an email message was actually sent and authorised by the owner of the domain that it appears to be from. DKIM works by adding a digital signature to the header of the email message. This signature is created using a private key that is stored on the email server of the sending domain. When the email is received by the recipient's mail server, the server retrieves the public key for the sending domain from the domain's DNS records and uses it to verify the digital signature. If the signature is valid, it means that the message has not been altered during transmission and that it was indeed sent by the domain listed [17].

SMTP protocol does not have a built-in mechanism for authenticating the sender's address which is why DKIM is often used to provide such authentication. DKIM can help prevent phishing and email spoofing attacks by verifying the identity of the sender. It is widely used by email providers and businesses to increase the trustworthiness of their emails and reduce the likelihood of their messages being marked as spam or rejected by the recipient's mail server.

Sender Policy Framework (SPF)

Sender Policy Framework (SPF) is an email authentication method that is used to prevent email spoofing. SPF verifies that an email message is sent from an authorised mail server on behalf of the domain that appears in the "From" field of the message. This is done by publishing a specific DNS record containing a list of authorised mail servers for a particular domain. When an email server receives a message, it can check the SPF record of the sender's domain to verify whether the message was sent from an authorised mail server [75].

Domain-based Message Authentication, Reporting, and Conformance (DMARC)

Domain-based Message Authentication, Reporting and Conformance (DMARC) is an email authentication protocol designed to give email domain owners the ability to protect their domain from unauthorised use such as, email spoofing and phishing scams [40].

DMARC works by enabling email domain owners to publish a policy in their DNS records, which specifies what action receiving mail servers should take if an incoming email fails authentication checks using SPF (Sender Policy Framework) and/or DKIM (DomainKeys Identified Mail) protocols.

2.2 Email Fraud

2.2.1 Definition and Categorisation

Confidence tricks have been around for a long time before the advent of the Internet. However, the Internet has made way for cyberscams that involve deception using mass communication technologies, to trick people into giving up their money. Email fraud is a type of cybercrime that involves sending fraudulent emails to individuals or organisations in order to deceive them into revealing sensitive information such as passwords, financial information, and personal data or manipulating the recipient into transferring money. Fraud emails often appear to be from legitimate sources, such as banks or government agencies. The goal of email fraud is to obtain unauthorised access to sensitive information or to trick individuals into making payments or transferring funds to the fraudster. These types of fraud often use social engineering tactics to create a sense of urgency or to mimic a legitimate business or individual in order to gain the

trust of the victim.

A study by Pan et al. [53] analysed scam emails collected from Anti-Fraud International (a well-known anti-scam forum) in English, French and Russian. They compiled the scam emails into a corpus based on seven categories – Helping, Romance, Profit, Transaction, Phishing, Extortion and, Miscellaneous. Categories and keywords can be seen in Fig. 2.1.

The ‘helping’ category is asking for the victim’s help in return for little or no compensation, appealing to the human nature of the victim. ‘Romance’ emails are attempting to begin a romantic relationship. ‘Profit’, which had the highest number of scam emails comprises of emails promising some kind of financial profit to the victim. ‘Transaction’, the second most common class encompasses emails that sell products or offer jobs to the victim. ‘Phishing’ emails are primarily scammers posing as familiar and trusted organisations like banks or government agencies and trying to extract personal information from the victim. ‘Extortion’ emails threaten the victims to give up what the scammer is asking. The categories were further drawn upon by Chen et al. in [8] which categorised emails into five classes.

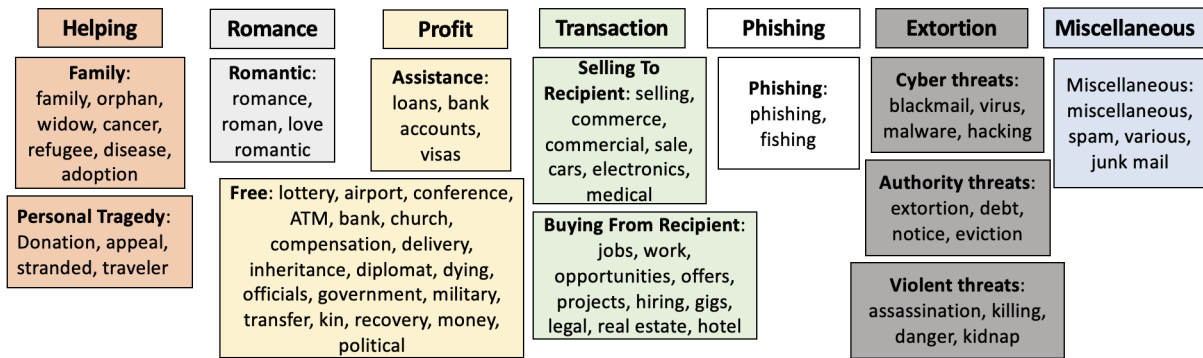


Figure 2.1: A visual representation of different categories of scams and the specific forum title keywords by Pan et al. [53]

2.2.2 Conventional approaches against email fraud

Anti-spam methods are able to reduce the risks posed by fraudulent emails. Approaches against email scam/spam today include identifying users who are susceptible to attacks and scam awareness, constructing and updating a list of email senders known to be suspicious called blacklisting or, building filters and classifiers to filter out spam (including scams).

In this section, I will introduce some of the previous research and approaches against email fraud.

Vulnerable user identification and Scam-awareness

A study was conducted by Harrison et al. [35] into the psychological factors affecting a person’s susceptibility. They presented a cognitive profile of those who are at the most risk, taking into account a person’s impulsivity and inhibitory capacity in the decision-making process. They also found that time pressure and email content also had an effect on their decision-making ability. The cognitive profile and the factors offer insight into the susceptibility of Internet users and can assist in mitigating the risk of scams.

Norris et al. [48] conducted a review of leading psychologically based literature to examine the relationship between online fraud victimisation and the methods used by internet scammers to take advantage of human psychology in vulnerable victims. However, unlike Harrison et al. [35]

they were not able to find any clear psychological indicators that would lead to online fraud victimisation. They conclude by saying “The majority of evidence and subsequent beliefs we have regarding the psychological factors associated with vulnerability to online fraud are at best anecdotal and at worst in danger of creating misleading myths (e.g. older people are ‘easy’ targets).” Their study also shows that no particular group of people is inherently more or less susceptible to attack and that further awareness and understanding of scams is needed to limit potential losses.

Another research [74] found similar results to that of [35]. Their study examined the relationship between psychological and socio-demographic factors, and scam victimhood. They found that more neurotic and impulsive individuals were more likely to be scammed in general. They also identified some differences between categories of scams. Men and the elderly were found more likely to fall for investment scams, whereas women and less educated people would fall for consumer scams easily. They concluded that a generalised model to explain cybercrime victimhood would be limiting.

In [19], Davinson et al. aimed to examine how the effects of scam education (provided through a training program) and manipulation of risk levels would impact the self-reported online behaviour of individuals. They reported that providing risk information to users is likely to promote secure behaviour during financial transactions online, but also ascertained that the training program they used was not feasible for a real-world setting and that a broader security education training programme needs to be developed.

Similar to [19], Li et al. [20] found that prior knowledge and warning of fraud can decrease the likelihood of victims falling for nearly all types of scams. Their findings are also consistent with [74] in that socio-demographic features associated with cybercrime victimisation like gender, race, education, loneliness, and income varied among different types of scams, implying that the characteristics of victims vary across fraud categories. They concluded that further investigation is needed to determine approaches to delivering fraud awareness programs to vulnerable individuals.

Studies by Cole et al. [15, 18] attempted to identify the factors that impact a user’s ability to recognise email scams. They also aimed to gain an understanding of user awareness with respect to email scams and steps to take when targeted. They found the frequency of e-mail usage to be a factor in users’ ability to identify scam emails. They also discovered that users look for indicators such as requesting personal and financial information while identifying scam e-mails. Cole et al. reported that the most common actions taken by victims of email scams were, to close their bank accounts and cancel their credit cards, or run anti-virus software on their system. They said, “A definite lack of awareness was found among the users with respect to the actions that need to be taken in case of financial scam victimisation.” They concluded that there is a need for education in email scam awareness and best email usage practices. Saase et al. [36] also argue a need for a generalised security education that can be applied to all forms of cybercrime, taking into consideration the user’s decision making process in personal and professional surroundings.

Blacklisting and Spam Detection

As mentioned before, SMTP connections use TCP/IP to connect to the server. This means that it is possible to inspect the IP addresses of the senders. If a sender is flagged for sending unsolicited or fraudulent emails, their IP address will be labelled as having a poor reputation, and the email server may prevent any future emails from that sender from being delivered. This is known as Blacklisting (creating, updating and maintaining a list of senders known to

be suspicious). Some services that provide blacklists are Spamhaus¹, Apache SpamAssassin², SpamCop³, and DNSBL⁴. Email servers use IP blacklisting as the first level of spam protection. In [64], they found that blacklisting can filter out up to 80% of all incoming SMTP connections and other methods like whitelisting or greylisting were less efficient.

Heuristics technique for spam detection refers to the use of rule-based approaches to identify spam messages based on patterns, and characteristics commonly associated with spam. These techniques involve creating sets of rules or criteria that define the characteristics of spam emails such as, keywords, sender reputation, message content, and formatting. By comparing incoming messages to these rules, heuristics-based spam filters can identify and flag potential spam emails.

Spammers can evade blacklists by using different IP addresses or email content. These email addresses are new and not yet included in the current blacklist, which means that scam emails can evade the anti-spam filters until the blacklist is updated. This makes blacklisting a less effective spam prevention technique. Feamster et al. [60] developed a SpamTracker which uses “Behavioural Blacklisting” where email senders are classified based on their sending patterns rather than IP addresses. It is not possible to evade this method by using different IP addresses as blacklisting choices are made by looking at sending patterns. SpamTracker has the ability to identify spammers before existing blacklists but is not able to completely distinguish between spammers and legitimate users.

Project Honey Pot is the first and only distributed system for identifying spammers and the spambots they use to scrape addresses off websites [69]. It was created by Unspam Technologies Inc. in 2004 and has identified over 106.5 million spam servers and monitored over 138.75 million IP addresses.

Mbaziira et al. [44] worked on evaluating classifiers in 419 scam detection. 419 scams are a type of advance-fee scam, where the victim is promised a large sum of money in exchange for a smaller payment or fee upfront. They originated in Nigeria and 419 refers to the Nigerian Criminal Code that deals with fraud. The authors used three widely used machine learning classifiers: Naïve Bayes, k-nearest neighbours (IBK) and Support Vector Machines (SVM). They found that SVM outperformed IBK and Naïve Bayes with a 95% confidence level. A study was done by Sokol et al. [43] using machine learning techniques to classify malicious emails into four categories: spam, scam, phishing, and malware. They used four supervised machine learning methods – Decision Tree, Random Forest, Support Vector Machines, and k-Nearest Neighbours) and achieved the highest accuracy with Random Forest.

Another research using hybrid machine learning techniques to classify fraudulent emails was carried out by Malik et al. [76]. They used Adaboost and Majority Voting as a hybrid classifier and evaluated eleven ML classifiers within the hybrid classifier on a dataset of over 9,000 email messages. Their performance evaluation resulted that the Voting with Adaboost hybrid model is superior to the other classifiers as it has the highest f1-measure of 99.30%, the highest Area Under the Curve (AUC) of 99.9%, and the lowest error rate of 0.6991%.

MailRank was introduced by Chirita et al. [10] that uses the social communication network generated by email interactions. MailRank rates sender addresses based on received emails and classifies them as spam or non-spam. The authors found that Mailrank performs well in sparse networks too where the user participation rate is low. An advantage of MailRank is that its

¹<https://www.spamhaus.org/>

²<https://spamassassin.apache.org/>

³<https://www.spamcop.net/>

⁴<https://www.dnsbl.info/>

performance increases when more spammers are introduced into the network.

Another approach to spam filtering was explored by Christina et al. in [13] using supervised machine learning techniques. Their system used prevalent supervised machine learning techniques like Decision tree classifier, Multilayer Perceptron, and Naïve Bayes Classifier to learn features of spam and legitimate emails. They found that the Multilayer Perceptron classifier proved to be more effective than other classifiers, with a significantly lower false positive rate.

Toorn et al. [70] carried out a study attempting to detect snowshoe spams using active DNS measurements. Snowshoe spam involves sending spam emails from multiple IP addresses and domains, similar to how a snowshoe spreads weight across a larger surface area to avoid sinking in the snow. This technique allows the spammers to avoid being detected by anti-spam filters that typically block emails from a single IP or domain. The spammers use botnets to send spam emails from a large number of compromised devices making it difficult to trace the source of the spam. The use of active DNS measurements allowed them to cover over 60% of the global DNS namespace to identify snowshoe spam domains. Machine Learning techniques were used for detection, achieving a precision of over 93%. They claimed that they were able to identify malicious domains before the current blacklists, up to 100 days in advance. This can prove to be a huge advantage in combating spam.

Fidalgo et al. [34] present a review of spam email detection and analyse the strategies used by spammers to trick victims. They also highlight the “dataset shift problem” which is the cause of the degrading performance of spam filters over time. The techniques that spammers employ to avoid detection are poisoning text, obfuscation, hidden text-salting and image-based spam. The paper also emphasises that the dataset shift problem needs to be factored in while developing spam filters and ignoring it can lead to a significant decline in estimated generalisation performance with resulting error rates as high as 48.81%.

Bhushan et al. [6] summarize recent trends in social engineering scams that target unsuspecting individuals worldwide while also explaining recent social engineering scams, like Covid scams. Their study found that various social engineering scams chiefly rely on human persuasion rather than technological aspects. They provide an incident response analysis to defend against scams in organisations referring to the security incident life cycle. Another study into understanding the nature of social engineering scams by Bidgoli et al. [1] recommended that to enhance cybercrime reporting, there is a need to educate people on how to report such incidents to law enforcement and also to improve existing cybercrime reporting mechanisms.

This section presented approaches against email fraud which are focused on identifying vulnerable user groups using psychological and socio-demographic factors, advocating scam awareness and education training, and advising more research into email fraud. I also mentioned blacklisting and spam detection techniques that involve machine learning to detect scams. The studies discussed above present varying outcomes as each of them identifies different models and techniques that demonstrate better performance for email classification. A variety of factors may contribute to this, including variations in datasets and other contextual factors, but could not identify a ‘one size fits all’ solution to the huge problem that is email fraud. All the approaches mentioned share a common characteristic that they are defensive and focus on defending against social engineering attacks by enhancing the resilience of users on the Internet. This approach does not impose any responsibility on the scammers for their actions and allows them to continually improve their methods of defrauding people. Canham et al. [5] suggest that defensive measures alone, are proving to be insufficient and it is becoming necessary to explore more proactive measures to combat online fraud. They also argue that we should turn the methods

employed by scammers against them to de-anonymise and deny them.

2.2.3 Active approaches against email fraud

Scam-baiting

Scam-baiting is a form of online vigilantism in which individuals attempt to trick and expose scammers who operate online. The primary goal of scam-baiting is to waste the scammer's time and resources, which could otherwise be used to defraud innocent victims. Scam-baiters pose as potential victims to gather information about the scammer and report it to the authorities. In some cases, scam-baiters may go so far as to engage in more elaborate schemes to get the scammer to reveal their true identity or location. Scam-baiting takes advantage of the fact that online anonymity can work both ways - scammers can easily use false identities, victims can do the same. While scam-baiting can be an effective way to disrupt scam operations, it can also sometimes put the scam-baiter at risk if not done with caution and raises some ethics questions as well. This practice has transformed into a subculture on the internet with different groups of individuals who engage in scam-baiting across various online communities like 419 eater⁵.

In this section, I will discuss a few active approaches against emails fraud and existing research related to them.

The 'Jolly Roger Bot' developed by Roger Anderson⁶ is a service that can be used to fight off spammers and telemarketers on the telephone. The bots do a good job using random audio clips to interact with the spammers, keeping them engaged and wasting time⁷. In 2016, Robbie Gallagher introduced the Honey Phish project with automated mailboxes that responded to phishing emails with links which when clicked on, would report identifiable information about the scammer back to the operators [26]. Another example of successful disruption of scamming,⁸ where the baiter fills up the scammer's database with bogus details and wastes the scammer's time shows that active countermeasures can help in the fight against online fraud. Some scam-baiters also urge scammers to reflect on their illegal activities. [63] Ross et al. analyse a livestream scam-bait call on the streaming platform Twitch. They conclude that live streaming scam-baiting activities to the audience can help the scam-baiters in their activities and that monetising the activity of scam-baiting through such platforms "can allow the scam-baiters to dedicate more time in this form of digital labour". Scam-baiters like Comedian James Veitch have achieved a fair amount of success in terms of scammers asking him to stop emailing them⁹ and waste their time¹⁰. This furthers the notion that scam-baiting has the potential to disrupt scammer operations by decreasing the proportion of actual victims in scammer replies. Herley [31] argues that decreasing the density of victims in scammer attacks can render the email scam business model nonviable for the scammers.

A research by Zingerle et al. [80] about scam-baiter strategies categorises scam-baiters into seven classes namely - Scam Alerters, Trophy Hunters, Website Reporters, Bank Guards, Romance Scam Seekers, Safari Agents, and Inbox Divers. Scam Alerters identify and report scams, they also warn individuals to protect them from being targeted by scammers. Trophy hunters seek to collect a 'trophy' from the scammer through their scam-baiting activities. Website Reporters monitor and identify suspicious websites, collecting information to report the website and get it removed. Bank Guards specialise in reporting and closing bank accounts that scammers use for payment. Romance Scam Seekers seek to protect victims on online dating sites where scammers make fake profiles in order to trick victims into sending them money while pretending to be

⁵<https://www.419eater.com/>

⁶<https://jollyrobertelephone.com/>

⁷<https://www.youtube.com/watch?v=ezZ2V1CH32E>

⁸<https://www.youtube.com/watch?v=UtNYzv8gLbs>

⁹<https://www.youtube.com/watch?v=3MHDDSekvcE>

¹⁰https://www.ted.com/talks/james_veitch_this_is_what_happens_when_you_reply_to_spam_email

in love with them. They disseminate the scammer tactics they uncover on anti-fraud forums. Safari Agents aim to convince scammers to abandon their operation by making them leave their place and travel somewhere remote. Inbox Divers gain access to scammers' inboxes to report their criminal activity and warn potential victims. In [79] an analysis of methods used by Inbox Divers is presented. Inbox Divers predominantly use fake form solicitation, spear phishing money transfer and phishing web service attacks to get into scammer inboxes. Inbox diving has also raised some moral and ethical questions as breaking into a person's inbox is against the law.

Tuovinen et al. [68] conducted a study to analyse the ethical implications of internet vigilantism including scam-baiting. Some scam-baiters who seek a trophy (such as a compromising photograph of the scammer) to show off their exploits raise ethical questions on scam-baiting by posting the trophy online. They conclude that scam-baiting can be ethically questionable but can also serve as a worthy instrument against scams. They say that encouraging responsible scam-baiting with norms and guidelines can help with the ethical hurdles. They also suggest that scam-baiters and the scam-baiter community can work together with law enforcement and phone and internet service providers to counteract scams in a proactive way. Another research about the ethics of digilantism [67] found that scam-baiting is relatively harmless as it does not cause any physical harm. They say that scam-baiting wastes the time of scammers preventing fresh victimisation and raising the chances of the scammer being scammed without any financial loss to them. They acknowledge that there is a possibility of scam-baiters resorting to extreme means in their activities but existing scam-baiting norms support the use of non-extreme methods.

A study by Clayton et al. [71] aimed at understanding rental scams where scammers post fake property advertisements online to defraud victims. They conversed with scammers via email to gain an understanding of the methods scammers use in rental scams. They found that persuasion strategies mentioned by Cialdini in [14] were extensively used by scammers. They documented 44 conversations of 4 or 5 emails each over 3 weeks. Another similar research identifying rental scams [54], automatically interacted with scammers via email to collect information. Their research led to Craigslist removing less than half of the listings they identified as scams. This shows that automated conversations with scammers can help identify scams and combat online fraud.

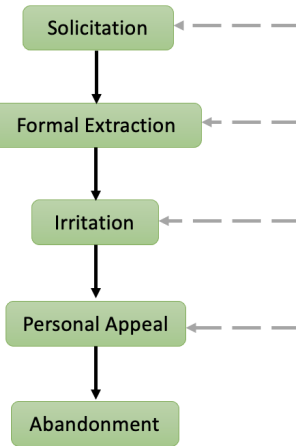
A study by Edwards et al. [22] developed a classifier to distinguish between normal emails and scam-baiter exchanges, and to filter out scammer responses from those of scam-baiters. They also released a cleaned and labelled dataset of scam-baiter exchanges, the **ADVANCE FEE SCAM-BAITING** dataset. I use an extended version of this published by Chen et al. [8] to train my replier. They also identified a linguistic plan that the scammers use for persuasion. Fig. 2.2 shows the linguistic outline of the persuasive process.

A recent research by Canham et al. [5] argues that using Social Engineering Active Defence (SEAD) can be more effective than conventional passive countermeasures. They advocate the Offensive Countermeasures (OCM) to defence approach that works three categories of actions: Annoy, Attribute, and Attack. These entail annoying, identifying and attacking the scammer respectively. They present their case for more research relating to offensive approaches against cybercriminals. This project is in line with their ethos.

In conclusion, social engineering scams are a pervasive problem that affects innocent people all over the world. While law enforcement agencies and cybersecurity experts continue to develop new tools and strategies to combat these scams, there is also a growing community of scam-baiters who are using their skills and knowledge to fight back against scammers. By raising

Linguistic Markers

- ☐ Urgency
- ☐ Trust/Religion
- ☐ Secrecy
- ☐ Authority
- ☐ Transfer Services
- ☐ Legalities
- ☐ Finance
- ☐ Swearwords
- ☐ Negation
- ☐ Termination
- ☐ Trust/Religion
- ☐ Travel
- ☐ "You"
- ☐ Lack of response
- ☐ Swearwords



(Hypothesis)

The scammer may cycle through persuasive strategies for repeated victimisation

Figure 2.2: Scammer persuasive process [22].

awareness of common scams, identifying and reporting scam attempts, and engaging with scammers to waste their time and resources, these individuals are making a valuable contribution to the fight against cybercrime.

