

# Project Report

Project Name:

A Multi-agent System for Crypto Project  
Fundrasing

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## **1 Business Case**

This robot is mainly to obtain the fundraising data of each blockchain project on the Icodrops website through the crawler, and then integrate the useful data through data analysis, process and extract the key information that is helpful for investment, thereby greatly saving researchers' time in the digital currency industry, who used to spend a lot of time writing reports every day to assist in investment decisions.

We developed this robot based on the team members' years of work experience in the blockchain industry, combined with both the actual needs of previous work and the automation skills learned in the classroom, we have completed the development of the robot through many continuous attempts. Although this time we only used one website's fundraising data to generate daily reports, the data of many different websites can also be obtained by our robot in the same way and use the same data processing logic to generate the same type of research report, so this project has great business potential whether it is in terms of scalability or in terms of commercial value.

## **2 Market Research**

If it weren't for the robots, it was certain to take a huge amount of time to obtain all projects data from just one website and analyze it with Excel, draw charts,

summarize the classification, and write it into a research report. It probably takes a few days for each researcher, and after writing the report, it also takes a few hours per week to maintain and update the data, so, this kind of work is usually structured and repetitive. However, since anyone engaged in project financing must pay attention to these newly financed projects every day, and use this as a reference for investment, these complicated and repetitive tasks are quite necessary

Fortunately, with the use of automated robots, researchers in each industry can save a lot of fragmentary time and lead a more productive life. Furthermore, another advantage of using robots is that the program is good at handling structured problems. We will no longer worry about making mistakes due to carelessness, and we can always let our robot generate a beautiful report and send it to us on time.

We took scalability and universality into consideration at the beginning of designing our robot, The crawler part adopts a general framework, which is used to call the browser interface to crawl through python and is suitable for most different data websites. As for our data analysis module, it is also suitable for processing various types of data, and generating charts as well as text descriptions for the given data, likewise, the report generation module and the email sending module can also be used directly on other websites, so our robot is universal and

can be used to write blocks Most data-based structured reports in the chain industry

### 3 System model

#### 3.1 Overall Architecture

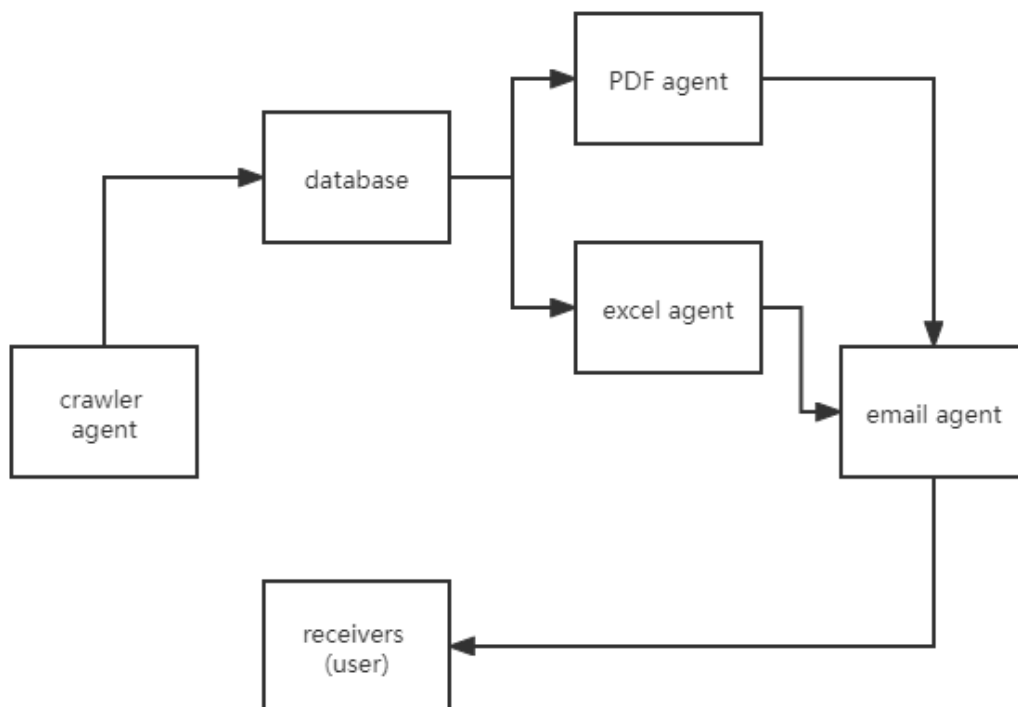


Figure: Overall Architecture of Our Multi-agent System

From the above figure, we can see that our system stores data through a cloud database, and three agents perform all the functions of the whole system. Specifically, crawler agent regularly collects the data we want from the target website and then uploads it to the database; Pdf agent reorganizes the obtained data to generate title, chart and text (organized in latex template), and then it

compiles latex into a typeset PDF; the email agent will automatically send the generated PDF (that is, daily report) to our mailbox.

### **3.2 System Development**

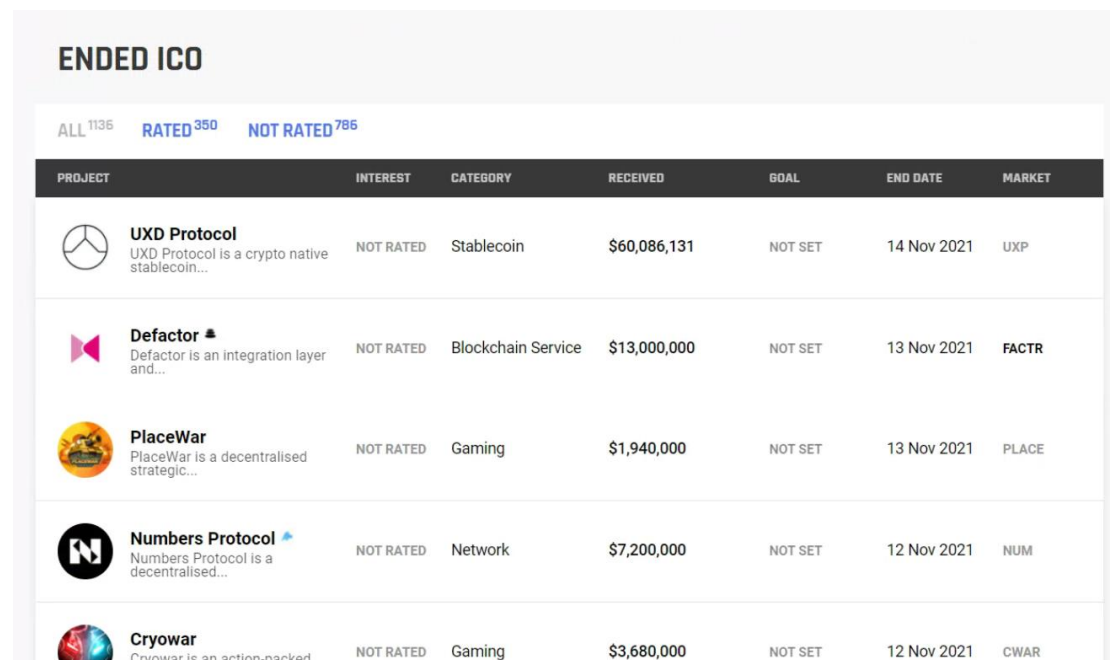
What the tools (python libraries) this system uses are: selenium, bs4, pymysql, requests, lxml, matplotlib, cfscape, smtplib, email.

In order to run the system smoothly, texlive environment should be equipped locally (the system commands inside PDF agent use this environment to compile latex into PDF), and "chromedriver.exe" should be available in the root directory (crawler agent uses it as a tool to simulate interaction).

### **3.3 Crawler Agent**

This agent uses selenium library and cfscape library to complete automatic collection. Firstly, it opens the main page through the chrome driver. Since the main page adopts the lazy loading technology of page rendering, the agent constantly sends key simulation requests to the page, simulates the click of the button "END", and constantly checks how many records there are in the total page. When the "END" is clicked many times and the records are no longer increased, it stops sending key requests and capture all data rows on the main page. Then it uses the beautifulsoup library to process the loaded page source code, so that we can directly obtain the data in the target tag through tag name, id, class, etc. Through the pymysql library, these data are eventually inserted into the database

table "ENDEDICO", whose format is "ENDEDICO (PROJECT, INTEREST, CATEGORY, RECEIVED, GOAL, ENDDATE, MARKET, URL)".