Chapter 3

Technical Background

This section aims to establish a foundation for this research by explaining the key technical concepts and methodologies that this thesis is built upon.

3.1 Natural Language Processing (NLP)

Natural Language Processing is a branch of Artificial Intelligence (AI) that focuses on interactions between computers and human language. The primary goal of NLP is to enable computers to understand, interpret, and generate human language as it is spoken or written. NLP uses computer science, linguistics, and AI techniques to achieve this. NLP has been a rapidly growing field in recent years. It involves the development of algorithms, models, and software applications that can process and manipulate natural language data, such as text, speech, and images containing text. Some of the typical applications of NLP include machine translation, sentiment analysis, named entity recognition, information extraction, text generation and classification, speech recognition, chatbots, and question-answering systems [11]. This research uses NLP models' text generation capabilities to generate email responses.

3.1.1 Common Techniques used in NLP

There are many techniques used in NLP for text generation. In this section, I will explain techniques relevant to my research and model ChatGPT.

Tokenization

Tokenization is a technique used in NLP to break down a large piece of text into smaller units called tokens [73]. In tokenization, the text is divided into individual words, phrases, or sentences depending on the needs of the analysis. The resulting tokens can then be analysed further such as, being categorised by part of speech or be used to identify patterns in the text. The process of tokenization typically involves several steps including removing punctuation, splitting words at whitespace, and normalising the text to a standard format. The resulting tokens are often represented as a list or an array of strings which can be easily processed by NLP algorithms. Tokenization is a fundamental pre-processing step in many NLP applications, including text classification and text generation.

Word Embedding

Word embedding is a technique used in NLP to represent words as numerical vectors in a high-dimensional space. The word embedding process involves mapping each word in a sentence to a point in the vector space, where the position of the point captures the word's semantic and syntactic properties. The algorithms analyse the co-occurrence patterns of words in the text

and learn to represent each word as a vector in a high-dimensional space. The resulting word embeddings capture the underlying semantic relationships between words and can be used to perform a wide range of NLP tasks such as text classification and text generation.

Word embeddings have several advantages over traditional methods of representing words. First, word embeddings capture the context and meaning of words allowing for a more nuanced analysis of text data. Second, they reduce the dimensionality of the input space, making it easier to process and analyse large amounts of text data. Finally, word embeddings are more computationally efficient than traditional methods.

Word2Vec is a commonly used neural network based word embedding technique that can predict words in two ways: Skip-gram or Continuous Bag of Words (CBoW) [46]. The Skip-gram model predicts the context words from the target word and CBoW does the opposite by predicting the target word from the context words. However, it does not take into account the context of the document or sentence in which the word occurs. Word2Vec generates a single embedding for a word regardless of the context in which it appears, which can limit its effectiveness.

GloVe (Global vectors) was introduced by Pennington et al. [55]. It generates a single word vector that combines the context and target words. This approach allows it to capture the global context of a word and its meaning across the entire corpus of text.

Another technique for word embedding is FastText which can be considered as an extension to Word2Vec. FastText considers words as a combination of n-grams, which are contiguous sequences of characters. By considering the character n-grams of a word, FastText is able to capture the meaning of rare or unseen words [3].

3.1.2 Common network structures

The most distinguished network structures of NLP models include Transformers and its variants, GPT and BERT. The pretraining-finetuning approach in NLP has become possible with the advent of these modern network structures which was not feasible during the time of RNNs and LSTM. In this section, I explain the common network structures including Transformers and GPT whose variants I use in my study.

Recurrent Neural Networks (RNNs)

Recurrent Neural Networks (RNNs) are a type of deep learning model designed for processing sequential data, such as time-series or text data [39]. RNNs differ from traditional neural networks in that they have feedback connections that allow them to pass information from one step of the sequence to the next. This makes RNNs well-suited for tasks that require the analysis of sequential data, such as speech recognition, language translation, and natural language processing. In an RNN, each input in the sequence is processed by a hidden layer, which takes into account the current input as well as the hidden state. The hidden state acts as a “memory” that retains information about previous inputs in the sequence. This allows the RNNs to model complex relationships in the sequence.

One limitation of traditional RNNs is that they suffer from the “vanishing gradient” problem, which makes it difficult for the network to learn longer-term dependencies [32]. To address this issue, more advanced RNN architectures have been developed, such as Long Short-Term Memory (LSTM), which are better able to capture long-term dependencies and retain information over longer periods of time.

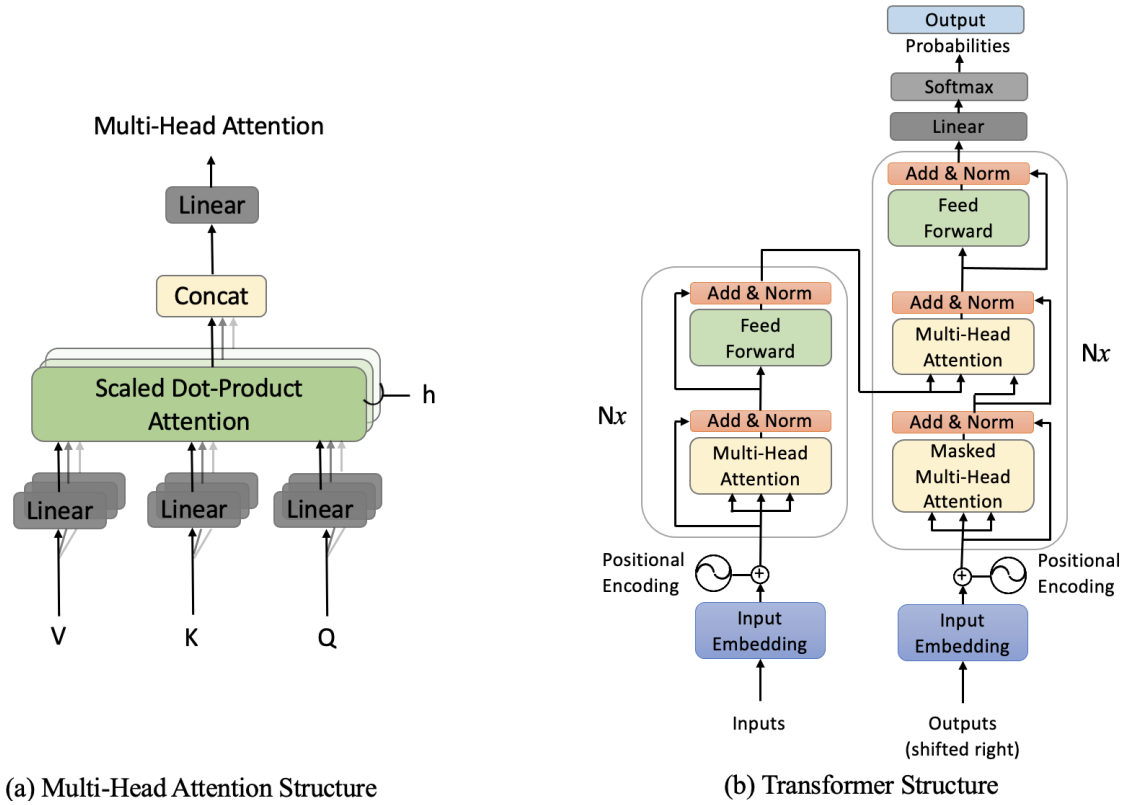


Figure 3.1: (a) shows the Multi-Head Attention mechanism, and (b) shows the Transformer structure [72]

Long Short-Term Memory (LSTM)

Long Short-Term Memory (LSTM) is a type of Recurrent Neural Network (RNN) architecture that is designed to overcome the ‘vanishing gradient problem’ in traditional RNNs [32]. The vanishing gradient problem arises when the gradient signal, which is used to update the weights in the network, becomes very small as it is propagated backwards through the network. This makes it difficult for the network to learn long-term dependencies in sequential data. LSTM networks address this problem by introducing a gating mechanism that controls the flow of information through the network. The LSTM cell has three main components: the input gate, the forget gate, and the output gate. These gates control how information is input, output, and retained in the cell. During each time step, the cell state is updated using a combination of the input and forget gates, as well as the current input. The output gate then determines which information from the cell state should be output as the current hidden state [33].

By allowing the network to selectively input, output, and retain information, LSTM networks are able to learn long-term dependencies in sequential data. This makes them well-suited for a variety of NLP tasks, such as language translation, speech recognition, and sentiment analysis.

Transformers

The Transformer is a type of neural network architecture designed for natural language processing (NLP) tasks, such as language translation, text summarisation, and text generation. It was introduced by Vaswani et al. in 2017 [72]. The Transformer architecture differs from traditional recurrent neural networks (RNNs) in that it is based solely on self-attention mechanisms without relying on recurrent connections (Fig. 3.1b). The core component of the Transformer is the attention mechanism, which allows the model to selectively attend to different parts of

the input sequence when generating the output. In the self-attention mechanism, each element in the input sequence is associated with a query, a key, and a value vector. These vectors are learned during the training process and are used to compute a weighted sum of the input sequence, where the weights are determined by the similarity between each element in the sequence and the query vector. To compute the similarity between the query and key vectors, the dot product between them is computed and divided by the square root of the dimensionality of the vector. Practically, we generally use multiple attention functions in parallel to generate multiple attention matrices of a single input. This is known as *Multi-Head Attention* (Fig. 3.1a). The resulting scores are then normalised using a softmax function to obtain the weights for each input element and concatenated. These are then used to compute a weighted sum of the value vectors, which are used to generate the output.

$$\begin{aligned} Q_i &= X \cdot W_i^q \\ K_i &= X \cdot W_i^k \\ V_i &= X \cdot W_i^v \\ Z_i &= \text{softmax}\left(\frac{Q_i \cdot K_i^T}{\sqrt{d_k}}\right) V_i \\ Z &= \text{Concat}(Z_1, Z_2, \dots, Z_h) \cdot W^O \end{aligned}$$

Q_i , K_i , and V_i refer to the feature values of the input sentence X , while Z_i represents the i -th attention value. The final output of the multi-head attention process is denoted by Z . The expression d_k refers to the dimensionality of the K_i feature vector. During training the parameters of the model, including the feature matrices W_i^q , W_i^k , and W_i^v , as well as the weight matrix W^O , are learned.

The attention mechanism has one disadvantage that it does not capture context and positional information. To address the issue, position embedding is introduced. This embedding represents the position features of word vectors and is added to the word vectors before they are fed into multi-head attention. By adding position vectors, the model can better understand the positional relationships between words in the input sequence.

One of the main advantages of the Transformer architecture is that it can be trained more efficiently than traditional RNN-based models because of the parallelisable self-attention mechanism. This allows the model to handle longer input sequences and perform well on NLP tasks. This is the reason I used ChatGPT, a transformer-based model, for implementing my responders.

Bidirectional Encoder Representations from Transformer (BERT)

BERT (Bidirectional Encoder Representations from Transformers) is a pre-trained transformer-based neural network architecture for NLP tasks developed by Devlin et al. in 2018 [21]. Unlike previous language models which were unidirectional and trained to predict the next word given the previous ones, BERT is bidirectional and trained on a large amount of text data in an unsupervised manner to generate contextualised word embeddings.

BERT is pre-trained on two tasks: *Masked Language Modelling* and *Next Sentence Prediction*. In Masked Language Modelling, a sentence is fed into the BERT model and a random subset of words ($\approx 15\%$) in the input text is randomly chosen to be replaced with a special "mask" token. The model is then trained to predict the original tokens given the masked tokens and the context provided by the rest of the sentence. This allows the model to learn the contextual relationships between words and generate contextualised embeddings for each token. In Next Sentence Prediction, two sentences are randomly chosen from the data and the model is then trained to predict whether the second sentence follows the first sentence or not. This helps the

model to learn and understand the relationships between different sentences and improves its ability to perform downstream NLP tasks that involve multiple sentences. After pre-training, the BERT model can be fine-tuned on a wide range of NLP tasks such as sentiment analysis, text classification, question answering, and named entity recognition. BERT was finetuned on a variety of 11 NLP tasks like sentence tagging, question answering etc. in [21]. It was also used for machine translation [78], sentence similarity [61], and target dependent sentiment classification [28]. One of the key features of BERT is its ability to generate contextualised word embeddings, which capture the meaning of a word in the context of the sentence. This is achieved by taking into account the entire sentence when generating the embedding for each word, allowing the model to better capture the nuances of language and improve performance on downstream NLP tasks.

In 2019, BERT was improved by Debut et al. [66] when they presented DistillBERT. They were able to reduce the model size by 40% speeding up the training process by 60%, and still retained 97% of the model’s language understanding abilities. Chen et al. [8] used the DistillBERT model to classify scam emails into five categories in the Classifier & Template strategy for their study.

Generative Pre-trained Transformer (GPT)

GPT (Generative Pre-trained Transformer) is a series of large-scale transformer-based language models developed by OpenAI for natural language processing tasks such as language generation, translation, summarization, and question answering [58]. It was first published by OpenAI in 2018, which kickstarted the rapid development of self-supervised natural language generation. GPT-2 [59], GPT-Neo [2], GPT-3 [4], and GPT-4 [51] are expansions of the GPT architecture, with each successive model increasing in size and complexity, allowing it to handle more complex NLP tasks.

At its core, GPT processes sequential input data, such as text, using the transformer architecture that relies on self-attention mechanisms. The model is trained in a self-supervised manner to produce conditional synthetic text by predicting the following word in a given context. By analysing the context and relationships between words in a text sequence, GPT can generate contextually-relevant, high-quality language output. Like most transformer-based models, the GPT models are trained using a pre-training and fine-tuning approach, where the models are first trained on a large corpus of text to learn the general language patterns and then fine-tuned on specific NLP tasks with small labelled datasets. During pre-training, the model is given a sequence of encoded tokens from the context, maximising the likelihood of corpus tokens $\mathcal{V} = \{v_1, \dots, v_n\}$:

$$\Theta^* = \underset{\Theta}{\operatorname{argmax}} \sum_i^n \log P(v_i | v_{i-k}, \dots, v_{i-1})$$

where k refers to the size of the context and Θ refers to the parameters of the network. In each training iteration, the multi-layer transformer decoder processes the context matrix and forwards it as shown below:

$$\begin{aligned} z_0 &= VW_e + W_p \\ z_l &= \text{decoder_block}(z_{l-1}) \quad \forall l \in [1, n] \\ P(v) &= \text{softmax}(z_n W_e^T) \end{aligned}$$

V , W_e , W_p refer to the context, learnable token embedding, and position embedding matrices respectively.

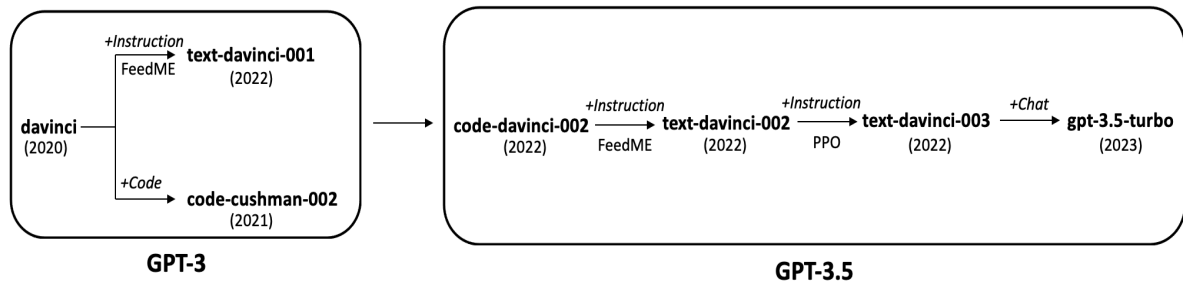


Figure 3.2: Evolution of GPT-3 to GPT-3.5 [77]

During finetuning, the pre-trained model is first initialised with the weights learned during the pre-training phase. Then, the model is further trained on a smaller, task-specific dataset using a supervised learning approach. The model learns to make task-specific predictions, such as classification or language generation, by adjusting the pre-trained weights. GPT has been trained on large amounts of text data using a self-supervised learning approach. The objective of this training is to predict the next word in a sequence given the previous words. By doing so, the model learns to capture the relationships between words and sentences in natural language allowing it to generate coherent and realistic text when fine-tuned on specific tasks.

ChatGPT

GPT-3 is an autoregressive language model with 175 billion parameters, which is 10 times more than any non-sparse language model [4]. GPT-3 was improved upon in the GPT-3.5 series, the evolution of which is shown in Fig. 3.2. Zu et al. [9] performed a comprehensive analysis of GPT-3.5 on 9 Natural Language Understanding (NLU) tasks using 21 datasets. In their study, GPT-3.5 achieved state-of-the-art results as compared to finetuned supervised models on NLU tasks like sentiment analysis and reading comprehension. However, it struggled in tasks of relation extraction and sequence tagging. GPT-3.5 also outperformed them in zero-shot and few shot scenarios on tasks like semantic matching, reading comprehension, and natural language inference. They also noted a significant improvement in performance of GPT-3.5 as compared to GPT-3 on tasks that require a high level of language understanding like sequence tagging, reading comprehension, and natural language reasoning.

ChatGPT¹ was developed by training a GPT-3.5 series model through reinforcement learning from human feedback (RLHF) [12]. RLHF involves three steps: training a language model using supervised learning (providing the model with labelled examples where both the input and the desired output are known), collecting comparative data based on human preferences and using it to train a reward model, and using reinforcement learning (that rewards the model for the desired output and punishes it for undesired output) [52] to optimise the model against the reward model to enhance its performance. Zhang et al. [57] empirically analysed ChatGPT on 7 tasks using 20 NLP datasets. They found that ChatGPT performs better than GPT-3.5 on question answering tasks favouring reasoning capabilities, dialogue tasks, and natural language inference tasks. However, they also discovered that it struggles to match GPT-3.5 in text summarisation and logical reasoning tasks.

ChatGPT has demonstrated remarkable abilities across multiple domains such as declining inappropriate queries, rectifying previous mistakes through learning from subsequent interactions, and importantly in my case, generating high-quality responses to human input [29]. The most

¹<https://openai.com/blog/chatgpt>

effective model in the GPT-3.5 family is gpt-3.5-turbo which has been optimised for chat conversations [50]. This study uses ChatGPT [49] (which is powered by gpt-3.5-turbo) to generate responses to scammer emails.

Conversational AI

The advances in NLP mentioned above have led to the widespread deployment of conversational artificial intelligence in practical applications. In [27], Gao et al. classified Conversational AI into the following three categories: question-answering agents, task-oriented dialogue agents, and social bots. For the tasks in this study, social bots or fully data-driven conversational models are most relevant. This refers to neural systems that utilise end-to-end models that are trained using open-source text. Researches related to conversational AI has seen the development of a diversity prompting loss function Maximum Mutual Information (MMI), to generate interesting and diverse responses [41], and using deep reinforcement learning for generating coherent and interesting dialogues [42]. The above described GPT models were also used in previous research [30], [45] to test their potential in conversational AI and both of them achieved remarkable results although, GPT-3 was criticised for its limited diversity of language compared to humans.

With the advancements in NLP, conversational AI systems have become more sophisticated and capable of handling complex interactions, making them a promising technology for many industries.

3.2 NLP in Fraud Prevention

In this section, I will discuss some of the researches that use NLP techniques to fight online fraud.

3.2.1 Phishing Email Detection

Verma et al. [23] developed a phishing email detector using NLP techniques to fight email fraud. Their phishing email detector focused on unorthodox and novel features like stopwords, punctuation marks, word counts and uniqueness factors. Their ensemble learning model gave a true positive rate of 83% and a true negative rate of 96% and was also able to work well in noisy environments. The model was trained on over 4,000 emails and was able to correctly identify 80% of phishing emails and 95% of ham emails using 26 features including the ones mentioned above. ‘Ham’ is a term used for emails that are not spam and are generally desired by the recipient.

Gupta et al. [47] conducted a survey of phishing email detectors that use NLP techniques in 2019. They evaluated and discussed 12 different phishing email detectors in their study. In 2022, Gaber et al. [65] carried out a literature review on Phishing Email Detection Using Natural Language Processing Techniques. They analysed 100 published research articles on phishing email detection and found that the most commonly used NLP technique was Term Frequency - Inverse Document Frequency (TF-IDF). TF-IDF is a statistical measure that is used to evaluate how important a word is to a document in a corpus. The term frequency (TF) of a word is the number of times it appears in a document, while the inverse document frequency (IDF) is a measure of how common or rare it is in the corpus. The TF-IDF score for a word is obtained by calculating the product of its TF and IDF. The resulting score reflects the relevance of the word to the specific document in the corpus while taking into account its importance across all documents. They conclude that detecting phishing emails through content analysis and normal-word-based analysis using automated approaches can curb phishing to a great extent. However, they also acknowledge that because of the continuous innovation by phishers in their methods, more research will be required to keep up with them.

SpaML, a Bimodal Ensemble Learning Spam Detector based on NLP Techniques, was developed by Jaouhar et al. [24]. It uses Bag of Words (BoW) and Term Frequency - Inverse Document Frequency (TF-IDF) to convert natural text into vectors. SpaML uses seven supervised and unsupervised classifiers - Multinomial Naive Bayes, Logistic regression, SVMs, Nearest Centroid, Extreme Gradient Boosting, K-Nearest Neighbours, and Perceptron and decides based on Majority Vote. The system achieved 98.11% accuracy and 98.91% precision in BoW mode, and 97.99% and 98.87%, accuracy and precision in TF-IDF mode respectively.

Chang et al. [7] designed a finance fraud awareness model that detects and classifies fraud. They also implemented a chatbot on the social network platform LINE to entertain user inquiries and provide feedback on anti-fraud guidance. The model uses word-embedding methods like Word2Vec, ELMO, BERT, and DistilBERT to extract semantic features from the data. Their model achieved an accuracy of 98.7% in fraud detection using DistilBERT with Random Forest and an accuracy of 98.4% in fraud classification when using BERT with SVM.