The screenshot shows the 'ENDED ICO' website. At the top, there are filters: 'ALL 1135', 'RATED 350', and 'NOT RATED 785'. Below these is a table with the following columns: PROJECT, INTEREST, CATEGORY, RECEIVED, GOAL, END DATE, and MARKET. The table lists five projects: UXD Protocol, Defactor, PlaceWar, Numbers Protocol, and Cryowar. Each row includes a project icon, name, a brief description, interest status, category, received amount, goal status, end date, and market code.









PROJECT	INTEREST	CATEGORY	RECEIVED	GOAL	END DATE	MARKET
 <b>UXD Protocol</b> UXD Protocol is a crypto native stablecoin...	NOT RATED	Stablecoin	\$60,086,131	NOT SET	14 Nov 2021	UXP
 <b>Defactor</b>  Defactor is an integration layer and...	NOT RATED	Blockchain Service	\$13,000,000	NOT SET	13 Nov 2021	FACTR
 <b>PlaceWar</b> PlaceWar is a decentralised strategic...	NOT RATED	Gaming	\$1,940,000	NOT SET	13 Nov 2021	PLACE
 <b>Numbers Protocol</b>  Numbers Protocol is a decentralised...	NOT RATED	Network	\$7,200,000	NOT SET	12 Nov 2021	NUM
 <b>Cryowar</b> Cryowar is an action-packed	NOT RATED	Gaming	\$3,680,000	NOT SET	12 Nov 2021	CWAR

Figure: Target Website (main page)


In addition to the information collection of the main page, for each row of data collected, we need to click in to obtain the corresponding detail page and collect the information from several page modules corresponding to the detail page. Before we start, we designed a piece of code to create an IP pool, which will be used in subsequent specific pages to bypass the detection of anti-crawler mechanism. Finally, all available IPs will be stored in the file "ip\_proxy.txt" in the form of {http: 'IP address'}. We use cfsrape to create a scraper dedicated to cloud flare defense. For each new target url, we use a new IP from the IP pool to assemble a new request header. Note that if the same IP makes frequent requests to a website, this IP will be blocked. For each page (their templates are the same), we obtain the data from the corresponding page block and store it in a large variable. Through the pymysql library, these data are eventually inserted into the

database table “ENDEDICO\_DETAI”, whose format is “ENDEDICO\_DETAIL (project, logo, description, fund\_goal, main\_entries, social\_links, our\_rating, token\_sale\_details, market\_return, short\_review, additional\_links)”.



## PlaceWar (Gaming)

PlaceWar is a decentralised strategic play-to-earn game universe deployed on multi-chain with highly engaging artillery gameplay.



Token Sale **ended**  
**13 NOVEMBER 2021**

**\$1,940,000**  
OF  
\$1,940,000 (100%)

[WEBSITE](#)

[WHITEPAPER](#)

social links

[f](#) [t](#) [t](#) [i](#) [y](#) [s](#)