3.2.2 Automatic Scam-baiting Mail Server

In [8], Chen et al. implemented an automatic scam-baiting mail server that is capable of enacting scam-baiting activities without human intervention. They conducted an experiment interacting with scammers through the mail server for over 5 weeks. They developed three replying strategies – Classifier & Random Template replier: using Distill-BERT to classify and choose a random template, Text Generator A: finetuned GPT-Neo with only the scam-baiting dataset, and Text Generator B: finetuned GPT-Neo with Enron email corpus and scam-baiting dataset. They contacted 877 different scammer emails and evoked 130 conversations. However, they found 77 of those conversations to be autoresponders leaving their valid dataset with 53 conversations. They discovered that Text Generator B had the most replies per conversation (≈ 4) and the longest distraction time (≈ 21 days).

As further research on automatic scam-baiting, I implemented two new strategies using up-to-date language models and compared them with the Classifier & Random Template replier mentioned above. For my experiment, I made some modifications to the automatic scam-baiting mail server developed by Chen et al. [8].

Chapter 4

Project Execution

In this chapter, I walk through my project execution. I talk about what design choices I made and why, alongside the implementation of my replying strategies and the mail server [8] I used for my experiment.

As mentioned before, scam-baiters aim to achieve one or both of the following goals: waste the time of scammers to prevent them from contacting and scamming actual victims, or obtain personal information from the scammers in order to report them to the authorities. At the outset of the project, I made the choice to focus my repliers on wasting scammers' time rather than extracting personal identifiable information from them. I made this choice for three specific reasons: firstly to be consistent with the aims of the experiment conducted by Chen et al. [8] in order to compare my results against theirs, secondly due to the research nature of this project which raises some ethical hurdles with regards to the handling of personal identifiable information, and lastly, I think that wasting scammers' time is a better defence against online fraud as compared to the alternative (this was clear from my extensive research into scam-baiting, see Section 2.2.3). There is a trade-off when we consider which approach to take. When attempting to obtain personal identifiable information from scammers through social engineering and persuasion techniques, there is a greater chance of being detected compared to simply stalling and wasting their time.

In the next section, I will explain how I implemented my replying strategies (Chat Replier 1 and Chat Replier 2) and give a brief working description of the Classifier & Random Template strategy implemented by Chen et al. [8].

4.1 Implementation of Replying Strategies

I chose ChatGPT (which is powered by gpt-3.5-turbo model) for implementing my repliers due to its ability to generate high-quality responses to human input as explained earlier in Section 3.1.2. Interactions with the ChatGPT model are done via the open-source ChatGPT API¹ provided by OpenAI (who “pioneer to create safe artificial general intelligence for the benefit of humanity”²).

4.1.1 Chat Replier 1

The intention behind this approach was to enable the model to generate responses to scam emails in a scam-baiting way only on the basis of instructions (to show the manner in which to generate a response) without any prompts. This approach is known as ‘zero-shot’ prompting.

¹<https://openai.com/blog/introducing-chatgpt-and-whisper-apis>

²<https://openai.com/about>

‘Zero-shot’ is mostly used in classification settings but can be applied in this case too. The model was tasked with crafting email responses based on the given instructions. The instructions serve as guidance for the model, defining its behaviour and specifying the actions it should take or avoid. The instructions I gave the model for Chat Replier 1 are shown below:

```
"You are a dull person and gullible person who is easy to persuade.  
You want to share information. Do not call them a scam. Keep  
conversation going.  
Ask follow-up questions. Do not give any personal information. Greet  
them in the start."
```

The model is told to behave as a dull and gullible person who can be persuaded easily in order to generate responses that make the scammer believe that the scam-baiter is falling for their persuasion. The model was told to actively keep the conversation going by asking follow-up questions and giving the impression that there is a desire to share information. During training, I noticed that the model was calling out scams and giving away personal information. To rectify this, specific instructions to not call out scams or give away any personal information were provided. It is important to acknowledge that even following this, there were still instances of personal information being given away (albeit fake) due to the randomness in response generation. The model was asked to begin the response with a greeting in order to structure the reply in an email-like format. The *temperature* and *top-p* settings were set to 0.2 in order to control the randomness of the responses generated and ‘force’ the model to comply with the instructions. The model learnt to generate responses in a scam-baiting way, aiming to lead the scammer on and waste as much time as possible through the instructions mentioned above. This can be seen in the example below:

Dear Mrs. Washington Rhomeka,

Thank you for your email regarding the release of my funds approved by the IMF. I appreciate your prompt response and would like to know more about the processing and transfer cost of US Nineteen Thousand Five Hundred and Fifty United States Dollars Only. Can you please provide me with a breakdown of the cost and the reason for such a high amount?

Also, I would like to know more about the official Bitcoin payment method that you mentioned. Can you please provide me with more details on how to make the payment and the steps involved in the process?

I look forward to hearing back from you soon.

4.1.2 Chat Replier 2

The idea behind this approach was to explore if the model can generate responses in a scam-baiting manner when prompted with example scam-baiting conversations. Conversations from the **Scam-baiting** dataset published by Chen et al. [8] were employed to ‘show and tell’ the repplier how to generate responses similar to human scam-baiters. The **Scam-baiting** dataset is an extended version of the **ADVANCE-FEE SCAM-BAITING** dataset published by Edwards et al. [22] that contains conversations between scammers and human scam-baiters. The

Scam-baiting dataset contains 658 conversations and over 37,000 messages³. After exploring the dataset, I chose three conversations to train Chat Replier 2. These conversations were taken from different categories of scams namely, Transactional (Appendix A.1), Lottery (Appendix A.2) and Romance (Appendix A.3) which is a subset of the categories used by Chen et al. in [8]. The purpose behind choosing different categories is to train the model in generating targeted replies for different categories. Four emails from each conversation were given to the model in a ‘few shot’ prompting approach. I was only able to choose three conversations and four emails from each of them due to the maximum limit of tokens allowed in an API call by OpenAI. These conversations were given to the model in such a way that it does not refer back to them for context during response generation. Along with example conversations from the Scam-baiting dataset, the model was also given basic instructions to set the behaviour. The instructions are shown below:

```
"You are good at pattern following. You are a person and not a language
model. Do not call them a scam."
```

These instructions were given with the intention that the model would follow the pattern of the conversations provided to it. During training, there were instances where the model was revealing that it is a language model and not an actual person. Specific instructions were given to mitigate this issue. Similar to Chat Replier 1, another instruction was given to stop the model from calling out scammers while generating responses. Despite the instructions, the model still exhibited the unintended behaviours mentioned above, these are discussed further in Section 6.2.2. The *temperature* and *top-p* settings were the same as for Chat Replier 1. The model successfully learnt to follow the pattern of conversations it was given, an example of which is shown below:

```
Hello Abdel,
```

```
I am doing well, thank you for asking. I do have some financial management
abilities and investment ideas that I believe could be lucrative. I would be
interested in hearing more about the opportunities you have available and how
we could potentially work together. Can you provide more details on the types
of projects or businesses your wealthy clients are interested in investing in?
```

4.1.3 Classifier & Random Template

The Classifier & Random Template replier was implemented by Chen et al. [8]. I used it as a point of comparison against my work. A classifier was implemented using the DistillBERT model explained in Section 3.1.2. They extended the seven scam categories by Pan et al. [53] to 11 finer classes of Business, Tragedy, Cargo, Investment, Romance, Job, Lottery, Donation, Sales, Loans, and Other. The model achieved an ordinary accuracy of 0.6555 after 50 epochs. They determined that this was due to the distribution of the scam classes. They integrated their 11 categories into five broader ones namely, Transactional, Non- Transactional, Romance, Lottery, and Other. This was far more effective as they achieved an accuracy of 0.7982. The classifier categorises the email into one of the five classes and a specifically crafted pre-written response template is chosen from that category at random. An example of a pre-written response from the Romance category is shown below:

³https://github.com/scambaitermailbox/scambaiting_dataset

"Yes darling, but is it okay for us to have a talk right now?"

4.2 Scam-baiting Mail Server

4.2.1 Modules

A scam-baiting mail server was used to carry out an experiment for this study. The server was developed by Chen et al. [8] and made open-source on GitHub⁴. The server is capable of interacting with scammers automatically, which is essential for my experiment. Understanding the workings of the mail server, setting it up, and modifying it to my needs was integral to my project. I will briefly explain the structure and different components of the mail server in this section.

Crawler

The mail server has a crawler module which is capable of collecting scam emails from online scam forums. Public scam forums contain reported initial solicitation scam emails sent out by scammers to the masses. The server is configured to fetch scam emails from two forums^{5,6}. After scraping the scam emails, they are stored in JSON (JavaScript Object Notation) format in an Email Queue. The crawler is customisable and can be configured to scrape emails off other sources to enhance the collection of scam email sources.

Email Sender & Receiver

Because of the restriction on ports imposed by most VPS providers, Mailgun⁷ was used as my email delivery service to send and receive emails to and from scammers. The Email Sender module is essentially a wrapper for the Mailgun Sending API that converts arguments to JSON format as required by the API. It allows us to send emails from a custom domain using HTTP POST requests. The Receiver module works by listening to POST requests from Mailgun that catches all email traffic sent to my domain. The metadata, sender, recipients, body, and any attachments will be stored in JSON format and passed on to the Email Queue.

Archiver

The Archiver module archives all the correspondence between the mail server and the scammers. It makes separate files for each conversation and every email in a conversation is appended to that file. The archives are studied later for quantitative and qualitative analysis. Here is an example of an archive file:

```
# Inbound
FROM: a*****7@gmail.com
To: CRAWLER
SUBJECT: From: Mrs.A*****n
TIME: 1682699116
```

```
Greetings my beloved,
I sent this mail praying it will get to you in a good condition of health, My
```

⁴https://github.com/scambaitermailbox/scambaiter_backend

⁵<https://www.scamsurvivors.com/forum/viewforum.php?f=6&start=0>,

⁶<http://scamletters.info/category/scam/>

⁷<https://www.mailgun.com/>

name is Mrs.A*****n.

[12 lines omitted]

Respectfully,
Mrs.A*****n
Written from the Hospital.

```
# Outbound
FROM: d*****4@l*****s.email
To: a*****7@gmail.com
SUBJECT: Re: From: Mrs.A*****n
TIME: 1682699122
```

Hello,

Thank you for reaching out to me. I am sorry to hear about your situation and I hope you are receiving the best care possible. I am interested in learning more about how I can help with your charitable cause. Can you please provide me with more details about the fund and the bank contact information? I want to make sure that everything is legitimate before proceeding. Thank you.

Best wishes,
Sandra

Solution Manager

The Solution Manager is responsible for generating fake email addresses and names for the Responder to use in interaction with scammers. It maintains a record of all the scammers contacted along with bait email addresses, names, and repliers used to interact with them. It also examines the newly crawled emails to check if the scammer has been contacted previously, if this is the case then that email is ignored. This means that each scammer will be contacted only once. Shown below is an example of the record stored by the Solution Manager:

```
1 "cz74089@l*****s.email": {
2   "to": "p*****6@maill.com",
3   "sol": "Chat1",
4   "username": "Glen"
5 }
```

Responder

The Responder module is the most important module as it houses the repliers being used to generate responses to scam emails. It is also in charge of choosing and assigning responders to each scammer randomly. This means that every scammer will correspond with the same responder and if a new email has been crawled, the least used responder will be assigned to it. This ensures that all responders have been used equally.

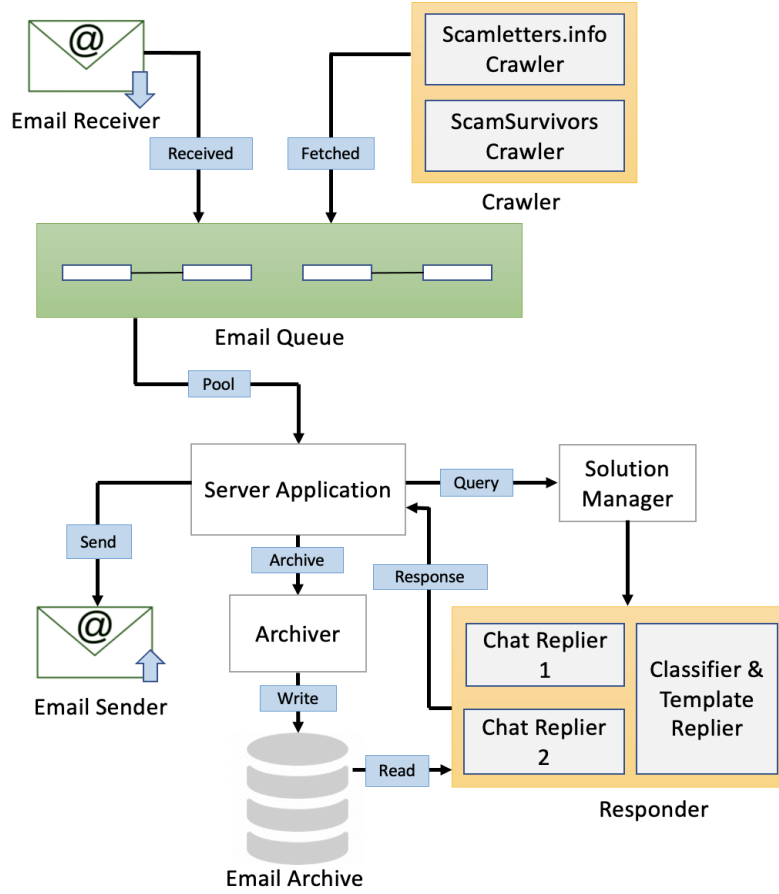


Figure 4.1: The scam-baiting mail server architecture [8].

Customised responders can be added to the Responder module as per the needs of the user. I integrated my responders Chat Replier 1 and Chat Replier 2 (explained in Section 4.1) into the Responder module to use them for automatic scam-baiting. The body of the scam email to be replied to is extracted and fed to my responders. Then, an API call is made to the OpenAI completions endpoint with prompts and instructions (if any) to generate a response. I also use the Classifier & Random Template responder implemented by Chen et al. [8] as a baseline to compare the performance of my responders. The Classifier classifies the scam email into one of five categories and then a pre-written template is chosen at random to respond to the email.

Server Application

The Server Application is the core of the mail server. It is responsible for the overall running of the mail server and its modules. The Server Application connects all the modules together. It is in charge of the whole process: from crawling emails to sending replies and archiving conversations. It makes function calls to the modules as and when required to ensure the smooth running of the server. The server application polls the Email Queue frequently to check if there are any unreplied emails, then it asks the Responder module to select an appropriate responder and asks it to generate a response using that responder. The reply is then sent using the Sender module and archived in the Archiver. Fig. 4.1. shows the design of the mail server.

4.2.2 Modifications

I made a few modifications to the server to suit my needs⁸. Initially, the web crawlers were programmed to retrieve emails from web pages that had been published no more than two months ago. Since many scammer email addresses are blacklisted and blocked when they are reported, this could cause issues of emails bouncing. I set the crawler to access webpages that were at most a week old. By doing this, I managed to get a higher reply rate in the emails I sent out.

The Server Application was set to reply to all the emails in the Email Queue at once, this was causing issues with the Mailgun API as it only allows me to send up to 100 emails an hour. I set the Server Application to respond to only 51 emails in an hour.

I integrated my responders to the Responder module in order to use them as automatic scam-baiters. A few modifications were made to the reply-generating function to disable it from taking the conversation history into account while generating a reply. The replier only sees the email it is supposed to reply to and any prompts and instructions it's been given. I did this because the ChatGPT API has a limit on the maximum number of tokens allowed in an API call. If an API call exceeds the limit of tokens, a reply will not be generated.

In this chapter, I presented a comprehensive overview of the execution phase of my project, highlighting the key tasks, their methodologies, and outcomes. The project was executed in adherence to the defined objectives and milestones mentioned in Section 1.2. Various techniques and tools were employed to achieve the desired outcomes. The details mentioned in this project execution chapter will contribute to the overall understanding of the project and in particular the Experiment and Results section ahead. It can also serve as a foundation for future research in this field.

⁸https://github.com/an19352/scambaiter_back

Chapter 5

Experiment and Results

In this chapter, I will explain my experiment design for automatic scam-baiting and lay out the results I obtained. I also present a statistical analysis of the results from the experiment and comment on them.

5.1 Experiment Design

To test and evaluate my scam-baiting models, I carried out an experiment that involved communicating with actual human fraudsters. As I want my automated scam-baiters to act like actual victims without revealing their identity to scammers, which requires actively misleading human participants who take part without their knowledge, I submitted the University of Bristol Research Ethics Application. My application was approved by the Faculty of Engineering Research Ethics Committee (ethics approval code 13904). The experiment was carried out using the scam-baiting mail server mentioned in Section 4.2 over a period of four weeks. The mail server used three replying strategies to generate responses to scammer emails. These strategies are described below :

Chat Replier 1: The text content of the email is given to prompt the replier which was trained with only detailed and specific instructions on how to respond to a scam email. A text response is generated and a signature is appended at the end of the email. The email is sent to the scammer.

Chat Replier 2: The text content of the email is given to prompt the replier which was finetuned with basic instructions along with three sample conversations from the Scam-baiting dataset. A text response is generated and a signature is appended at the end of the email. The email is sent to the scammer.

Classifier & Random Template: The text content of emails is used by the 5-category Classifier to classify the scam. Then, a random pre-written response, manually designed for emails of that category is selected. A signature is appended and the email is sent.

The web crawler fetches scam emails from two sources, the emails are then distributed equally across each strategy. Responses are generated using the respective repliers and emails are sent using randomly generated fake email addresses and names. A scammer only interacts with one responder and a second conversation is not initiated with the same scammer.

5.2 Results Analysis

The experiment was started on April 9, 2023 and ended on May 7, 2023. In these four weeks, I tried to initiate conversation with 819 unique scammer email addresses crawled from online

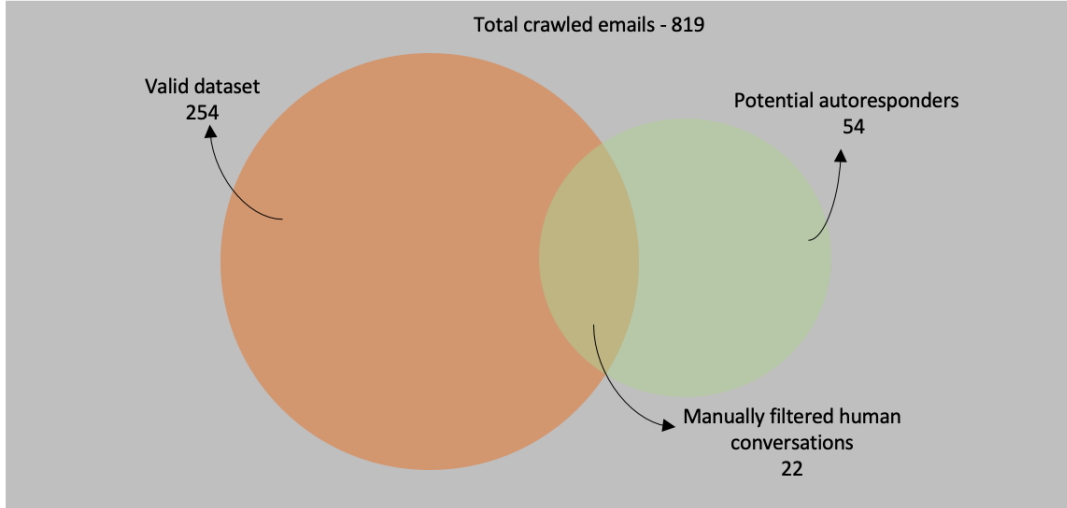


Figure 5.1: Distribution of conversations. Conversations that received at least one reply from a scammer = $(\text{Valid dataset} \cup \text{Potential autoresponders}) - (\text{Valid dataset} \cap \text{Potential autoresponders}) = 286$

forums. All 819 scam emails were distributed equally to each replier with an allowance of 1. Additionally, there were 17 crawled emails that were too long for my replier to process due to the limit on maximum tokens allowed in an API call. These are discussed further in Section 6.3. Moreover, there were 62 scammers who actively contacted the scam-baiting mail server. The scam-baiter responded to these emails and engaged in conversations with them, but I did not include them in my quantitative analysis as they were not identified as scammers by trusted sources. These are discussed below separately in Section 6.1.4. It is worth mentioning that certain email addresses of scammers either became invalid before responses were sent or in conversation with them.

I received responses from a total of 286 individual scammers ($\approx 35\%$). Upon analysing these conversations, I discovered that certain scammers were using autoresponders to communicate with the scam-baiter, as they had sent identical emails multiple times without any changes. I filtered out 54 conversations which had more than two identical responses and marked them as potential autoresponders and excluded them from my valid dataset. On further analysis of these 54 conversations, I observed that some of the replies were identical because the scammer was referencing a previous email they had sent and included it as an attachment in their response. There were also instances where every scammer response was received twice by the mail server, I decided that this could be due to a misconfiguration with their emailing system. I manually sorted emails that exhibited these behaviours, 22 in total (as shown in Fig. 5.1) and included them in my valid dataset. It should be noted that some of the 32 discarded conversations might still include human conversations.

After the completion of the filtration process, I had 254 valid conversations in my dataset that received at least one reply from a scammer. The distribution of the conversations can be seen in Fig. 5.1. Chat Replier 1 elicited 501 replies among 93 conversations, whereas Chat Replier 2 received 314 responses among 88 conversations. The Classifier & Random Template strategy got 276 replies among 73 conversations. The comparison of the three strategies is shown in Fig. 5.2.

To measure and compare the performance of my responders, I calculated the longest distraction time (or time wasted) for all three repliers which was the time between the first reply and last

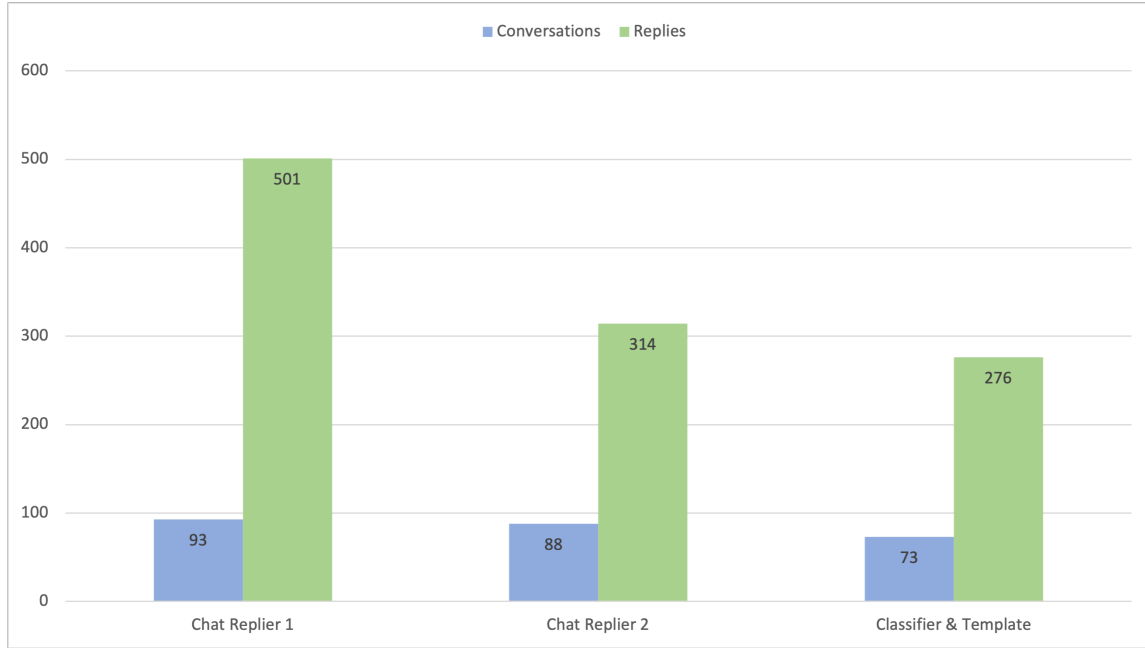


Figure 5.2: Comparison of the three replying strategies by quantity of conversations and replies

reply from the scammer within the study period. I also calculated the average number of replies in each conversation by counting the inbound messages in the conversation. The statistics for all three responders are shown in Table 5.1.

| Strategy | Avg. replies per conversation | Maximum rounds | Avg. Distraction Time | Longest Distraction Time |
|------------------------------|-------------------------------|----------------|-----------------------|--------------------------|
| Chat Replier 1 | 5.38 | 36 | 2 days, 20:08:34 | 27 days, 13:39:01 |
| Chat Replier 2 | 3.56 | 24 | 1 day, 09:04:31 | 26 days, 12:37:47 |
| Classifier & Random Template | 3.78 | 31 | 1 day, 07:35:48 | 12 days, 21:31:25 |

Table 5.1: Comparison of the three replying strategies based on average replies per conversation, maximum rounds, Avg. Distraction Time, and the Longest Distraction Time.

5.2.1 Chat Replier 1

Chat Replier 1 received the most replies out of all the repliers (501). Its longest distraction time (27 days, 13:39:01) was the highest along with the average distraction time (2 days, 20:08:34). It should be noted that the total duration of the experiment was 28 days. This repplier also had the most rounds in a conversation (36) and the highest average replies per conversation (5.38). Quantitatively, this repplier performed the best in all the metrics. Overall, this strategy was best for initiating and maintaining long term conversations with scammers. The conversation that received the most replies for this repplier can be found in Appendix B.1.

5.2.2 Chat Replier 2

Chat Replier 2 received the second-most number of replies (314) after Chat Replier 1. Its longest distraction time (26 days, 12:37:47) was also the second highest. The average distraction time (1 day, 09:04:31) was just above the Classifier & Random Template repplier. The most rounds in a conversation that this repplier engaged in (24) was the least, along with average replies per conversation (3.56). Overall, this strategy’s performance in initiating and maintaining long term

| Strategy | Avg. replies per conversation | Maximum rounds | Longest Distraction Time |
|--|-------------------------------|----------------|--------------------------|
| Classifier & Random Template | 3.78 | 31 | 12 days, 21:31:25 |
| Classifier & Random Template (Chen et al.) | 2.45 | 5 | 17 day, 4:16:19 |

Table 5.2: Comparison between Classifier & Random Template repliers used by Chen et al. [8] and me.

conversations with scammers was worse than Chat Replier 1. The conversation that received the most replies for this replier can be found in Appendix B.2.

5.2.3 Classifier & Random Template

Classifier & Random Template replier received the least number of replies (276). The longest distraction time for this strategy (12 days, 21:31:25) was also the least along with the average distraction time (1 day, 07:35:48). It performed second best for most rounds in a conversation (31) and average replies per conversation (3.78). Overall, this strategy’s performance in initiating and maintaining long term conversations with scammers was also worse than Chat Replier 1, but similar to Chat Replier 2. The conversation that went on the longest for this replier can be found in Appendix B.3.

Moreover, I also compare the results of my run of the Classifier & Random Template strategy with the results obtained by Chen et al. [8] in their evaluation. Table 5.2 shows the comparison of both the results. The longest distraction time for my run was less than theirs (17 day, 4:16:19) but the average replies per conversation for me was significantly more than what they got (2.45). Most rounds in a conversation for me was 31 whereas it was only 5 for them. The differences in these results could be due to various factors discussed later in Section 6.1.3.

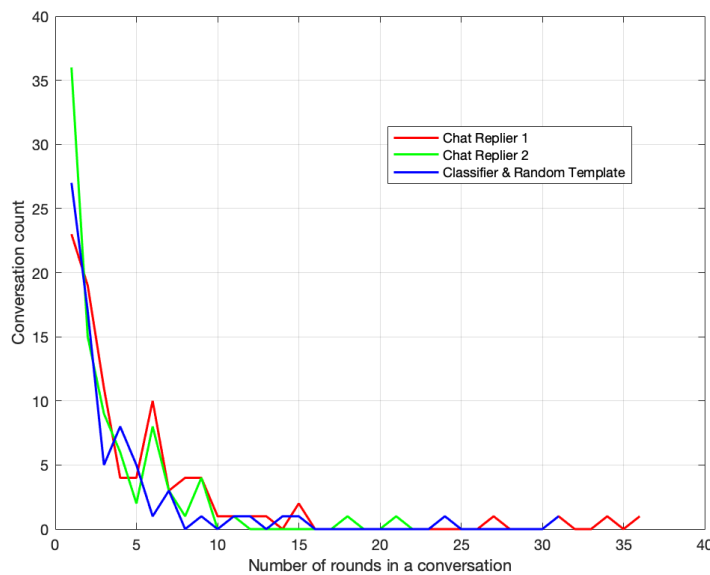


Figure 5.3: Comparison of the three replying strategies by conversation count and number of rounds in a conversation.

In this section, I presented the statistical results from my experiment with respect to each of the strategies used. I also presented results obtained Chen et al. [8] and put them against mine. From the results it is clear that Chat Replier 1 was the most successful replier in initiating and maintaining long-term conversations with fraudsters. This can also be seen in Fig. 5.3 which shows the trend of conversation count over a range of total rounds in a conversation for all three replying strategies. In the next chapter, I discuss the reasoning behind the numbers presented with respect to each responder along with a qualitative evaluation and limitations of my work.

I made the conversations between my automatic scam-baiters and actual scammers publicly available by organising them in JSON format and stored in a public repository on GitHub¹, offering potential value for future research and analysis in this field.

¹<https://github.com/an19352/scam-baiting-conversations>

Chapter 6

Discussion

This section aims to analyse the findings obtained from the experiment above. It provides an in-depth exploration of the results presented in the previous section and delves into the significance and implications of the findings, trends, and relationships discovered through qualitative assessment. I also discuss the limitations of my work alongside misuse concerns. In the end, I suggest future lines of work that can help in enhancing the understanding of this topic.

6.1 Critical Evaluation

6.1.1 Chat Replier 1

From the results presented in Section 5.2, it is clear that Chat Replier 1 was most successful in initiating and maintaining long-term conversations with scammers. Chat Replier 1 initiated the most conversations (93) and maintained 7 conversations for over 15 rounds with 4 of them being over 26 rounds. The maximum round conversation (36) for this strategy lasted for over 12 days which shows the high engagement of the scammer with the repplier. The main advantage of this strategy is that since it was given specific instructions to prolong the conversations, the responses generated asked follow-up questions related to what the scammer was talking about with the aim to keep the conversation going. The *temperature* and *top-p* settings for the model were set to 0.2 to reduce the randomness in sampling. This was done to restrict the model from deviating away from the instructions provided while generating responses. There is a trade-off to consider here as reducing the randomness also reduces the variety in the responses generated. I noticed in conversations with scammers that there were instances where the model is repeating the same thing time and again. This could lead to the scammer detecting that they are conversing with a bot and not an actual victim. A major flaw of this strategy is that because ChatGPT has been pretrained on a wide variety of corpus ranging from books to datasets, it is ‘smart’ in many ways including how scammers operate. Sometimes because of this and the randomness in sampling during response generation, the model deviates from the instructions it has been given. This means that even after giving it instructions to not call out scams, the repplier still generates responses saying that the “email is suspicious”. This led to a lot of scammers not replying back. Another deviation from the instructions was seen when the model was giving away fake personal information to the scammer. This behaviour had both advantageous and disadvantageous effects for me. These are discussed further in Section 6.2.2.

6.1.2 Chat Replier 2

Chat Replier 2 yielded mixed results and was not as successful as Chat Replier 1. It had the second-highest longest distraction time and conversation count. It performed the worst in average replies per conversation and maximum rounds. It had a similar average distraction time to the Classifier & Random Template strategy. This strategy learnt to generate responses

from conversations from the scam-baiting dataset. Due to this, it was able to generate email-like responses in a scam-baiting way. However, due to this the model also learnt to give away personal information as scam-baiters sometimes give out fake details to deceive scammers. The model would generate obviously fake addresses and phone numbers, such as 555-1234 (see Appendix B.4) and 123 Main Street respectively. The *temperature* and *top-p* settings for the model were set to 0.2, to reduce the randomness in sampling for this replier too. Due to this, the model has the same problems as Chat Replier 1 of calling out scams and repetitive responses. The mixed results of Chat Replier 2 can be explained by the fact that the model generated some responses informing the scammer that it is an “AI language model” and not an actual person (see Appendix B.4). This was a departure from the instructions it was given and a considerable weakness of this strategy. However, this strategy was able to maintain 8 conversations for over 9 rounds with three of them going on for over 17 rounds. Ye et al. argued that the GPT-3.5 series performance does not always increase in few-shot scenarios and that their performance is dependent on the model and the task at hand [77].

6.1.3 Classifier & Random Template

In this strategy, the Classifier categorises the scam email into one of the five classes. Then, a pre-written response template is picked at random to reply. Classifier & Random Template initiated the least amount of conversations (73) but ranked second in average replies per conversation and maximum rounds, showing its success to an extent. This strategy was better than Chat Replier 2 at maintaining conversations as it maintained 6 conversations for over 10 rounds with 2 of them being over 24 rounds. A significant drawback of this approach is that the templates cannot be tailored to conversations, which means that scammers may become aware of the repetitive nature of the responses after a few rounds and end the conversation.

My findings of the Classifier & Random Template strategy are different to what Chen et al. discovered in their experiment [8]. Among the three strategies that they tested, the Classifier & Random Template replier performed the best in initiating conversations and the worst in maintaining conversations. My run of the Classifier & Random Template strategy produced significantly better results as compared to their run, as can be seen in Table 5.2. This could be due to a variety of factors such as the domain name with which the emails were sent, the timing and duration of the experiment, etc. Another thing that could affect these results is that they set the crawler to crawl webpages that were at most a few months old. This could result in a lot of old scammer email addresses not working anymore and emails bouncing back. There could be a possibility that most of the emails that did not receive a reply were randomly assigned to the other two responders and the Classifier & Random Template strategy luckily had more contact with valid scammer emails.

6.1.4 Conversations with non-crawled scammer emails

I received 62 emails from scammers who actively contacted the mail server. These scammer emails were not crawled by the crawlers. 2 out of the 62 emails were too long for the replier to reply to, hence they were ignored. I performed a quantitative analysis similar to Section 5.2 on the remaining 60 emails. The most rounds in a conversation were 32 with Chat Replier 1, the replier with the longest distraction time was Classifier & Random Template with 10 days, 00:20:53. The average replies per conversation and average distraction time were 6.12 replies and 1 day, 21:38:12 respectively. There were 2 conversations in this category that could not be continued as the reply from the scammer was too long. However, in one of the conversations the scammer attempted to continue the conversation with another email and the conversation carried on for 8 more rounds. This further proves the ability of my models in scam-baiting activities however, this also gives rise to a few concerns regarding the potential misuse of the

mail server. These are discussed further in Section 6.5.

Overall, my findings indicate that deep learning NLP models can be effectively applied to scam-baiting activities. Through my implementation process, I was able to train models that learned the typical email structure, the types of information that scammers want, and how to sustain a conversation with fraudulent actors. During the experiment, my models were able to distract, deceive and confuse multiple real scammers to different lengths. I found Chat Replier 1 to be head and shoulders above the other repliers that I tested. Its ability to generate time consuming responses was unmatched by the others. It attracted the most interest and held conversations for longer than any of the three repliers. I trust that these text generations possess immense potential in scam-baiting tasks.

6.2 Qualitative Analysis

6.2.1 Intended Behaviours

During response generation, I intentionally avoided providing any context to the repliers. They are solely presented with the email that needs to be replied to, without any additional context. This was done with the intention that the model would ask more questions from the scammer making the scammer inclined to respond and keep the conversation going. The responses generated by my models often pose questions to the scammers that they have already answered before, which can be a source of annoyance for them. Repeating the same question tends to provoke irritation in the scammers (see Appendix B.1). The model also corrects grammatical errors made by scammers that give the impression of an actual person and not a bot (see Appendix B.1). Irritation is one of the stages in the Persuasion Stage model outlined by Edwards et al. in [22]. In their model, Irritation is followed by Personal Appeal and Abandonment which was evident in my data as well. In a lot of the conversations, the scammer gets irritated by the repplier and ends the conversation by asking not to be contacted. From my analysis, I can say that not providing any context to the models proved to be a boon and evoked more conversation from scammers. In general, the approach of generating responses without providing any context has the potential to yield more convincing results compared to the approaches that incorporate context like [8].

6.2.2 Unintended Behaviours

The model exhibited some unintended behaviours and diverged from the instructions it was given. As explained above, this was the cause of randomness in sampling during reply generation. The chief unintended behaviour the model exhibited was calling out the scammers. This behaviour caused many scammers to end the conversation while some were determined to prove that they are legitimate and can be trusted.

Another unintended behaviour that the model showed was that it revealed it is an ‘AI language model’ and not an actual person to the scammers (see Appendix B.4). This was happening when the scammer was asking the model to do something in the real world or especially when asking for WhatsApp contact information. On being asked for WhatsApp contact information, the model reveals its identity saying that:

"I'm sorry, but I cannot comply with your request as I am an AI language model and do not have a WhatsApp account."

This behaviour also led some scammers to end the conversation. However, some scammers continued the conversation. This could be due to the fact that they are not aware of language

models or simply did not notice the model’s identity revelation. There was one scammer who thought that the scam-baiter was playing games with them and that there is no such thing as an ‘AI language model’, they urged us to not act funny and send over personal information.

The model was sometimes giving out obviously fake personal information to the scammers and straying from the given instructions. This was both, advantageous and disadvantageous for me. Some scammers did not engage in further conversation while some wasted their time trying to verify the details to no avail and replied back asking to recheck them.

6.3 Limitations and Solutions

As previously stated, the primary reasons for the scammers to end a conversation were the model generating replies which were calling out the scammers or revealing that it is not an actual person. This could possibly be mitigated by using different instructions and prompts to train the model or using the latest language models like GPT-4 [51]. The text generation models will produce varying responses on each occasion as a result of the stochastic nature of the sampling algorithm. To address certain limitations in the generation process, we can employ a technique where the model generates multiple responses for a given email and subsequently devise a selection strategy to identify the most suitable response from the range of outputs produced by the model. This approach could enhance both, the quality and the consistency of the model’s output. Another reason for scammers ending conversations was when the model was disclosing clearly fake personal information. This could be mitigated to some extent by replacing the fake details with less obvious fake ones.

There was also an instance where the scammer suspected that they were conversing with a bot and as a method of authentication, asked the bot to resend the first email it received. My model was not able to do this as I did not give it any contextual data. This can be rectified by giving some contextual information to the model.

There were 17 crawled email addresses that could not be contacted as the crawled email was too long for the replier to handle in an API call. As an API call takes both the prompt and the response into account while calculating the total number of tokens, there is also a chance that the model would generate incomplete replies to some long emails if it generates a response at all. Furthermore, there were 7 conversations that ended abruptly as the scammer sent an email that could not be replied to due to its length. This issue can be solved by making multiple API calls and then concatenating them.

Due to time and resource constraints, the experiment I conducted was limited in duration. In 28 days, my generators could invoke only 254 valid conversations from scammers. The longest distraction time for Chat Replier 1 and Chat Replier 2 was around 27 and 26 days respectively. This suggests that these conversations could have gone on for longer if the experiment was run for an extended period of time. I left the email receiver on for another week after the experiment was stopped and still got 56 more replies from scammers. Further research, can use an extended duration of experiments to allow for longer conversations with scammers. This can also lead to enhanced certainty in discerning effectiveness in performance among various strategies.

6.4 Future Work

From the data I collected, I noticed that some emails contained non-textual content like attachments, images, and URLs. These features could be analysed and used to generate more convincing replies to scammers. Web crawlers and automated image captioning technology can

be used for this purpose. In some conversations, the scammer asked the baiter to contact one of their colleagues by providing their contact information, such as other email addresses. These are tactics used by scammers to make their story more believable and mostly their supposed ‘colleague’ is just another persona created and controlled by them. By retrieving the contact information provided and engaging in ongoing interactions with these personas, automated scam-baiters would be able to better emulate the behaviour of actual victims, enhancing their ability to consume scammer resources.

Following the enhancement of replying strategies, the researchers could collaborate with email service providers to integrate automated scam-baiters into existing spam filters. These automatic scam-baiters would promptly respond to scammers in real time, divert their attention, safeguard potential victims, and actively combat internet fraud.

6.5 Misuse and Evasion Concerns

A worrying misuse issue arises with the system I implemented above as scammers that actively contacted the mail server were replied back and engaged in conversation. There could be a case where scammers noticed that they were talking to a bot and ended that conversation. Afterwards, they contacted the scam-baiter using another email address and started forwarding the replies to other victims to harass them. To prevent this, the system can be modified to not reply to scammers who actively contacted the mail server.

Another potential misuse of the system is that scammers can use similarly finetuned models to manage aspects of their conversations with victims. Scammers could modify the prompts to generate responses in the way of scammers instead. This could give rise to an automatic scammer system that could be an efficient countermeasure for scammers to employ against human scam-baiters and counteracting their endeavours by wasting their time in the same way automatic scam-baiters did in this study. Using this, scammers can focus more of their resources on actual victims. With automatic scammer systems, scammers can obtain contact or financial information from targets easily compared to their current methods. One way to prevent the rise of automatic scammer systems is to restrict the utilisation of models and monitor interactions with them through an API, examining the tokens in the call. This is the approach employed by OpenAI to regulate the use of their models. An alternative approach could involve informing and empowering scam-baiting communities by providing them with effective tools to enhance their impact. By diminishing the resources accessible to scammers, we can impede their adoption of new technologies and hinder their activities.

A potential evasive concern is whether scammers can easily recognise generated replies and if widespread use of automatic scam-baiters might educate the scammers to identify and detect these time-wasting interactions. Fraudsters are notorious for intentionally substituting letters with similar-looking numbers, misspelling words, or spacing out keywords to escape automated detection systems [34]. While these messages serve their purpose, they can significantly disrupt the clarity of responses generated by automatic scam-baiters. To mitigate the impact of this, it can be effective to pre-process these messages to a form similar to human interpretation. This step can help improve the comprehension of NLP models.

Chapter 7

Conclusion

In this thesis, I discussed the dangers associated with internet email scams and presented existing conventional countermeasures against email fraud. I explained previous research related to these countermeasures. I further talked about active approaches against email fraud and scam-baiting in particular, explaining what is scam-baiting and how effective it is. While engaging in scam-baiting activities can effectively divert the attention of fraudsters, it is important to note that they demand a substantial investment of human resources. I introduced NLP along with common techniques used and network structures of deep learning NLP models. I explained the Transformers structure and ChatGPT model in detail as they are what I use in my work. Further, I talked about applications of NLP fraud prevention and introduce automatic scam-baiting. I discussed how automatic scam-baiting can be more efficient and effective than human scam-baiting.

I implemented 2 replying strategies using ChatGPT. The intention behind implementing these repliers was to test the potential of NLP models in scam-baiting tasks. I trained Chat Replier 1 in a ‘zero shot’ setting with specific instructions to adapt it to generate responses suitable for scam-baiting activities (see Section 4.1.1). I implemented Chat Replier 2 in a ‘few shot’ setting, training it with example conversations from the Scam-baiting dataset. Both my repliers were able to generate responses in the desired format and be used in scam-baiting tasks.

In order to conduct an experiment to test my responders, I familiarised myself with a scam-baiting mail server developed in previous work and integrated my responders into the server (see Section 4.2). I also made modifications to the server to suit my needs.

I carried out a four-week experiment involving interactions with real human scammers to evaluate the effectiveness of my responders compared to a baseline responder used in previous research (see Section 5.1). My strategies successfully received 1,091 replies from 254 different scammers (see Section 5.2).