 **TOKEN SALE: 12 NOV - 13 NOV**



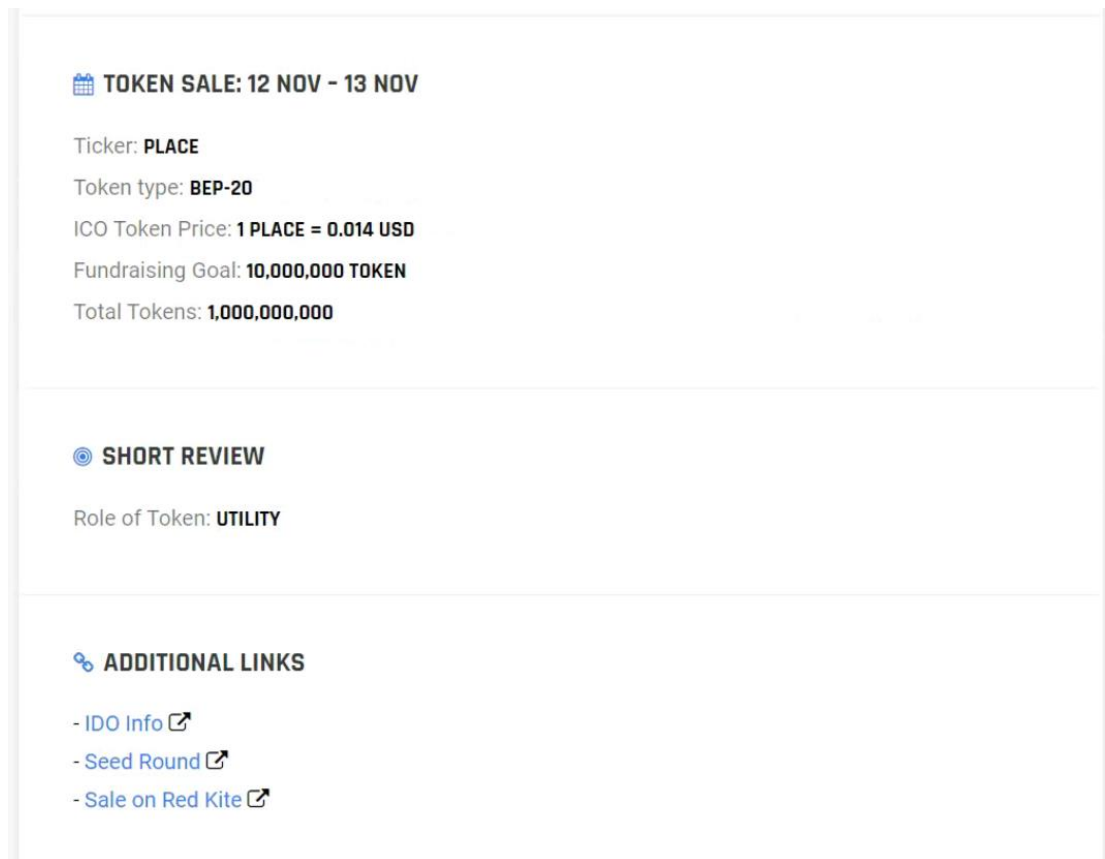


Figure: Target Website (detail page)

Before the above two data uploading processes, we will clear the corresponding database to ensure that the data is up-to-date and there is no duplication.

### 3.4 PDF Agent

The agent queries the latest data from the database and returns. Based on these data, it organizes the description of the report, generates the corresponding chart (PNG format) through the matplotlib library, and finally outputs all these as a tex file called "Daily Report".

Next, it calls multiple system command lines "os.system("bmeps -c xxx.png xxx.eps")" to convert all PNG images to EPS format that supported by latex. With the prepared tex file and the corresponding EPS format chart, it subsequently calls

the following system command lines to generate the final PDF.

```
os.system("C:/texlive/2020/bin/win32/xelatex Daily_Report.tex")
```

The first step above is to generate the corresponding DVI through tex, and the second step is to convert the DVI into the PDF we want to see. The illustration of the generated PDF is as below:

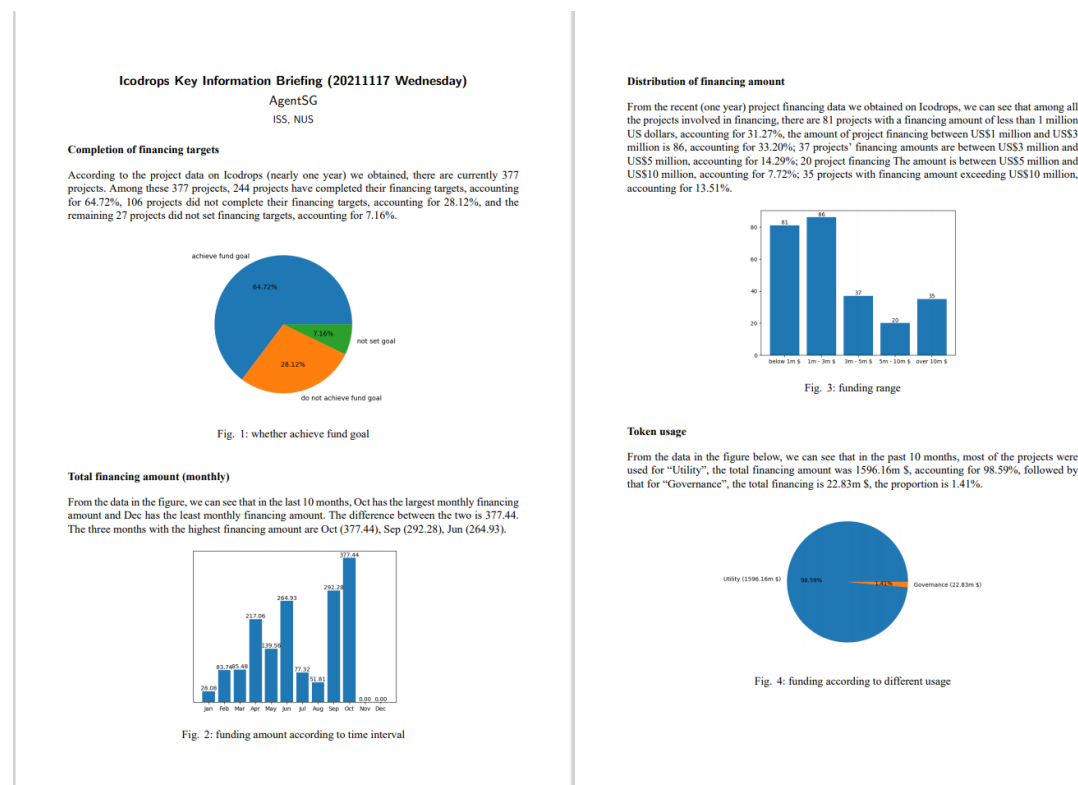


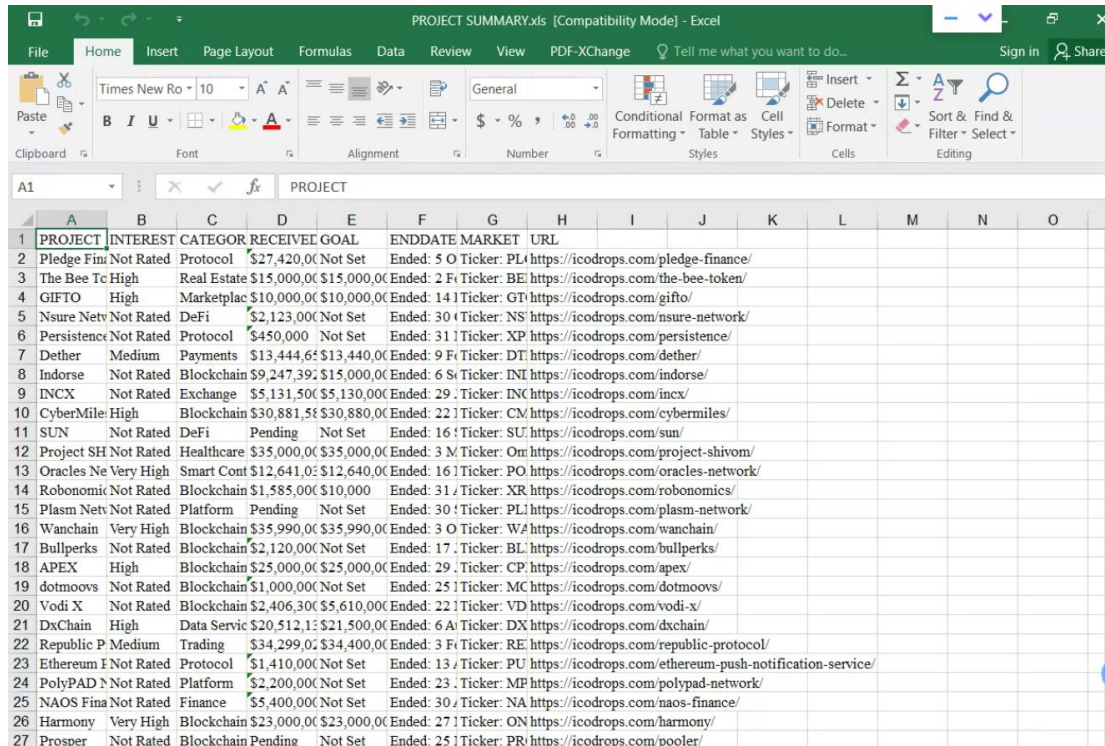
Figure: Daily Report (PDF)

### 3.5 Excel Agent

In order to provide users with more complete analysis, in addition to the above report generated by PDF agent, we also read two tables in the database and save them in two different Excel files.