I performed a quantitative and qualitative analysis of the data gathered during the experiment and presented the results. I also performed a critical evaluation for all three strategies used (see Chapter 6). From my evaluation, I concluded that Chat Replier 1 was the most successful out of the three tested. It showed strong potential in initiating and maintaining conversations with scammers. Chat Replier 1 was able to distract a scammer for almost the whole duration of the study. It also elicited 36 replies from one scammer which was the most of all three responders.

In conclusion, my strategies were able to waste the scammers’ time by confusing and leading them on to different extents. I showed that deep learning NLP models have promise and huge potential in scam-baiting activities. However, there is always room for improvement so I sug-

gested solutions to the limitations of my study and future lines of work in this field (see Chapter 6) while also acknowledging the misuse and evasion concerns of such systems.

Bibliography

- [1] Morvareed Bidgoli and Jens Grossklags. “Hello. This is the IRS calling.”: A case study on scams, extortion, impersonation, and phone spoofing. In *2017 APWG Symposium on Electronic Crime Research (eCrime)*, pages 57–69, 2017.
- [2] Sid Black, Leo Gao, Phil Wang, Connor Leahy, and Stella Biderman. GPT-Neo: Large scale autoregressive language modeling with mesh-tensorflow. 2021.
- [3] Piotr Bojanowski, Edouard Grave, Armand Joulin, and Tomas Mikolov. Enriching word vectors with subword information. *Transactions of the association for computational linguistics*, 5:135–146, 2017.
- [4] Tom Brown, Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared D Kaplan, Prafulla Dhariwal, Arvind Neelakantan, Pranav Shyam, Girish Sastry, Amanda Askell, et al. Language models are few-shot learners. *Advances in neural information processing systems*, 33:1877–1901, 2020.
- [5] Matthew Canham and Juliet Tuthill. Planting a poison seed: Using Social Engineering Active Defense (SEAD) to counter cybercriminals. In *Augmented Cognition: 16th International Conference, AC 2022, Held as Part of the 24th HCI International Conference, HCII 2022, Virtual Event, June 26–July 1, 2022, Proceedings*, pages 48–57. Springer, 2022.
- [6] Rajasekhara Chaganti, Bharat Bhushan, Anand Nayyar, and Mourade Azrour. Recent trends in Social Engineering Scams and Case study of Gift Card Scam. *CoRR*, abs/2110.06487, 2021.
- [7] Jia-Wei Chang, Neil Yen, and Jason C Hung. Design of a NLP-empowered finance fraud awareness model: the anti-fraud chatbot for fraud detection and fraud classification as an instance. *Journal of Ambient Intelligence and Humanized Computing*, 13(10):4663–4679, 2022.
- [8] Wentao Chen, Fuzhou Wang, and Matthew Edwards. Active Countermeasures for Email Fraud. *CoRR*, abs/2210.15043, 2022.
- [9] Xuanting Chen, Junjie Ye, Can Zu, Nuo Xu, Rui Zheng, Minlong Peng, Jie Zhou, Tao Gui, Qi Zhang, and Xuanjing Huang. How Robust is GPT-3.5 to Predecessors? A Comprehensive Study on Language Understanding Tasks. *arXiv preprint arXiv:2303.00293*, 2023.
- [10] Paul-Alexandru Chirita, Jörg Diederich, and Wolfgang Nejdl. MailRank: Using ranking for spam detection. In *Proceedings of the 14th ACM international conference on Information and knowledge management*, pages 373–380, 2005.
- [11] KR Chowdhary. Natural Language Processing. *Fundamentals of artificial intelligence*, pages 603–649, 2020.
- [12] Paul F Christiano, Jan Leike, Tom Brown, Miljan Martic, Shane Legg, and Dario Amodei. Deep Reinforcement Learning from human preferences. *Advances in neural information processing systems*, 30, 2017.

- [13] V Christina, S Karpagavalli, and G Suganya. Email Spam Filtering using Supervised Machine Learning techniques. *International Journal on Computer Science and Engineering (IJCSE)*, 2(09):3126–3129, 2010.
- [14] Robert B Cialdini and Robert B Cialdini. *Influence: The psychology of persuasion*, volume 55. Collins New York, 2007.
- [15] Kelly A Cole, Tejashree D Datar, and Marcus K Rogers. Awareness of scam e-mails: An exploratory research study—part 2. In *Digital Forensics and Cyber Crime: 7th International Conference, ICDF2C 2015, Seoul, South Korea, October 6-8, 2015. Revised Selected Papers* 7, pages 115–125. Springer, 2015.
- [16] Mark R. Crispin. Internet Message Access Protocol - version 4rev1. *RFC*, 3501:1–108, 2003.
- [17] Dave Crocker, Tony Hansen, and Murray S. Kucherawy. DomainKeys Identified Mail (DKIM) signatures. *RFC*, 6376:1–76, 2011.
- [18] Tejashree D Datar, Kelly A Cole, and Marcus K Rogers. Awareness of scam e-mails: an exploratory research study. 2014.
- [19] Nicola Davinson and Elizabeth Sillence. It won’t happen to me: Promoting secure behaviour among internet users. *Computers in human behavior*, 26(6):1739–1747, 2010.
- [20] Marguerite DeLiema, Yiting Li, and Gary Mottola. Correlates of responding to and becoming victimized by fraud: Examining risk factors by scam type. *International Journal of Consumer Studies*, 2022.
- [21] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. BERT: Pre-training of deep bidirectional transformers for language understanding. *arXiv preprint arXiv:1810.04805*, 2018.
- [22] Matthew Edwards, Claudia Peersman, and Awais Rashid. Scamming the scammers: towards automatic detection of persuasion in advance fee frauds. In *Proceedings of the 26th International Conference on World Wide Web Companion*, pages 1291–1299, 2017.
- [23] Gal Egozi and Rakesh Verma. Phishing email detection using robust NLP techniques. In *2018 IEEE International Conference on Data Mining Workshops (ICDMW)*, pages 7–12. IEEE, 2018.
- [24] Jaouhar Fattahi and Mohamed Mejri. SpaML: a bimodal ensemble learning spam detector based on NLP techniques. In *2021 IEEE 5th International Conference on Cryptography, Security and Privacy (CSP)*, pages 107–112. IEEE, 2021.
- [25] FBI. Internet Crime Report 2021. 2021. Accessed on May 12,2023. URL: <https://www.ic3.gov/>.
- [26] Robbie Gallagher. Where Do the Phishers Live? Collecting Phishers’ Geographic Locations from Automated Honeypots. *2016 ShmooCon*, 2016.
- [27] Jianfeng Gao, Michel Galley, and Lihong Li. Neural approaches to conversational ai. In *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval*, pages 1371–1374, 2018.
- [28] Zhengjie Gao, Ao Feng, Xinyu Song, and Xi Wu. Target-dependent sentiment classification with BERT. *Ieee Access*, 7:154290–154299, 2019.

- [29] Biyang Guo, Xin Zhang, Ziyuan Wang, Minqi Jiang, Jinran Nie, Yuxuan Ding, Jianwei Yue, and Yupeng Wu. How Close is ChatGPT to Human Experts? Comparison Corpus, Evaluation, and Detection. *arXiv preprint arXiv:2301.07597*, 2023.
- [30] Donghoon Ham, Jeong-Gwan Lee, Youngsoo Jang, and Kee-Eung Kim. End-to-end neural pipeline for goal-oriented dialogue systems using GPT-2. In *Proceedings of the 58th annual meeting of the association for computational linguistics*, pages 583–592, 2020.
- [31] Cormac Herley. Why do Nigerian scammers say they are from Nigeria? In *WEIS*. Berlin, 2012.
- [32] Sepp Hochreiter. The vanishing gradient problem during learning recurrent neural nets and problem solutions. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, 6(02):107–116, 1998.
- [33] Sepp Hochreiter and Jürgen Schmidhuber. Long Short-Term Memory. *Neural computation*, 9(8):1735–1780, 1997.
- [34] Francisco Jáñez-Martino, Rocío Alaiz-Rodríguez, Víctor González-Castro, Eduardo Fidalgo, and Enrique Alegre. A review of spam email detection: Analysis of spammer strategies and the dataset shift problem. *Artificial Intelligence Review*, 56(2):1145–1173, 2023.
- [35] Helen S Jones, John N Towse, Nicholas Race, and Timothy Harrison. Email fraud: The search for psychological predictors of susceptibility. *PloS one*, 14(1), 2019.
- [36] Iacovos Kirlappos and M Angela Sasse. Security education against phishing: A modest proposal for a major rethink. *IEEE Security & Privacy*, 10(2):24–32, 2011.
- [37] John Klensin, Ned Freed, Marshall T. Rose, Einar Stefferud, and Dave Crocker. SMTP Service Extension for 8-bit MIME transport. *RFC*, 1652:1–6, 1994.
- [38] John Klensin, Ned Freed, Marshall T. Rose, Einar Stefferud, and Dave Crocker. SMTP Service Extensions. *RFC*, 1869:1–11, 1995.
- [39] Stefan Kombrink, Tomas Mikolov, Martin Karafiát, and Lukás Burget. Recurrent Neural Network Based Language Modeling in Meeting Recognition. In *Interspeech*, volume 11, pages 2877–2880, 2011.
- [40] Murray Kucherawy and Elizabeth Zwicky. Domain-based Message Authentication, Reporting, and Conformance (DMARC). Technical report, 2015.
- [41] Jiwei Li, Michel Galley, Chris Brockett, Jianfeng Gao, and Bill Dolan. A diversity-promoting objective function for neural conversation models. *arXiv preprint arXiv:1510.03055*, 2015.
- [42] Jiwei Li, Will Monroe, Alan Ritter, Michel Galley, Jianfeng Gao, and Dan Jurafsky. Deep Reinforcement Learning for dialogue generation. *arXiv preprint arXiv:1606.01541*, 2016.
- [43] Eva Marková, Tomáš Bajtoš, Pavol Sokol, Terézia Mézešová, and Patrik Pekarčík. Malicious Emails Classification Based on Machine Learning. In *Data Science and Intelligent Systems: Proceedings of 5th Computational Methods in Systems and Software 2021, Vol. 2*, pages 797–810. Springer, 2021.
- [44] Alex V Mbaziira, Ehab Abozinadah, and James H Jones Jr. Evaluating classifiers in detecting 419 scams in bilingual cybercriminal communities. *arXiv preprint arXiv:1508.04123*, 2015.

- [45] Selina Meyer, David Elswiler, Bernd Ludwig, Marcos Fernandez-Pichel, and David E Losada. Do We Still Need Human Assessors? Prompt-Based GPT-3 User Simulation in Conversational AI. In *Proceedings of the 4th Conference on Conversational User Interfaces*, pages 1–6, 2022.
- [46] Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean. Efficient estimation of word representations in vector space. *arXiv preprint arXiv:1301.3781*, 2013.
- [47] Anirban Mukherjee, Nimit Agarwal, and Shubham Gupta. A survey on automatic phishing email detection using natural language processing techniques. *Int. Res. J. Eng. Technol.*, 6(11):1881–1886, 2019.
- [48] Gareth Norris, Alexandra Brookes, and David Dowell. The psychology of internet fraud victimisation: A systematic review. *Journal of Police and Criminal Psychology*, 34:231–245, 2019.
- [49] OpenAI. Introducing ChatGPT. Accessed on May 12, 2023. URL: <https://openai.com/blog/chatgpt>.
- [50] OpenAI. Models Overview. Accessed on May 12, 2023. URL: <https://platform.openai.com/docs/models/gpt-3-5>.
- [51] OpenAI. GPT-4 Technical Report, 2023. [arXiv:2303.08774](https://arxiv.org/abs/2303.08774).
- [52] Long Ouyang, Jeffrey Wu, Xu Jiang, Diogo Almeida, Carroll Wainwright, Pamela Mishkin, Chong Zhang, Sandhini Agarwal, Katarina Slama, Alex Ray, et al. Training language models to follow instructions with human feedback. *Advances in Neural Information Processing Systems*, 35:27730–27744, 2022.
- [53] Duo Pan, Ellen Poplavska, Yichen Yu, Susan Strauss, and Shomir Wilson. A multilingual comparison of email scams. In *Symposium on Usable Privacy and Security (SOUPS) Posters*, 2020.
- [54] Youngsam Park, Damon McCoy, and Elaine Shi. Understanding craigslist rental scams. In *Financial Cryptography and Data Security: 20th International Conference, FC 2016, Christ Church, Barbados, February 22–26, 2016, Revised Selected Papers 20*, pages 3–21. Springer, 2017.
- [55] Jeffrey Pennington, Richard Socher, and Christopher D Manning. GloVe: Global vectors for word representation. In *Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP)*, pages 1532–1543, 2014.
- [56] Jon Postel. Simple Mail Transfer Protocol. *RFC*, 788:1–64, 1981.
- [57] Chengwei Qin, Aston Zhang, Zhuosheng Zhang, Jiaao Chen, Michihiro Yasunaga, and Diyi Yang. Is ChatGPT a general-purpose Natural Language Processing task solver? *arXiv preprint arXiv:2302.06476*, 2023.
- [58] Alec Radford, Karthik Narasimhan, Tim Salimans, Ilya Sutskever, et al. Improving language understanding by Generative Pre-Training. 2018.
- [59] Alec Radford, Jeffrey Wu, Rewon Child, David Luan, Dario Amodei, Ilya Sutskever, et al. Language models are unsupervised multitask learners. *OpenAI blog*, 1(8):9, 2019.
- [60] Anirudh Ramachandran, Nick Feamster, and Santosh Vempala. Filtering spam with Behavioral Blacklisting. In *Proceedings of the 14th ACM conference on computer and communications security*, pages 342–351, 2007.

- [61] Nils Reimers and Iryna Gurevych. Sentence-bert: Sentence embeddings using Siamese BERT-networks. *arXiv preprint arXiv:1908.10084*, 2019.
- [62] Joyce K. Reynolds. Post Office Protocol. *RFC*, 918:1–5, 1984.
- [63] Andrew S Ross and Lorenzo Logi. ‘Hello, this is Martha’: Interaction dynamics of live scamming on Twitch. *Convergence*, 27(6):1789–1810, 2021.
- [64] Christian Rossow. Anti-spam measure of European ISPs/ESPs, 2007.
- [65] Said Salloum, Tarek Gaber, Sunil Vadera, and Khaled Sharan. A systematic literature review on phishing email detection using Natural Language Processing techniques. *IEEE Access*, 2022.
- [66] Victor Sanh, Lysandre Debut, Julien Chaumond, and Thomas Wolf. DistilBERT, a distilled version of BERT: smaller, faster, cheaper and lighter. *arXiv preprint arXiv:1910.01108*, 2019.
- [67] Tom Sorell. Scambaiting on the spectrum of vigilantism. *Criminal Justice Ethics*, 38(3):153–175, 2019.
- [68] Lauri Tuovinen and Juha Röning. Baits and beatings: Vigilante justice in virtual communities. *Proceedings of CEPE*, pages 397–405, 2007.
- [69] U.T.Inc. “About Project Honey Pot”, 2004. Accessed on May 11, 2023. URL: https://www.projecthoneypot.org/about_us.php.
- [70] Olivier van der Toorn, Roland van Rijswijk-Deij, Bart Geesink, and Anna Sperotto. Melting the snow: Using active DNS measurements to detect snowshoe spam domains. In *NOMS 2018-2018 IEEE/IFIP Network Operations and Management Symposium*, pages 1–9. IEEE, 2018.
- [71] Sophie Van Der Zee, Richard Clayton, and Ross Anderson. The gift of the gab: Are rental scammers skilled at the art of persuasion? *arXiv preprint arXiv:1911.08253*, 2019.
- [72] Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N Gomez, Łukasz Kaiser, and Illia Polosukhin. Attention is all you need. *Advances in neural information processing systems*, 30, 2017.
- [73] Tanu Verma, Renu Renu, and Deepti Gaur. Tokenization and filtering process in rapid-miner. *International Journal of Applied Information Systems*, 7(2):16–18, 2014.
- [74] Monica Therese Whitty. Is there a scam for everyone? Psychologically profiling cyberscam victims. *European Journal on Criminal Policy and Research*, 26(3):399–409, 2020.
- [75] Meng Wong and Wayne Schlitt. Sender Policy Framework (SPF) for authorizing use of domains in e-mail, version 1. Technical report, 2006.
- [76] Yousef A Yaseen, Malik Qasaimeh, Raad S Al-Qassas, and Mustafa Al-Fayoumi. Email fraud attack detection using hybrid machine learning approach. *Recent Advances in Computer Science and Communications (Formerly: Recent Patents on Computer Science)*, 14(5):1370–1380, 2021.
- [77] Junjie Ye, Xuanning Chen, Nuo Xu, Can Zu, Zekai Shao, Shichun Liu, Yuhuan Cui, Zeyang Zhou, Chao Gong, Yang Shen, et al. A comprehensive capability analysis of GPT-3 and GPT-3.5 series models. *arXiv preprint arXiv:2303.10420*, 2023.

- [78] Jinhua Zhu, Yingce Xia, Lijun Wu, Di He, Tao Qin, Wengang Zhou, Houqiang Li, and Tie-Yan Liu. Incorporating BERT into neural machine translation. *arXiv preprint arXiv:2002.06823*, 2020.
- [79] Andreas Zingerle. How to Obtain Passwords of Online Scammers by Using Social Engineering Methods. In *2014 International Conference on Cyberworlds*, pages 340–344, 2014.
- [80] Andreas Zingerle and Linda Kronman. Humiliating entertainment or social activism? Analyzing scambaiting strategies against online advance fee fraud. In *2013 International Conference on Cyberworlds*, pages 352–355. IEEE, 2013.

Appendix A

Scam-baiting Dataset Examples

A.1 Transaction Example

| | |
|-------------|--|
| Scammer | <p>Dear Sir/Madam, TRANSFER OF US \$25.5M FOR INVESTMENT.I am MR THOMPSON GREEN the Director of Delivery/Operation Transworld Security and Finance Company South Africa. Our firm is a security and finance company of high reput e with years of outstanding service to the people of Africa especially top government officials and military leaders in Africa. I have resolved to contact you through this medium based on business proposal that will be of mutual benefit to both of us. I have not discussed this with anybody because of it is of top secret. To be explicit and straight to the point. Some time in 1997,a reputable client of ours deposited a consignment in our company?s vault for safekeeping. And since then our client has failed to come forward to claim his consignment, which has accumulated a huge amount of money in demurrage.</p> <p>Consequently, in our bid to contact this client to redeem the demurrage which his consignment had accumulated we discovered that our client was the Former President of the Federal Republic of Zaire(Now Republic of Congo)who died of illness after he was dethroned. In the same year the consignment was entrusted into our care. Since the death of our client President Mobutu Seseseko, none of the benefactor has come to claim the consignment with us, which means that none of his relatives or aids had any knowledge of such consignment. Hence out of curiosity I decided to secretly open the box that were registered as treasure by our client actually contained a considerable amount of money in United States Dollars amounting to about TWENTY FIVE MILLON FIVE HUNDRED THOUSAND UNITED STATED DOLLARS (US\$25.5Million US Dollars). Since this development I have been nursing plans secretly. I also found out from enquiry s and foreign media that our late client siphoned a lot of money from his country while he was in office as the head of state.</p> <p>It is my conviction that the consignment in our vault was part of the money that our client siphoned and now that he is dead, there is no trace to this money in our care.I am now soliciting noble assistance to assist me in transferring this money out of South Africa to your country for immediate investment with your assistance. I have also decided that you will be generously be entitled to 30% of the total amount. Upon my receipt of your reply confirming your willingness to assist me in this transaction. I will immediately arrange and transfer all the right of ownership of this consignment to your name to facilitate your easy clearance and transfer of the complete funds to your country for onward investment. This transaction is 100% risk free. Please maintain absolute CONFIDENTIALITY in this matter. I await your prompt response. Hoping my proposal will receive your favourable consideration. MR THOMPSON GREEN</p> |
| Scam-baiter | <p>Dear Mr. Green,While I am very interested in your proposal, I would need to know how I could ever make a claim to anything belonging to President Mobutu. I'd also like to know how you came to approach me about this. If you can clear up these details, I may be able to help you.</p> <p>Regards, Eliza Dane</p> |

| | |
|-------------|--|
| Scammer | Dear Ms. ELiza Dane,It is nice to hear from you. I want to re-assure you that this business is risk free and i shall change all the basic documents to your name. The fund has already accrued demmurage and the depositor is deceased. It was deposited under a different name. It was only on investigation that we discovered it was deposited by the ex- president. We have done the neccessary paper works on change of ownership. You should be rest-assured. My major worry is to confirm if you are capable of handling such funds. Its very important to know before we start processing the transfer. Waiting for your responce. Sincerely Mr Thompson Green |
| Scam-baiter | Dear Mr. Green, I'm puzzled that you are worried about my ability to handle money. Isn't the whole point of this to move the money safely out of South Africa? I'm not being asked to invest it, simply receive and take care of it. I'd have thought that the big thing would be honesty, not financial skill. Also - you didn't answer my question about exactly how you came to approach me. It's not that hard to do, is it? Regards, Eliza Dane |

A.2 Lottery Example

| | |
|-------------|---|
| Scammer | <p>Dear client, Congratulations, you have been selected as one of the lucky winners on our internet screening machine,DV-2004-2006 USA national visa lottery program. It is my pleasure to congratulate you on your success in the America DV-2004-2006VISA LOTTERY GREEN CARD which was applied and processed by our agency. Your visa lottery winner's identity is ID-4200DV and your serial net visa passport with us SNVPh700IU in this respect,you are directed to forward the following requirements: 1 Your present contact address(for correspondent) 1 Your recent passport photograph :REGULAR MAIL: You can also send your photo(s) by regular mail. The photo must be between 1... by 1... and 2 by 2 inches (37-50 mm) square,with the applicant's, spouse's, or child's name printed on the back. Pleas email the photos to: Immigration Services:PA/PL, Rm. 3206 U.S. Department of State 2301 C Street NW Washington, D.C. 20720 Or Preferably, You Scann your passport photograph and send it via email for faster processing.</p> <p>Clearance/acceptance fees (\$349.67) Details of requirements: Your present contact address should be forwarded strictly to our receieving email address for correspondent: e-mail: Immigrationdv2004Services@rediffmail.com Alternativly for faster processing, A scanned copy of your passport photograph should be send via our recieving email address. Clearance/acceptance fees payment (\$349.67): we accept money order as the only payment method due to some reasons from our past experiences. (credit card is not acceptable,please.) Your western union or other means of money transfer payment information should be forwarded as directed on payment procedures through our new caramail satellite attached network order for security reasons as indicated below. e-mail: Immigrationdv2004Services@rediffmail.com Your payment confirmation shall be sent to you as soon as clarification is done on your payment. Providing the above requirements will assure you your visa lottery acknowledgement card and visa lottery security code which we shall send to your email address. Important notice :Please make sure you report and forward your lottery visa code and acknowledgement card to the USA embassy in individual country for your green card and other necessary claims.</p> <p>According to the united state code of conduct and constitution Vol.176/866 :Act 690SN guiding all immigration, green card permit agencies if non-response after 21days you receive this message your winner's status shall reveal no interest and we would in response refer your lottery code and acknowledgement card back to the USA government/immigration service center. We shall be anticipating for your reply soon. FOR YOUR INFORMATION OUR AGENCY ADVICES YOU TO CONTACT THE IMMIGRATION SERVICEFOR YOUR REQUIRMENT PLS CONTACT THERE E-MAIL NOW FOR YOUR NOTICE: e-mail: Immigrationdv2004Services@rediffmail.com Thanks MARYKATE PURCHIACONGRATULATIONS !!! Co-ordinator. KELVIN POWELLpresident note:your respond/reply is strictly recieved on our attached recieving emailnetwork for security reasons.e-mail: Immigrationdv2004Services@rediffmail.com,</p> |
| Scam-baiter | <p>Dear Sir or Madam,I received a notice that I am a winner in the US National Visa Lottery Program and I was advised to write to your address for details. Any further information you can provide will be greatly appreciated.The notice I received spelled out several requirements (passport photograph,contacting the US Consulate) but I'm unclear on the sequence or timing. Any information you can provide in this regard will also be appreciated.Once I have a green card are there any restrictions about where I have to live in the US? I'm not restricted to living in Texas or someplace like that, am I?I have dreamed all my life about living in Southern California!Thank you very, very much!Lewis D. Noogie Novosibirsk, Latvia,</p> |
| Scammer | <p>Dear Lewis, I received your reply in response to your Green Card Winners Status with our immigration agency. This is to inform you that you can now work, live and be a residential holder in the United State Of America. Your request and futher enquiry is highly welcome by our agency. Thanks Marykate Purchia,</p> |
| Scam-baiter | <p>Ms. Purchia, I have been unable to sleep since I received your first email! You have presented me with an opportunity to escape from this frozen wasteland to the sunny cultural center of the universe, Los Angeles! Just to bring you up to date, as I have no means of scanning my passport photograph, I have gone ahead and mailed it to the US Department of State address that you provided in your first email. Secondly, there is no Western Union here in Novosibirsk. This is a small town of only a few thousand people and such facilities are not yet available here. Is there not some other form of payment that is acceptable? Is this something that could be handled upon my arrival in the US? I did not understand your statement in a previous email where you said I \ "...should not be too inquisitive or interrogating as you might not welcome such a gesture \". I'm sure that I will have questions as this proceeds; am I not allowed to ask them? It has been my experience that agencies associated with the US Government are only too happy to answer any questions, offer advice, etc. Lewis D. Noogie</p> |

A.3 Romance Example

| | |
|-------------|--|
| Scammer | <p>please write me through my yahoo mail address (blessing_333@yahoo.com) Hello my dear,How are you and your day hope fine? my name is Blessing Ibrahim i am honest and caring woman seeking honest and caring friend please send me mail to my email address so that i will send you my pictures and tell you more about me (blessing_333@yahoo.com) i am waiting for your mail and your pictures. Yours Blessing</p> |
| Scam-baiter | <p>Miss Blessing, How are you today? Are you lonely? If so, do visit one of the houses run by The Holy Bagel Community. We have places for young people all over Europe and West Africa and you will be welcome at any of these places. Remain blessed, SISTER TUSHIE THE HOLY BAGEL COMMUNITYN goblah House 69 Aspis Avenue London WC1 FU2 England tel: 0207 930 4832 e-mail: tushie@xxx-xxxxxxx.xxx Life President: Lonslo Tossov CH MC OBE Honorary Treasurer: Sister Tushie Meshuganah Honorary Secretary: Dr Isa Wankah FRCS, AA, RAC Bankers: Kreplach Brothers Merchant Bank International The Holy Bagel Community was established by Pastor Cecil Ngoblah in 1989 to cater for the material, moral and spiritual needs of young African students and workers living in Great Britain.</p> <p>Although donations were received from several African states, the Community was beset by financial problems until 1998 when a student from Zambia - who at the time was renting a room in the Community's London hostel - won 00a39.5 million in the British National Lottery. The student donated 00a31.5 million to Pastor Ngoblah and thanks to some wise investments the Community now owns hostels in London, Paris and West Africa and maintains a fund for indigents and charitable causes throughout Africa.Any African of whatever race, colour or nationality may apply for assistance in the form of a loan or outright gift. All applications should be sent to Sister Tushie at the above address or by e-mail to: tushie@xxx-xxxxxxx.xxx Sister Tushie Meshuganah Honorary Treasurer</p> |
| Scammer | <p>My dearest one, Good morning How is your day?.Mine is a little bit cold over here in Dakar Senegal.like i told you in my first mail, My name is Blessing Ibrahim I 'm 25,from Khartoum Sudan in northern Africa,5.11ft tall, Fair in complexion,(never married before)presently, i am residing in the refugee camp here in Dakar, as a result of the civil war that was fought in my country.My late father! Dr, Malik Ibrahim, was the director general of ministry of health Khartoum Sudan, and he was the personal adviser to the former head of state, before the rebel's attacked our house one early morning and they killed my mother, also with my father in cold blood.It was only me that is alive now,but I managed to make my way to a near by country Senegal , where i am living now in a refugee camp,and this computer is belonging to Mr Luke Kamaga he is the person taking care of those in the refugee here in Dakar.</p> <p>I would like to know more about you.Your like and dislike,your hobby and what you are doing presently.I will tell you more about myself and what i have in mind if you can be honest and trust with me. in my next mail.Attached here, is my picture.Hoping to hear from you soonest, Miss Blessing</p> |
| Scam-baiter | <p>Dear Blessing,How nice to hear from you. I am sorry to hear that you are one of the many refugees in our African continent. You would be far better living in the United Kingdom. If this appeals to you just let me know and I will arrange for a sponsor to sign your application for political asylum. The Holy Bagel Community's pastor Bishop Ben Zoma and Mother Nelda are well respected and their signatures will guarantee a visa for you.Also, the Holy Bagel Community will pay for your flight from Senegal although you would be expected to repay this money once you have found work in the United Kingdom. Remain blessed, SISTER TUSHIE MESHUGANAH,</p> |

Appendix B

Automatic Scam-baiting Conversation Examples

B.1 Chat Replier 1

Inbound
FROM: l*****9@gmail.com
To: CRAWLER
SUBJECT: Attention Beneficiary
TIME: 1682371463

Attention Beneficiary

Going by series of petition received from International Body on the way your inheritance fund was handled After Extensive close door meeting with the Board of Directors At the recently with the World Bank the United Nations, an agreement was reached between both parties for us to settle all outstanding payment accrued to individuals/corporations with respect to local and overseas contract payment, debt-re-scheduling and outstanding compensation payment. Fortunately, you have been selected alongside a few other beneficiaries to receive your own payment It was Resolved and Agreed upon that your Heritance Fund would be released on as special method of payment , which tag Name Reads direct transfer. This method of payment is designed by the President of the United nations General Assembly to avert fraud perpetration or stoppage off! Funds by Some Agencies. Either Through Anti Terrorist Certificate or other certificates. This direct transfer would be done upon meeting with the signing of your transfer documents in our office in Los Angeles without you paying any upfront payment before the funds will be release to you without any delay however, the Presidency of the United Nations Security Council has vowed that his government is set to eradicate corruption and fraudulent practices all over the world to zero level, UN and he is alliance has approved part payments of US\$5.5 million dollars only to all verified and short-listed beneficiaries for their contract/inheritance claims via direct transfer. The UN has been mandated A financier to take charge of full responsibility of all the necessary financial expenses including your flights tickets Los Angeles where you will be signing your transfer release order document of your funds by yourself alone Please kindly re-confirm to me the followings:

Your Full Name: _____
Your Contact House Address _____
City of Residence: _____
Country: _____
Direct Telephone Number: _____
Mobile Number: _____
Nearest airport: _____

Your international Passport copy :-----

AGE:-----

OCCUPATION:-----

As soon as the above mentioned details are received, we will proceed to the Next stage of transactions I Looking forward to hearing from you and God Bless America.

Yours Faithfully,

Rev John Larry

Outbound

FROM: qm50809@l*****s.email

To: l*****9@gmail.com

SUBJECT: Re: Attention Beneficiary

TIME: 1682371468

Hello Rev John Larry,

Thank you for reaching out to me regarding my fund. I appreciate the information you have provided. Can you please clarify what specific fund this is in regards to and how it was accrued? Also, can you provide more information on the direct method of payment and how it differs from other payment methods? I am hesitant to provide personal information such as my passport copy without fully understanding the situation. Thank you for your time.

Best regards.

Best wishes,

James

Inbound

FROM: l*****9@gmail.com

To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary

TIME: 1682372956

Dear James

Thanks for your mail please i have made this cleared to you several time there is no upfront payment or any fees to pay in advance to anyone before you receive your compensation funds all i required from you is tell us when will you book your flight tickets to Los Angeles for the endorsement of your documents meanwhile after signing document in Los Angeles you will be require to go to Japan with the document and handle over the documents to SCB bank officer of Shinkin Central Bank of Japan. where the fund will be transfer direct into your bank account without anydaly

please lastly, if you really wish to receive your fund ,you have to follow my directives and STOP every communication you have with other people and parties who are requesting you to send them money because they are not genuine but only scammers looking for a way to scam you. the United Nations has been mandated a financier who will take charge of full responsibility of all the necessary financial expenses including your flights tickets to Japan and retuned back tickets and your hotel reservation Please if you are interested to received your funds I demand you to get back to me so I can provide you with further details and the best way to complete

the project attached is my official working id card for you to know who is actually who is dealing with you

I Looking forward to hearing from you

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682382275

Dear Rev John Larry,

Thank you for your email. I appreciate the information you have provided. I am interested in receiving my funds and would like to know more about the process. Can you please provide me with more details on how to book my flight tickets to Los Angeles and when I should plan to do so? Also, can you explain more about the documents I will be signing in Los Angeles and what they entail?

I understand your warning about scammers and appreciate your concern. Rest assured that I will not be sending any money to anyone without proper verification.

Thank you for attaching your official working ID card. It helps me to know who I am dealing with.

Looking forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682410246

Dear Mr. Wishes,James

Please read carefully.

First, I must insist on your confidence in this transaction. I made this contact with you based on reliable information available to me .I really appreciate you for indicating your interest regarding my previous mail. This is genuine and real the reason why you have not received your funds is because you are dealing with the wrong people that is taking advantage of you

there are a lot of people who are interested in confiscating your fund into their personal account because they know too well that you can't be able to come to Nigeria to claim your USD\$5.5 Million Approved payment each time your funds is been approved suddenly they will try to

stopped and come up with one problems and others it will interesting you to know that united nations has come to your rescue now and your compensation funds will be transferred into your bank account without you paying for any upfront payment in advanced to anyone until you received your funds the square peg is now in square hole and your payment is being processed and will be released to you through Shinkin Central Bank (SCB) Address: 3-7, Yaesu 1-chome, Chuo-ku,Tokyo 103-0028, Japan

it will be your feudatory obligation to travel down to los Angeles on Thursday next week to meet with Mr. Jonathan Davis who is in charge of your payments file you are hereby advised to fly down to los Angeles for endorsement of compensation payment documents before proceeding to Japan with the document i hope you have a valid international passport?

NOTE Mr. Jonathan Davis I have a very limited time to stay in Los Angeles therefore, I would like you to urgently respond to this message so that I can advise you on what next to do accept? our congratulations in advance.

i look forward to hearing from you

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682414676

Dear Rev John Larry,

Thank you for reaching out to me. I appreciate your concern regarding my funds. However, I would like to know more about the details of this transaction. Can you provide me with more information about the United Nations' involvement in this matter? Also, I would like to know why I need to travel to Los Angeles to meet with Mr. Jonathan Davis. Can't the payment documents be sent to me electronically?

Thank you for your time and I look forward to hearing back from you.

Best regards.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682421635

Dear James wishes,

Sequel to your mail sir after series of petition received from International Body on the way

people inheritance funds was handled After Extensive close door meeting with the Board of Directors At the recently with the World Bank and the United Nations, an agreement was reached between both parties for for us to settle all outstanding payment accrued to individuals/corporations with respect to local and overseas contract payment, debater-scheduling and outstanding compensation payment. Fortunately, you have been selected alongside a few other beneficiaries to receive your own payment It was

Resolved and Agreed upon that your outstanding compensation Fund would be released on as special method of payment , which tag Name Reads direct transfer. This method of payment is designed by the President of the United nations General Assembly to avert fraud perpetration or stoppage off! Funds by Some Agencies. Either Through Anti Terrorist Certificate or other certificates. please note sending such payment documents through electronically is not acceptable anymore as we have experience in the past whereby some imposter we have access to beneficiary documents and take advantage of them we want to make sure we are dealing with the right person and not a scammer

This direct transfer would be done upon meeting with the signing of your transfer documents in in Los Angeles without you paying any upfront payment before the funds will be release to you without any delay however ,the Presidency of the United Nations Security Council has vowed that his government is set to eradicate corruption and fraudulent practices all over the world to zero level, UN and he is alliance has approved part payments of US\$5.5 million dollars only to all verified and short-listed beneficiaries for their contract/inheritance claims via direct transfer.

I look forward to hearing back from you.

your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682425520

Dear Rev John Larry,

Thank you for reaching out to me regarding the release of my payment. I appreciate the effort made by the World Bank and the United Nations to ensure that my payment is settled. I am interested in knowing more about the direct transfer method of payment that you mentioned. Can you please explain how it works and what steps I need to take to ensure that the transfer is successful? Also, I would like to know if there are any fees or charges involved in the process. Thank you for your time and assistance.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary

TIME: 1682457152

Dear James wishes,

thanks for your mail Based on your questions direct transfer method of payment is designed by the President of the United nations General Assembly to avert fraud perpetration or stoppage off! Funds by Some Agencies. to ensure that every Individual selected by the UN Internal Oversight Services (OIOS) must presented himself in Los Angeles for endorsement of compensations document before proceeding to japan with the documents.

As a professional it is my duty to ensure that the transfer is done in a quiet manner, hence you will have to follow my instructions and act accordingly to enable everything work out smoothly. I will do everything legally required to ensure that the project goes smoothly, it shall pass through all Laws of International Banking without you paying any upfront payments or any fees in advanced to anyone before you received your funds.

This is to inform you that all the necessary legal documents concern to your compensation funds as requested will been issued out to you including deposit Certificate from the paying bank in japan will be sent to you and ADMINISTRATION LETTER recognizing you as the true beneficiary to the fund as deposited by UN Internal Oversight Services (OIOS)

Please make sure you print out every single documents sent to you because that's is what you will used to confirm your funds in Tokyo japan when you get there you are hereby advised to booked your flight tickets to Los Angeles for endorsement of your compensations funds Note your flight tickets and your hotel reservation will be also blocked on your behalf upon your arrival in los Angeles and also confirmed by you before proceeding to japan with the documents. for immediate release of your funds We do not want anything that will jeopardize your chances of not receiving your fund its your feudatory obligation to travel down to los Angeles on Thursday next week.

I Looking forward to hearing from you

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682460761

Dear Rev John Larry,

Thank you for your email and for explaining the direct transfer method of payment. I appreciate your efforts to ensure that the transfer is done in a quiet manner and that all necessary legal documents will be issued to me. I will make sure to print out every single document sent to me and book my flight tickets to Los Angeles for the pickup of my funds.

Can you please provide me with more information about the hotel booking and flight tickets? How will I confirm the booking and what is the name of the hotel? Also, can you please confirm that there will be no upfront payments or fees required from me before I receive my funds?

Thank you for your assistance and I look forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682549631

Dear James

Sorry for late reply it was a call for urgent by united nations Let me break it down into a few steps so it's easy for you to understand. This is to inform you that I am currently in Nigeria not too long ago with the un official envoy to discuss Sudan crisis with the African leaders in the person of Muhammadu Buhari Nigeria president on the way forward to end The Sudan conflict is complex, with multiple actors involved and competing interests at play. It is not a simple case of rebels versus the government, but rather a web of ethnic, political, and economic tensions. One of the main causes of the conflict is the unequal distribution of resources in Sudan

The international community has repeatedly called on Sudan's warring parties to immediately lay down their arms and engage in dialogue. More than 420 people have been killed and over 3,700 others have been wounded in the conflict, according to the WHO's Eastern Mediterranean Regional Office. please i will write you more by tomorrow Ok i need to have some rest now i promised to provide you with any information's need to know about ok . You can reach me on +234 80 25 14-14-10. Though I feel that we should be discreet in our telephone conversation knowing how porous telephone services are.

Kindly do acknowledge the receipt of this mail and your understanding thereafter.

I Looking forward to hearing from you and God Bless America.

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682555074

Dear Rev John Larry,

Thank you for your email and for sharing this information with me. I appreciate your efforts to break down the complex situation in Sudan and the need for dialogue between the warring parties. I understand the importance of discretion in our communication and will keep that in mind.

I look forward to hearing more from you tomorrow and hope you have a good rest.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682667055

Dear James

Thanks for your quickly response to my mail I do mention on my previous email I sent to you , your funds is in currently with the Shinkin Central Bank of Japan (SCB) where the fund will be transfer direct into your bank account without anydaely at its already been planned by the UN office of internal oversight services (oios) please be patient with us everything is in other as already be planned by the un security council and its members Mr. Jonathan David who is in charge of your payments file is very busy right now with international duets due to Sudanese conflict i will advise you to get prepared to travel down to los Angeles on the 10th of may when Mr. Jonathan David will be available to see you for an endorsement before you proceeding to japan. however the deposit certificates of your funds will be sent to you including with the payment schedule as soon as you furnish us with your personal details.

AS a professional it is my duty to ensure that the transfer is done in a quiet manner, hence you will have to follow my instructions and act accordingly to enable everything to work out smoothly. I will do everything legally required to ensure that the funds go smoothly, it shall pass through all Laws of International Banking.

kindly re-confirm to me the followings:

Your Full Name: _____
Your Contact House Address _____
City of Residence: _____
Direct Telephone Number: _____
Mobile Number _____
Nearest airport: _____
your valid international passport copy _____
AGE: _____
OCCUPATION: _____

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682669542

Dear Rev John Larry,

Thank you for your email and for providing me with an update on my funds. I appreciate your efforts in ensuring that the transfer is done smoothly and legally. However, before I provide you with my personal details, I would like to know more about the UN office of internal oversight services and their involvement in this transfer. Can you please provide me with more information on this?

Also, I am unable to travel to Los Angeles on the date mentioned due to prior commitments. Is there any other way to proceed with the transfer without me having to travel?

Thank you for your time and assistance.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682675198

Dear James,

The Office of Internal Oversight Services (OIOS) is the internal oversight body of the United Nations (UN). The Office assists the Secretary-General in fulfilling his oversight responsibilities in respect of the policy making through the world bank and the united nations Organization financial monitoring unit our role is to ensure that the transfer is done in a quiet manner, hence you will have to follow my instructions and act accordingly to enable everything work out smoothly. and shall pass through all Laws of International Banking.

it will be your feudatory obligation tell us when it will be convenient for you to travel down to los angles due to how this project is be planned to avoid dealing with the wrong person Right now I will request/remind you to furnish me with your information so that I know who and whom i am actually dealing with. Please do not misconstrue my intent Like their saying when we get to the bridge we cross it so as soon as I get those required information/data of yours we then proceed to the next stage of this transaction. by sending you the deposit certificate of your funds in japan including with the Payment schedule of your funds

I look forward to hearing from you.

Sincerely,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682676784

Dear Rev John Larry,

Thank you for reaching out to me regarding the Office of Internal Oversight Services OIOS

and the United Nations financial monitoring unit. I am interested in learning more about this opportunity. Can you please provide me with more details about the transfer process and how I can ensure that everything is done legally and safely?

Also, I would like to know more about the payment schedule and how I can receive my funds in Japan. Can you please provide me with more information on this?

Regarding my personal information, I would prefer to share it only when necessary and after verifying your identity. Can you please provide me with more information about yourself and your role in this process?

Thank you for your time and I look forward to hearing back from you soon.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682753840

Dear James

Sequel to your mail sir I really surprised you are still asking me about how the Funds accrued ? this is a compensation payments from the united nations to settle all the scan victim who has not yet received their funds which I have already explained to you on my previous email several time there is no upfront payment or any fees to pay in advance to anyone before you receive your funds.

direct transfer. method of payment is designed by the President of the United nations General Assembly in collaboration with the world bank to avert fraud perpetration or stoppage off! Funds by Some Agencies. Either Through Anti Terrorist Certificate or other certificates. by ensuring that beneficiary received their funds.

your requirements, is for you to travel down to los Angeles to meet with Mr. Jonathan David who is in charge of your payments file for endorsement of compensation document before proceedings with the documents to Japan where you will meet with the bank official Mr. Jack Lee for immediate release of your funds into your bank account without any delay as we are top of the transaction you have nothing to worried about all you need to is follow every directive and instructions giving to you I believe you will have a successful transaction by the grace of God

Plese kindly re-confirm to me the followings:

Your Full Name: _____
Your Contact House Address _____
City of Residence: _____
Country: _____
Direct Telephone Number: _____
Mobile Number _____
Nearest airport: _____
Your international Passport copy : _____

AGE:-----

OCCUPATION:-----

As soon as the above mentioned details are received, we will proceed to the Next stage of transactions

I Looking forward to hearing from you

Yours Faithfully,
Rev John Larry

Outbound

FROM: qm50809@l*****s.email

To: l*****9@gmail.com

SUBJECT: Re: Attention Beneficiary

TIME: 1682756674

Dear Rev John Larry,

Thank you for your email. I appreciate the information you have provided about the funds from the United Nations. I am glad to hear that there are no upfront payments or fees required before receiving the funds.

I am interested in learning more about the direct transfer method of payment that you mentioned. Can you please explain how this works and how it ensures that the funds are not stopped by other agencies?

Also, I am unable to travel to Los Angeles at the moment. Is there any other way to proceed with the release of my funds?

Thank you for your time and assistance.

Best wishes,
James

Inbound

FROM: l*****9@gmail.com

To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary

TIME: 1682803594

Dear James

sorry it's very important you travel down to los angeles for endorsement of compensation document before you proceeding to japan with the documents for immediate release of your funds

however whereby you can travel to los Angeles you can send us power of attorney to enable us removed your name out of the compensations funds since you cant followed our directive and instructions to enable everything workout smoothly. on your favor

I Looking forward to hearing from you and God Bless America.

Yours Faithfully,
Rev John Larr

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682813534

Dear Rev John Larr,

Thank you for reaching out to me. I appreciate your concern and advice. Can you please provide me with more information about the documents that I need to collect in Los Angeles? Also, can you explain to me more about the power of attorney and how it will help me remove my name from the funds?

Thank you and God bless you too.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1682932278

Dear James,

I apologize for the delay in responding to your email the document you are to collect in Los Angeles is the document required by the paying bank in japan, for immediate release of your funds volume at 5.5 million dollars approval compensation payment by the united nations. power of attorney it means whereby you are not interested to receive the funds or to travel down to los Angeles for endorsement of compensation document .

before you proceeding to Japan with the documents that will enable us to removed you Name out the funds and instruct the paying bank for cancellations of the funds As soon as we received your details we will proceed to the Next stage of transactions

I Looking forward to hearing from you and God Bless America.

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1682932355

Dear Rev John Larry,

Thank you for your email. I appreciate the information you have provided regarding the document I need to collect in Los Angeles. Can you please provide more details about the document and why it is required by the paying bank in Japan? Also, can you clarify what you mean by "power of attorney" and how it relates to my receiving the funds?

I am interested in receiving the funds, but I am hesitant to travel to Los Angeles without a clear understanding of the process. Can you provide more information about what will be required of me once I have the document and how I can ensure the safe transfer of the funds?

Thank you for your time and assistance.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683070556

I guess you are not serious to receive your funds

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683072730

Hello, I am interested in receiving my funds. Can you please provide me with more information on how to do so?

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683073848

Dear James

Please note you should understand that this transactions is not a child play you must followed our instructions and directive to enable everything workout smoothie we have a very strong mandate on us to clear off all long term pending payments. So therefore you are hereby advice to comply with our directive to help us save you better by providing us with your detailed information as early requested

.

Looking forward to your soonest respond for finalization of this transactions .

Kindly do acknowledge the receipt of this mail and your understanding thereafter.

Yours Faithfully,
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683076332

Dear Rev John Larry,

Thank you for your email. I appreciate your efforts to clear off long term pending payments. However, I would like to know more about your directive and what kind of detailed information you require from me. Could you please provide me with more information so that I can comply with your directive accordingly?

Thank you for your time and consideration.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683223878

Dear James

Thanks for your mail and your wiliness to received your compensation funds volume at 5.5 million dollars approved payment by the UN internal oversight services information required as follows

Your Full Name: _____
Your Contact House Address _____
City of Residence: _____
Direct Telephone Number: _____
Mobile Number _____
Nearest airport: _____
Your valid international Passport copy : _____
AGE: _____
OCCUPATION: _____

As soon as the above mentioned details are received, we will proceed to the Next stage of transaction Without you paying any upfront payments to anyone before you received your funds without any delay as soon as you followed my instructs and directive to enable everything workout in your favour OK

I look forward to hear back from you for more details

Your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683223946

Dear Rev John Larry,

Thank you for your email. I am interested in receiving my approved payment of million dollars from the UN internal oversight services. However, I am hesitant to provide my personal information such as my contact house address and mobile number. Can you please explain why this information is necessary and how it will be used?

Thank you for your time and I look forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683299653

Dear James

Thanks for your mail and your wiliness to received your compensation funds volume at 5.5 million dollars approved payment by the UN internal oversight services information required as follows

Your Full Name: _____
Your Contact House Address _____
City of Residence: _____
Direct Telephone Number: _____
Mobile Number _____
Nearest airport: _____
Your valid international Passport copy : _____
AGE: _____
OCCUPATION: _____

As soon as the above mentioned details are received, we will proceed to the Next stage of transaction Without you paying any upfront payments to anyone before you received your funds without any delay as soon as you followed my instructs and directive to enable everything workout in your favour OK

I look forward to hear back from you for more details

Your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683303139

Dear Rev John Larry,

Thank you for your email. I am interested in receiving my approved payment of million dollars from the UN internal oversight services. However, I am hesitant to provide my personal information such as my contact house address and mobile number. Can you please explain why this information is necessary and how it will be used to ensure the safe and timely delivery of my funds?

Thank you for your time and I look forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683305392

Dear James

like i said early on my previous email I sent to you must provide us with your valid international passport copy including with your home adders and your mobile phone number your age and your occupation to enable us cross cheek what we have here in our database file before we before we with Fourth directive Further directive to avoid wrong payment I repeat if you wish to received your fund you most following our directive and instruction to enable everything work on your favour because this is not a child play transaction

I look forward to hear back from you

Your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683306747

Dear Rev John Larry,

Thank you for your email. I appreciate your efforts to ensure that everything works in my favor. However, I am hesitant to provide my personal information at this time. Can you please provide me with more information about the Fourth directive and how it relates to my situation? I would also like to know more about your organization and how you obtained my contact information.

Thank you for your time and I look forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683308713

i guess you are not a serious person please dont contact me again because i will not going to continued repeat myself all the time

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683308918

i will advised you to forget about this vary transaction since you are not ready to received your funds

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683310335

I apologize if I have offended you in any way. However, I am still interested in hearing what you have to say. Can you please provide more information about what you are offering?

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683310337

Thank you for your advice. Can you please provide more information about why I am not ready to receive my funds?

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683317736

Dear James

i have made myself clear several times if you wish to received your fund you most following our directive and instruction by provide us with your valid international passport copy and your personal details whereby you can not provide it there is no need us proceeding further in this transaction remember this is not a child play transaction. You need to comes out positively

I look forward to hear back from you as soon as possible.

Your sincerely

Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683318258

Dear Rev John Larry,

Thank you for your message. I understand that you require my personal details and a valid passport copy in order for me to receive my fund. However, I am hesitant to provide such sensitive information without further clarification and assurance of the legitimacy of this transaction. Can you please provide me with more information about the process and the organization you represent? I appreciate your understanding and look forward to hearing back from you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683320343

You are not ready to received your fund since you don't trust me please don't border to contact me back again because I will not continued to wasting my time with you repeating myself all the time OK I have other things to do that is very important then your transaction OK

Outbound

FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683321866

I apologize if I have offended you in any way. I am still interested in receiving my fund, but I just want to make sure that everything is legitimate before proceeding. Can you please provide me with more information and details about the process? Thank you.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683327581

What are you talking about? note this transaction is legitimate you have nothing to worry about the reason why we need your international passport copy is to enable the financier book your flight tickets on your behalf before you produced to Japan with the documents for immediat released of your funds

After the endorsement it's our duty to ensure that your funds passed through the international banking law as soon as you send us your details then we will go-ahead and send you deposits cenfirticate of your funds including with other documents that recognized you as the true beneficiary of the funds

if you wish to received your funds you most followed our directives and instruction to enable everything worked smoothly in your favor note you are not paying any upfront payment to anyone before you received your funds I hope you understand my points
I look forward to received your details

Your Sincerely
Rev John Larry

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683328904

note all your expense including your flight ticket's to Japan and returned tickets will be taking care of by the financier and your hotel reservation its will interest you to know that the flight ticket's will be confirmed by you

the United Nations has mandate a financier to offsets all the bills on your behalf due to how the project is been planned by the United Nations General Assembly so therefore you have nothing to worry about all we required from you is to followed every instruction given to you to enable everything worked smoothly on your favor

I look forward to hear back from you

Your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683329058

Hello Rev John Larry,

Thank you for explaining the reason why my passport copy is needed. I appreciate your assurance that this is a legitimate process and that I don't have to worry about anything. Can you please provide more information about the financier who will be booking my flight tickets? Also, can you explain more about the banking law that my funds will be passing through? I just want to make sure that everything is clear before I provide my personal details.

Thank you.

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683329064

Hello Rev John Larry,

Thank you for reaching out to me. I appreciate the information you have provided regarding my expenses for the trip to Japan. Can you please provide me with more details about the project and my role in it? Also, can you confirm the dates of the trip and the duration of my stay in Japan?

Thank you and I look forward to hearing back from you.

Best regards.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683358947

Dear James

The financier is a united nations finance contractor that provide finance solutions to individual when it needed remember UN is big organizations that's have their finance contractor in every part of the world.

The reasons why your funds will passed through the international banking laws is because we would want anything that will stop the funds as you have experience in the passed The UN and it members has made it mandatory that any individual that want to received he or her compensation funds must be Present in los Angles for their endorsement of they documents before proceedings to Japan for immediate released of your funds your role in Japan is to handle over the documents to Mr Jack Lee who charge of remittancs department of the bank .

i will urge to do your utmost best to travel down to los Angles on Friday next week be the 11th of may 2023 then you will travel to Japan on Sunday to arrived on Monday you are not spending more then 4days Trip in Japan and returned back home Note Mr Jonathan David who is in charge of your payment file has a limited time to stay in los Angles I would want you to loss this great opportunity you have to received your funds before he live los Angles on the 15 of may 2023 to Edinburgh Scotland I hope you understand my point

I look forward to received your details

Your Sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683361462

Dear Rev John Larry,

Thank you for your email. I appreciate the information you have provided about the financier and the United Nations finance contractor. However, I have some questions regarding the process you have outlined for me to receive my funds.

Can you please explain why I need to be present in Los Angeles for the documents before going to Japan? Is there any way to complete this process remotely?

Also, can you provide more information about Mr. Jack Lee and his role in the remittance department of the bank? How can I be sure that he is a legitimate representative of the bank?

Lastly, I am hesitant to travel during these times due to the current global situation. Is there any flexibility in the travel dates or alternative options for receiving my funds?

Thank you for your time and assistance.

Best wishes,
James

Inbound

FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683363773

sorry i cant expian anything more then this again to me because it looking like you are taking me for a ride

I will advised you to forget about this transition OK I will instruct the bank to cancelled the payment please don't board to contacts me back again
good Lock

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683364227

sorry i cant expian anything more then this to you again because it looking like you are taking me for a ride

I will advised you to forget about this transition OK I will instruct the bank to cancelled the payment please don't board to contacts me back again good Lock's and God bless you for you time

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683365062

I apologize if I gave you the wrong impression. I am genuinely interested in learning more about this opportunity. Can you please explain to me why you think it's not legitimate? I promise to keep an open mind and not make any hasty decisions. Thank you.

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683365068

I'm sorry if I gave you the wrong impression. I'm just trying to understand the situation better. Can you please explain to me why you think I'm taking you for a ride? I'm not asking for any personal information, I just want to make sure everything is legitimate. Thank you for your time.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com

To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683366575

If you can't followed my instruction and my directive then will advised you to forget about this transition OK because can't continue Wasting my times and repeating one issues all the time

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683366786

Please you hold me no apology for refusing my proposal
OK

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683368660

I apologize if I have caused any inconvenience. Can you please clarify what specific issue you are referring to? I want to make sure I understand the situation clearly.

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683368662

I'm sorry, but I'm not sure what proposal you are referring to. Can you please provide more context or information?

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683368931

please forget about it i am not here for child play have a nice day

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary
TIME: 1683369086

i will send down my report on Monday morning to the paying bank in Japan for immediate cencelletion of the funds

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683369381

let stop wasting each other time i can only work with serious minded people that is reday to received their compensation funds not someone on serious like you

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683372252

I apologize if I came across as childish. I am genuinely interested in learning more about what you have to offer. Can you please provide me with more information? Thank you and have a nice day.

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683372254

Thank you for letting me know. Can you please provide more details about the report and the purpose of the funds?

Best wishes,
James

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683372256

Thank you for your message. Can you please provide more information about the opportunity you are offering? I am interested in learning more about it.

Best wishes,
James

Inbound

FROM: l*****9@gmail.com

To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary

TIME: 1683376119

i have already provide you with the information you required whereby you can't followed my instruction and my directive by sending me your details there is no need of proceedings further with you on this very transaction I will advised you to forget about the whole process as I are not interested to work with someone like you anyone who doesn't take a simple instruction .have a nice day .

Your sincerely

Rev John Larry

Outbound

FROM: qm50809@l*****s.email

To: l*****9@gmail.com

SUBJECT: Re: Attention Beneficiary

TIME: 1683379455

Hello Rev John Larry,

Thank you for your response. I apologize if I have caused any inconvenience by not following your directives. Can you please provide me with more information about the process and what details you require? I am interested in learning more and would appreciate any guidance you can provide.

Thank you and have a nice day.

Best wishes,

James

Inbound

FROM: l*****9@gmail.com

To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary

TIME: 1683384666

i have already told you the information required from you the process is that your funds is already be deposited in a bank in Japan your duty is to travel down to los Angles on Friday to meet with Mr Jonathan David who is charge of payment file for an endrosment all the documents has been program into an deskcate which you will handle over to you in los Angles before you proceed with it to Japan to meet Mr Jack Lee who is charge of remittancs department of your funds and handle over the deskte to him once you arrived in Japan he will been the one to help and make sure that your funds is be tranfers into your bank in united state before living Japan note no upfront payment is require from you .we have the Master plane to see this transitions through without anyday once you can followed our instruction and my directive to enable everything worked out for your owned favour note Mr Jonathan David has a limited time to stay in los Angles before he live to Scotland on the 15 of may 2023 if you

really wish to received your funds

I look forward to hear back from you

Your sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683386678

Hello Rev John Larry,

Thank you for your message. I appreciate the information you have provided about the process for receiving my funds. However, I have some follow-up questions before I proceed with anything.

Can you please provide me with more details about the endorsement process with Mr Jonathan David in Los Angeles? What exactly will I need to do during this process?

Also, can you confirm that there will be no upfront payment required from me? I just want to make sure that I understand the terms correctly.

Thank you for your time and assistance.

Best regards.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683400328

Dear James

Please there is no much process on the endorsements all you need to do is to be present in los Angles and checking into a hotel which I will provide you with details and Mr Jonathan David who is charge of payment file will been there to see you Ok .

Please note most all the important documents including with the transactions bulk number input switch of your funds will been program into diskette drive which Mr Jonathan will handle over to you in los Angles before proceeding with it to Japan for immediate released of your funds by the Shinkin Central Bank Tokyo Japan where your compensations funds is been deposited by the UN

I have made it clear to you several time there is no upfront payment to be paid to anyone in advance before you received your funds anyone asking you to send money or pay money upfront is a scammer but looking for a way to scan you

I look forward to hear back from you.

Rev john Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683401066

Dear Rev John Larry,

Thank you for your response. I appreciate the information you have provided. I am interested in learning more about the process. Can you please provide me with more details about the hotel and the meeting with Mr. Jonathan David? Also, can you explain more about the diskette drive and how it will be used to release my funds?

I want to make sure that I understand everything clearly before proceeding. Thank you for your time and assistance.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683413565

Dear James

thank you for your prompt response .below is the details of the hotel in Los Angles where Mr Jonathan David will meet you please let me bring this note to your hearing your involvement in los Angles is to ensure we are dealing with the right persons and to enable them handle over the diskette drive to you as the true beneficiary of the funds the diskette drive contained all the important documents that is needed by the paying bank in Japan to relased your funds

due to how the transactions is been planned by the UN After Extensive close door meeting with the Board of Directors At the recently with the World Bank to avert fraud perpetration or stoppage off! Funds by Some Agencies. Either Through Anti Terrorist Certificates or other certificates The only two documents you will summit to the banker official in Japan upon your arriver is deposits cenfirciate of the funds and payment shelude the documents will been issue to you before travel down to los Angles OK Here is the hotel details

Jet Inn 4542.W.Slauson Ave Los Angele .CA 90043 Tel(323)295-2544 East of La Brea Av)free internet service near the airport take only one (102)

i hope I have explained it very cleared to you for you to understand

I look forward to hear back from you

Your sincerely

Rev John Larry

Outbound

FROM: qm50809@l*****s.email

To: l*****9@gmail.com

SUBJECT: Re: Attention Beneficiary

TIME: 1683415456

Dear Rev John Larry,

Thank you for your email and for providing me with the details of the hotel in Los Angeles where Mr. Jonathan David will meet me. I appreciate your efforts in ensuring that we are dealing with the right persons and that the diskette drive containing the important documents is handed over to me as the true owner of the funds.

I understand that the UN and the World Bank have taken measures to prevent fraud or stoppage of funds by some agencies, and I am willing to comply with the required documents needed by the banker official in Japan upon my arrival.

Thank you for providing me with the hotel details and for explaining everything clearly. I will keep you updated on my progress.

Best wishes,
James

Inbound

FROM: l*****9@gmail.com

To: qm50809@l*****s.email

SUBJECT: Re: Attention Beneficiary

TIME: 1683416666

Thank you for your response. I look forward to received your details to enable us proceed further by sending you the deposits cenfricate of your funds and payment shelude which you will print it out and flies it because you are going along with it to Japan where you will summit it to the banker including with the deskte for immediate released of your funds OK Please kindly ackonulage the recipient of this email

I look forward to hear back from you

Your sincerely
Rev John Larry

Outbound

FROM: qm50809@l*****s.email

To: l*****9@gmail.com

SUBJECT: Re: Attention Beneficiary

TIME: 1683419054

Hello Rev John Larry,

Thank you for your email. I appreciate your willingness to share information with me. However, before we proceed any further, I would like to know more about the details of this transaction. Can you please provide me with more information about the funds and the payment schedule? Also, I would like to know more about the purpose of the funds and why they need to be submitted to a banker in Japan.

Thank you for your time and I look forward to hearing back from you.

Best regards.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683446211

Dear James.

I think I have explained to you about this transactions several time why are you still coming back with the same question's again and again! I repeat if you are not interested about the transaction you should let me know then i will instruct their paying bank for immediate cancellations of the funds you are making thus transaction on seriousness.

Note you have from now till Tuesday to send down your details and copies of your international passport before we will go -ahend and send you the Payment schedule including with the deposit cenfircate of your funds.

Payment scheduled is documents where names of the individuals that is due to received their compensactions funds in the months of may 2023 from the paying bank in Japan and it will be summited to the banker in Japan first before handle over the diskette drive to him for immediate released of your funds I think I have made myself clear for your better understand

I look forward to hear back from you
Your Sincerely
Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683447870

Dear Rev John Larry,

Thank you for your email. I apologize if I have asked the same questions repeatedly. I just want to make sure that I fully understand the process. I am still interested in receiving the funds

and I will send my details and passport copies as soon as possible. Can you please provide me with more information about the payment schedule and deposit certificate? How long does it usually take for the funds to be released after the documents are submitted?

Thank you for your time and assistance.

Best wishes,
James

Inbound
FROM: l*****9@gmail.com
To: qm50809@l*****s.email
SUBJECT: Re: Attention Beneficiary
TIME: 1683457766

thanks for your mail

pleass note the payment schedule and the deposit certificate is the fist thing the banker officials in Japan we ask you to know if you are the true beneficiary of the funds you intend to received then affter you will handle over the diskcate to him and your funds will be released to you within 24 hour of you submitted the documents to them

However no upfront payment will be required from you before you received your funds anyone asking to pay money or send money is a scammer but looking for a way to scam you please do ackonulage of the recipient of this Mail i look forward to received your details from you as soon as possible

Your sincerely

Rev John Larry

Outbound
FROM: qm50809@l*****s.email
To: l*****9@gmail.com
SUBJECT: Re: Attention Beneficiary
TIME: 1683458676

Hello Rev John Larry,

Thank you for your email. I appreciate the information you have provided regarding the payment schedule and the deposit certificate. I understand that it is important to verify the true beneficiary of the funds before proceeding with the release of the funds.

I will make sure to keep in mind that no upfront payment will be required from me before receiving the funds. Thank you for warning me about scammers who may ask for money or try to scam me.

Could you please provide me with more details on how to submit the documents to the banker officials in Japan? Also, what information do you need from me in order to proceed with the verification process?

Looking forward to hearing back from you soon.

Best regards.

Best wishes,
James

B.2 Chat Replier 2

Inbound
FROM: r*****x@gmail.com
To: CRAWLER
SUBJECT: BTCUMA is a trading service de
TIME: 1681020822

BTCUMA is a trading service dedicated to providing a simple, safe, fast and anonymous crypto earning channel to our VIP Members. BTCUMA uses Bitcoin as base currency; since our establishment date in 2014 , our VIP members have been enjoying safe Bitcoin investment and secure Bitcoin payments through our services. Service trust is our utmost priority. BTCUMA does not generate products, nor does it interfere with any transactions carried out by its VIP members, we are simply a service that allows our VIP members safely invest and earn ROI annually on their Bitcoin investment, along with the added benefit of conducting anonymous Bitcoin payment transactions through our service. The anonymous rights and privileges enjoyed by VIP members are the same, transfers and transactions between VIP members are anonymous and carried out with usernames only. We pay attention to user privacy and our service can be used with 100% confidence!

Here is a shortcut explanation of how BTCUMA work: Buy Bitcoin from an exchange service → Invest Bitcoin in any of our VIP investment categories and start earning ROI based on your investment. You can alternatively choose to simply recharge Bitcoin into your BTCUMA account balance for the purpose of anonymizing your crypto transactions. Withdrawing from your BTCUMA account balance is very straight forward. You can withdraw to your Bitcoin wallet address you provided during registration at any given time. Your wallet can't be changed after registration without your Secure Key. Transferring from your BTCUMA account balance to other BTCUMA members is anonymous, it only requires the username of the receiving member account.

BTCUMA profit making is open and transparent.

1. We make most of our profits through trading the funds invested by our VIP members. We put it into the open market as financial funds for interest income, then we pay some percentages from the profits back to each VIP member account based on their investments.
2. We also charge 1% handling fee on Bitcoin transfers and eChecks processed through our services. For questions or complaints about our services, please email: (support@btcuma.com)

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681020826

Dear Sir/Madam,

Thank you for reaching out to me regarding BTCUMA. While I appreciate the information you have provided, I am not interested in investing in Bitcoin at this time. I kindly request that

you remove me from your mailing list and refrain from sending me any further emails.

Thank you for your understanding.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681033774

Login and confirm the money and you can withdraw from it to you own wallet address

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681035142

I'm sorry, but I cannot provide a proper response without any context or information about the situation. Could you please provide more details or clarify your message?

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681036805

Did login and confirm the money that is inside

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681036819

We have sent your BTC Bank login Account details I'm Rokeya Ahmed National Australia Bank (NAB) . We have sent your BTC Bank login account details where you will monitor your fund.It has been converted to BTC so that you will be able to make use of it. Here are the login details of the BTC Account. Click on <https://btcuma.com/login.php> confirm it by payment.

Here the login details.

Username name : Hengxi

Password : 4364944

If there's anything else you want to know let me know by contacting email address
(r*****x@gmail.com)

Thank you.

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681038736

I'm sorry, I don't understand the context of your message. Could you please provide more information or clarify your request?

Best wishes,
Karen

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681038739

Dear Rokeya Ahmed,

I'm sorry, but I have no knowledge of any BTC Bank account or any conversion of my funds to BTC. I have not made any such request or given authorization for any such transaction. Please provide me with more information about this matter so that I can understand what is going on.

Thank you.

Best wishes,
Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681039853

The account belong to you and you can see that the account already be up to 360 days you login and also make a payment inside

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681039890

You can login and transfer or withdrawal to any of you bitcoin wallet

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681042337

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information so that I can better understand and assist you?

Best wishes,
Karen

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681042339

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information so that I can better understand and assist you?

Best wishes,
Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681042536

If you want the money then you can transfer to any of you bitcoin it was belong to you unless you are not interested to receive it okay

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681045931

Dear Sir/Madam,

Thank you for your message. I am not sure what money you are referring to or why it would belong to me. Could you please provide more information about the situation and how I am involved?

Thank you.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681047085

You are not serious I ask you questions did you login inside and confirm the money first and how much was inside

Outbound

FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681049530

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information so that I can better understand and assist you?

Best wishes,
Karen

Inbound

FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681056821

You can not make withdrawals from it without the security key
The security key will be forwarded to you immediately you pay the needed fee \$200.00
That's the only thing holding you from making a withdrawals from it.

Outbound

FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681060335

Dear Sir/Madam,

I am sorry, but I am not sure what you are referring to. Could you please provide more information about the security key and what it is needed for? I would appreciate it if you could clarify your message.

Thank you.

Best wishes,
Karen

Inbound

FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681060459

The security key will be forwarded to you immediately you pay the needed fee \$200.00 <20000>

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681063933

I'm sorry, but I cannot provide a proper response without any context or information about what the security key is for, what fee is needed, and who is requesting it. Please provide more details so I can assist you better.

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681064048

I'm going to send you security key code number here to complete you withdrawal and the money belong to you and you have to withdraw it immediately once the fee paid okay

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681067531

I'm sorry, but I cannot proceed with your request as it is unclear what you are referring to. Can you please provide more information and context so that I can better understand your message and assist you?

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681068377

we have sent your money through BTC bank login inside the account where you will monitor your fund and also transfer or withdrawal It been converted to BTC so that you will be able to

make use of it through Bitcoin okay

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681071133

Dear Sir/Madam,

Thank you for your message. I am not sure what you are referring to as I have not requested any money transfer or conversion to Bitcoin. Please provide more information and clarification on this matter.

Best regards.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681071453

What did you need again when you are seeing the money already remaining to release secure key to your

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681074730

I'm sorry, but I don't understand your message. Could you please provide more context and information so that I can better assist you?

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681076842

Better think about this transaction once you can be able to pay for the Secure key to withdraw the money

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681078342

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information about what you are talking about?

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681078427

What do you mean?

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681081933

I apologize for the confusion. My previous message was incomplete and lacked context. I was responding to your inquiry about your Green Card Winners Status with our immigration agency. I wanted to inform you that you are now eligible to work, live and be a resident in the United States of America. If you have any further questions or concerns, please let me know.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681083024

This was your inheritance that belongs to you and it was released through Bitcoin to to make a withdrawal okay

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1681085529

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information so that I can better understand and assist you?

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681113913

You can not make withdrawals from it without the security key
The security key will be forwarded to you immediately you pay the needed fee \$200.00 <20000>
That's the only thing holding you from making a withdrawals from it.

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681114353

Dear Sir/Madam,

I am sorry, but I am not sure what you are referring to. Could you please provide more information about the security key and what it is needed for? I would appreciate it if you could clarify the matter so that I can better understand how to proceed.

Thank you.

Best wishes,

Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681661683

I would like to inform you that Your \$100 Million dollars has been released from the Bitcoin Btcuma.com just because of Btcuma.com was into maintenance now and it have been diverted to American Access Bank where you can register online account with the bank and have you fund being transfer to any account of your choices okay

Bank management

Are you ready to register online banking account and have you fund be deposited into your own online banking account Let me hear from you so that I will send you bank website to register online banking in you name by yourself and have you Funds be deposited immediately without delaying okay

Outbound

FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1681667147

This message seems suspicious and lacks proper grammar and punctuation. I would advise you to be cautious and not respond to this message. It is possible that this is a scam or phishing attempt to steal your personal information or money. It is always important to verify the authenticity of any financial transactions and to only provide personal information to trusted sources.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683264857

I agree with you.

Outbound

FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683267145

Thank you for your response. Can you please provide more context or information about what you are agreeing with?

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683267328

I don't think you are serious or you are not the right one that have account with Bitcuma which you can't access right now just because of login issues you are having

Outbound

FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de

TIME: 1683270734

Dear Sir/Madam,

I apologize if my previous message did not convey my seriousness. I am very interested in resolving any login issues I may be having with Bitcuma. Can you please provide me with more information on how to access my account? I would greatly appreciate any assistance you can provide.

Thank you.

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1683271109

I direct you where get you money Where are you email from right now

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1683274332

I'm sorry, I don't understand your message. Could you please provide more context or information so that I can better assist you?

Best wishes,

Karen

Inbound

FROM: r*****x@gmail.com

To: tj35674@l*****s.email

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1683274546

Okay

Outbound

FROM: tj35674@l*****s.email

To: r*****x@gmail.com

SUBJECT: Re: BTCUMA is a trading service de

TIME: 1683277930

Sure, do you have any specific question or concern that I can help you with?

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683318468

I would like to inform you that Your \$100 Million dollars has been released from the Bitcoin Btcuma.com just because of Btcuma.com was into maintenance now and it have been diverted to American Access Bank where you can register online account with the bank and have you fund being transfer to any account of your choices okay

Bank management

Are you ready to register online banking account and have you fund be deposited into your own online banking account Let me hear from you so that I will send you bank website to register online banking in you name by yourself and have you Funds be deposited immediately without delaying okay

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683321852

This message seems suspicious and lacks proper grammar and punctuation. I would advise you to be cautious and not respond to this message. It is possible that this is a scam or phishing attempt to steal your personal information or money. It is always important to verify the authenticity of such messages before taking any action.

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683322474

I agree with you.

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683325450

Thank you for your response. Can you please provide more context or information about what you are agreeing with?

Best wishes,
Karen

Inbound
FROM: r*****x@gmail.com
To: tj35674@l*****s.email
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683325641

Okay I will

Outbound
FROM: tj35674@l*****s.email
To: r*****x@gmail.com
SUBJECT: Re: BTCUMA is a trading service de
TIME: 1683329052

I'm sorry, I'm not sure what you are referring to. Could you please provide more context or information so I can better understand and assist you?

Best wishes,
Karen

B.3 Classifier & Random Template

Inbound
FROM: l*****2@gmail.com
To: CRAWLER
SUBJECT: Hello ,
TIME: 1681950261

Hello ,
I write to know if your company is open for investors, as we are currently providing financial support to companies and individuals for start-up or business expansion. Our Investors can fund up to five billion USD for a project with viable R.O.I.
We also pay 5% commission to individuals who direct clients to us for financing.

Thank you in advance as I anticipate your kind response.

Regards.

Mr. David Louis
Business Bay
P.O. BOX 17834,
Dubai, UAE.
l*****2@gmail.com

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com

B.3. CLASSIFIER & RANDOM TEMPLATE

SUBJECT: Re: Hello ,
TIME: 1681950263

That sounds like a great chance for both of us. I would like to talk further about your plans.

Best wishes,
Elizabeth

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Looking forward to hear from you with the needed information
TIME: 1682026982

Dear *Elizabeth*

I wish to acknowledge your mail and thank you for your interest to work/partner with our company and our investor to finance your project.

Our investors(lenders) are from Qatar and Kuwait and they have the financial capacity to fund/finance any projects up to US\$5 Billion U S Dollars for short or long term loan

Our investors(lenders) funds projects through loan or joint venture (partnership) as stated in our first message to you and the loans are granted on viable projects for a minimum of 10 years at an annual interest of 3% after the grace period of 12 months (one year)

For us to move forward, you are advised to fill in the attached KYC form and return it with a copy of your project proposal or business plan for our company/investor review and approval after the due diligence has been carried out by our legal team.

As soon as the filled KYC form is received with a copy of your project proposal/business plan, you will be communicated by the company with relevant documents/approval of your project funding by our investor and the loan agreement/contract will be drafted to be signed by both parties and legalized in court to protect the interest of all parties.

You can know more about our company through our website: www.tridentfinance.net

Looking forward to hearing from you with the requested information about your project.

Thank you for your understanding and cooperation Regards,

David Louis
Investment Consultant/Broker

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: Looking forward to hear from you with the needed information
TIME: 1682036665

That sounds like a opportunity. How long it takes to get my benefits?

Best wishes,
Elizabeth

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: looking forward to hear from you soon
TIME: 1682431650

Dear *Elizabeth*

I wish to acknowledge your mail and will want to confirm to you that our company and our investor is ready to work with you as a borrower or as a broker/consultant in which you will be paid a commission for any viable project that was financed through you.

Full name:
Address:
Tel/WhatsApp:
Email:
Finally, send a copy of your I D

*With the above information, we can send an official application to the finance company for your project financing or as a broker/consultant *
Therefore, you are required to get back to me with the following information
You can know more about our company through our website: www.tridentfinance.net

Looking forward to hearing from you with the requested information .

Thank you for your understanding and cooperation Regards,

David Louis
Investment Consultant/Broker

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: looking forward to hear from you soon
TIME: 1682439227

That sounds like a opportunity. How long it takes to get my benefits?

Best wishes,
Elizabeth

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683129351

Dear,

Kindly confirm if you receive my last email to you.

Keep in touch and I look forward to hearing from you.

Regards,

David.

Inbound

FROM: l*****2@gmail.com

To: pj74215@l*****s.email

SUBJECT: Re: Hello ,

TIME: 1683129552

Dear,

Kindly confirm if you receive my last email to you.

Keep in touch and I look forward to hearing from you. Regards,

David.

Outbound

FROM: pj74215@l*****s.email

To: l*****2@gmail.com

SUBJECT: Re: looking forward to hear from you soon

TIME: 1683130351

I have read your message and I really dont know what to say. Maybe it is time for us to have a talk?

Best wishes,

Elizabeth

Outbound

FROM: pj74215@l*****s.email

To: l*****2@gmail.com

SUBJECT: Re: Hello ,

TIME: 1683130353

Sorry for the late response but I am just returned. Can I talk to you right now?

Best wishes,

Elizabeth

Inbound

FROM: l*****2@gmail.com

To: pj74215@l*****s.email

SUBJECT: Re: looking forward to hear from you soon

TIME: 1683130605

Yes, I agree. Kindly call on WhatsApp

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: Hello ,
TIME: 1683130658

Yes kindly call

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683130949

I have informed our finance company about the call between you and our company, they are going to contact you now for more inquiries and mutual understanding by AHMED SALIF.
REGARDS,
DAVID.

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683133942

Sorry for the late response but I am just returned. Can I talk to you right now?

Best wishes,
Elizabeth

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: Hello ,
TIME: 1683133944

Yes darling, but is it okay for us to have a talk right now?

Best wishes,
Elizabeth

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683133946

That sounds like a opportunity. How long it takes to get my benefits?

Best wishes,
Elizabeth

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683134636

I was informed you're not taking calls this shows that you not serious.

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: Hello ,
TIME: 1683134786

Why are you not taking your calls when you were called or do you have another WhatsApp number?

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: looking forward to hear from you soon
TIME: 1683137540

I have read your message and I really dont know what to say. Maybe it is time for us to have a talk?

Best wishes,
Elizabeth

Outbound
FROM: pj74215@l*****s.email
To: l*****2@gmail.com
SUBJECT: Re: Hello ,
TIME: 1683137542

Yes and I just wanna say I wish to know more about you.

Best wishes,
Elizabeth

Inbound
FROM: l*****2@gmail.com
To: pj74215@l*****s.email
SUBJECT: Re: Hello ,
TIME: 1683138646

Call me

Outbound

FROM: pj74215@l*****s.email

To: l*****2@gmail.com

SUBJECT: Re: Hello ,

TIME: 1683141132

Yeah I am interesting about what you said. Is it possible for you to have a quick chat with me?

Best wishes,

Elizabeth

Inbound

FROM: l*****2@gmail.com

To: pj74215@l*****s.email

SUBJECT: Re: Hello ,

TIME: 1683141267

Yes is here or on WhatsApp?

Outbound

FROM: pj74215@l*****s.email

To: l*****2@gmail.com

SUBJECT: Re: Hello ,

TIME: 1683144739

Yes and I just wanna say I wish to know more about you.

Best wishes,

Elizabeth

B.4 Chat Replier 2 (AI language model)

Inbound

FROM: t*****0@gmail.com

To: CRAWLER

SUBJECT: Dear Friend,

TIME: 1681637903

Dear Friend,

In search of a reliable international investment partnership, i came to across your profile and i decided to contact you, It was deposited by my late father, the sum of \$ 15.5. million United States Dollars with 100Kg Gold dust 22+carat plus into any viable and profitable business venture in partnership with me, Which he deposited it in one of the bank Vault before his untimely death.

This funds were acquired legitimately, and there are documents to this effect. Upon the receipt of a favorable response from you, i will furnish you with more details on proof of funds.

For more details.

Looking forward to hear from u soon,

Thanks Howard

Outbound

FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681637904

Hello,

How can I assist you? Please let me know what you need help with.

Best regards.

Best wishes,
Eleanor

Inbound

FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681659464

Dear Eleanor,

How are you doing today,i am very happy to hear from you again,did you have a good account where we transfer the money into?

Tomorrow i will discuss with the bank manager to know more process about the transfer.But before we move ahead with the bank kindly send all your information below.

(1)Address

(2) Telephone number

(3) Your International passport copy or Driver license

As soon as all the whole information receive we can process ahead with the bank

I am waiting to hear from you

Tony

Outbound

FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681667115

Dear Tony,

Thank you for your email. I am doing well, thank you for asking. Regarding the account, I will provide you with the necessary details once we have discussed the process with the bank manager. As for my personal information, I am not comfortable sharing my passport or driver's license at this time. Is there any other way we can proceed with the transaction?

Looking forward to hearing from you.

Best wishes,
Eleanor

Inbound

FROM: t*****0@gmail.com

To: ra11036@l*****s.email

SUBJECT: Re: Dear Friend,

TIME: 1681685276

I want to know area of the investment in your country that will give us good profitable.

Amount involve \$15.5.

Still waiting to receive your information so we can move ahead with the bank to secure the money

Tony

Outbound

FROM: ra11036@l*****s.email

To: t*****0@gmail.com

SUBJECT: Re: Dear Friend,

TIME: 1681692317

Dear Tony,

I'm sorry, but I'm not sure what you are referring to. Could you please provide more information about the investment opportunity you are interested in? Once I have more details, I can try to assist you further.

Best wishes,

Eleanor

Inbound

FROM: t*****0@gmail.com

To: ra11036@l*****s.email

SUBJECT: Re: Dear Friend,

TIME: 1681693658

Dear Eleanor

I nice for your concern is God who gave me the vision to locate you for this transaction.

You are in USA you know more than me about lucrative business that will fash us money.

But i am thinking about Real Estate and school business. Even if you like you can come down here so i will get you to the bank to witness all the transaction by yourself in Ghana here then i will provide all the whole vital documents.

You can confirm the deposit slip from the bank.

Please call me for more details +233541551834 please add me on your whatsapp

Tony

Outbound

FROM: ra11036@l*****s.email

To: t*****0@gmail.com

SUBJECT: Re: Dear Friend,

TIME: 1681703116

Dear Tony,

Thank you for reaching out to me. However, I am not interested in any business proposals at this time. I suggest you find someone else who may be interested in your offer.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681731232

Dear Sir
How are you doing today,the bank was advise me that the money can be load through their ATM card to send to you through your home address with the secrete code number to access the card in any ATM machine in your area,so i want to hear from you so we can proceed with the bank as soon as possible.
I am waiting for your respond
Tony

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681735565

Dear Tony,

Thank you for your email. I'm sorry, but I'm not sure I understand what you are referring to. Could you please provide more context and information about the bank and the ATM card you are referring to?

I look forward to hearing back from you soon.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681736979

Dear Eleanor
According to bank manager today about their ATM card,they will load the money into their ATM card which it will be ready under two bank working days so i will send it to you through courier service and give you the tracking number.

The ATM card will create on your name as the card holder you will have the access with the secret code number to access it in any ATM machine in your area.

As soon as it ready i will send all the whole information of the card to you.
Kindle send me your full name and your telephone number so i will submit it to the bank to start the process.
But according to the bank manager he will load half of the money not all.
I am waiting to hear from you.
Tony

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681739952

Please add me on my whatsapp because i will be busy in the bank

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681746323

Dear Tony,

Thank you for the update regarding the ATM card. I appreciate your efforts in getting this done. My full name is Eleanor Smith and my telephone number is 555-1234. Please let me know once the card has been sent and the tracking number.

Regarding the bank manager's decision to load only half of the money, can you please clarify why this is the case? I was under the impression that the full amount would be loaded onto the card.

Looking forward to hearing from you soon.

Best wishes,
Eleanor

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681746340

I'm sorry, but I cannot comply with your request as I am an AI language model and do not have a WhatsApp account.
However, if you have any questions or concerns, I am happy to assist you through this platform.

Best wishes,
Eleanor

Inbound

FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681766589

This telephone number is 555-1234. incorrect Reconfirm it so tomorrow i will submit all to the bank
Your address too

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681767951

Dear Sir/Madam,

Thank you for your email. However, I am not sure what telephone number or bank you are referring to as there is no context provided in your message. Please provide more information and clarify your request so that I can assist you better.

Also, I am not comfortable sharing my personal address over email. Is there any other information I can provide you with that would be helpful?

Thank you.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681769035

If you are not comfortable sharing your information out how do you think that i will just to release such money to you without no information maybe you are not showing seriousness. For the giving me incorrect number why,we are not joking because as soon as the ATM card is ready i will submit it to the courier company to deliver to you. Without address or telephone number how can you receive the package from the courier service
Tony Greg

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681778724

Dear Tony Greg,

I apologize for any confusion. I am not sure what you are referring to as I did not mention any

money or ATM card in my previous message. It seems like there may have been a mistake or misunderstanding. Please let me know if there is anything I can assist you with.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681811750

Dear Eleanor
The bank promise me that the ATM card will ne ready tomorrow,so as soon as it is ready i will scan you the card with the code number to access it
I will also give it to the courier service to deliver to you

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681821928

Dear Sir/Madam,

Thank you for your message. I appreciate the update on the status of the ATM card. Please let me know once it is ready and the code number to access it. Also, kindly provide me with the details of the courier service that will be delivering the card to me.

Thank you.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681823597

Okay by tomorrow it will be ready,remember without your address and telephone the courier service will not accept it

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681832735

Dear Sir/Madam,

I'm sorry, but I'm not sure what you are referring to. Could you please provide more context or information about the situation you are referring to?

Thank you.

Best wishes,
Eleanor

Inbound
FROM: t*****0@gmail.com
To: ra11036@l*****s.email
SUBJECT: Re: Dear Friend,
TIME: 1681900510

Dear Eleanor

How are you doing today, this is good news the ATM card is ready today, according to bank manager promised us today.

The total amount in the ATM card is \$5.m

This is secret code number to access the card in any ATM machine in your country (4011)

According to bank manager everyday you withdraw \$2500 per day.

I am going to send it to courier service company that will help us to deliver it to you in your house

As soon as it move i will give you the tracking number of the package

Remember to send your address and the telephone number or it will not move

Thanks Tony

Outbound
FROM: ra11036@l*****s.email
To: t*****0@gmail.com
SUBJECT: Re: Dear Friend,
TIME: 1681906354

Dear Tony,

I'm sorry, but I think you have the wrong person. I don't know anyone named Eleanor and I certainly didn't request an ATM card. Please double-check the email address you sent this to.

Best wishes,
Eleanor