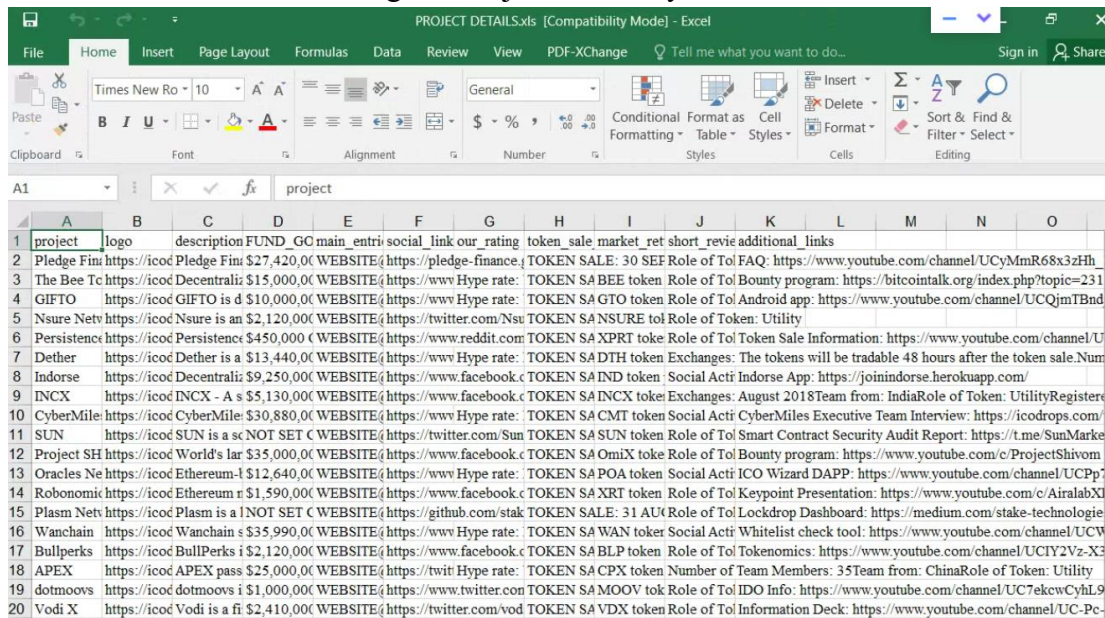
The pymysql library and xlwt library are used here. We use the former to connect to the database and read the corresponding table data, and use the latter to

continuously write data to Excel files according to cell location, and finally generate 'PROJECT SUMMARY.xls ' and 'PROJECT DETAILS.xls', as shown in the following figures:



PROJECT	INTEREST	CATEGOR	RECEIVED	GOAL	ENDDATE	MARKET	URL
1 Pledge Fin	Not Rated	Protocol	\$27,420,00	Not Set	Ended: 5 O	Ticker: PL	<a href="https://icodrops.com/pledge-finance/">https://icodrops.com/pledge-finance/</a>
2 The Bee Tc	High	Real Estate	\$15,000,00	\$15,000,00	Ended: 2 F	Ticker: BE	<a href="https://icodrops.com/the-bee-token/">https://icodrops.com/the-bee-token/</a>
3 GIFT0	High	Marketplace	\$10,000,00	\$10,000,00	Ended: 14 I	Ticker: GT	<a href="https://icodrops.com/gift0/">https://icodrops.com/gift0/</a>
4 Nsure Netv	Not Rated	DeFi	\$2,123,000	Not Set	Ended: 30 I	Ticker: NS	<a href="https://icodrops.com/nsure-network/">https://icodrops.com/nsure-network/</a>
5 Persistence	Not Rated	Protocol	\$450,000	Not Set	Ended: 31 I	Ticker: XP	<a href="https://icodrops.com/persistence/">https://icodrops.com/persistence/</a>
6 Dether	Medium	Payments	\$13,444,65	\$13,440,00	Ended: 9 F	Ticker: DT	<a href="https://icodrops.com/dether/">https://icodrops.com/dether/</a>
7 Indorse	Not Rated	Blockchain	\$9,247,39	\$15,000,00	Ended: 6 S	Ticker: INI	<a href="https://icodrops.com/indorse/">https://icodrops.com/indorse/</a>
8 INCX	Not Rated	Exchange	\$5,131,50	\$5,130,000	Ended: 29 I	Ticker: INC	<a href="https://icodrops.com/incx/">https://icodrops.com/incx/</a>
9 CyberMile	High	Blockchain	\$30,881,58	\$30,880,00	Ended: 22 I	Ticker: CM	<a href="https://icodrops.com/cybermiles/">https://icodrops.com/cybermiles/</a>
10 SUN	Not Rated	DeFi	Pending	Not Set	Ended: 16 I	Ticker: SU	<a href="https://icodrops.com/sun/">https://icodrops.com/sun/</a>
11 Project SH	Not Rated	Healthcare	\$35,000,00	\$35,000,00	Ended: 3 M	Ticker: Om	<a href="https://icodrops.com/project-shivom/">https://icodrops.com/project-shivom/</a>
12 Oracles Ne	Very High	Smart Cont	\$12,641,00	\$12,640,00	Ended: 16 I	Ticker: PO	<a href="https://icodrops.com/oracles-network/">https://icodrops.com/oracles-network/</a>
13 Robonomic	Not Rated	Blockchain	\$1,585,000	\$10,000	Ended: 31 I	Ticker: XR	<a href="https://icodrops.com/robonomics/">https://icodrops.com/robonomics/</a>
14 Plasm Netv	Not Rated	Platform	Pending	Not Set	Ended: 30 I	Ticker: PL	<a href="https://icodrops.com/plasm-network/">https://icodrops.com/plasm-network/</a>
15 Wanchain	Very High	Blockchain	\$35,990,00	\$35,990,00	Ended: 3 O	Ticker: W	<a href="https://icodrops.com/wanchain/">https://icodrops.com/wanchain/</a>
16 Bullperks	Not Rated	Blockchain	\$2,120,000	Not Set	Ended: 17 I	Ticker: BL	<a href="https://icodrops.com/bullperks/">https://icodrops.com/bullperks/</a>
17 APEX	High	Blockchain	\$25,000,00	\$25,000,00	Ended: 29 I	Ticker: CP	<a href="https://icodrops.com/apex/">https://icodrops.com/apex/</a>
18 dotmoovs	Not Rated	Blockchain	\$1,000,000	Not Set	Ended: 25 I	Ticker: MC	<a href="https://icodrops.com/dotmoovs/">https://icodrops.com/dotmoovs/</a>
19 Vodi X	Not Rated	Blockchain	\$2,406,300	\$5,610,000	Ended: 22 I	Ticker: VD	<a href="https://icodrops.com/vodi-x/">https://icodrops.com/vodi-x/</a>
20 DxChain	High	Data Servc	\$20,512,10	\$21,500,00	Ended: 6 A	Ticker: DX	<a href="https://icodrops.com/dxchain/">https://icodrops.com/dxchain/</a>
21 Republic P	Medium	Trading	\$34,299,00	\$34,400,00	Ended: 3 F	Ticker: RE	<a href="https://icodrops.com/republic-protocol/">https://icodrops.com/republic-protocol/</a>
22 Ethereum F	Not Rated	Protocol	\$1,410,000	Not Set	Ended: 13 I	Ticker: PU	<a href="https://icodrops.com/ethereum-push-notification-service/">https://icodrops.com/ethereum-push-notification-service/</a>
23 Polypad	Not Rated	Platform	\$2,200,000	Not Set	Ended: 23 I	Ticker: MP	<a href="https://icodrops.com/polypad-network/">https://icodrops.com/polypad-network/</a>
24 NAOS Fina	Not Rated	Finance	\$5,400,000	Not Set	Ended: 30 I	Ticker: NA	<a href="https://icodrops.com/naos-finance/">https://icodrops.com/naos-finance/</a>
25 Harmony	Very High	Blockchain	\$23,000,00	\$23,000,00	Ended: 27 I	Ticker: ON	<a href="https://icodrops.com/harmony/">https://icodrops.com/harmony/</a>
26 Prosper	Not Rated	Blockchain	Pending	Not Set	Ended: 25 I	Ticker: PR	<a href="https://icodrops.com/pooler/">https://icodrops.com/pooler/</a>

Figure: Project Summary Excel



project	logo	description	FUND GOAL	main entry	social link	our rating	token sale market	ret short	review	additional links
1 Pledge Fin	<a href="https://icodrops.com/pledge-finance/">https://icodrops.com/pledge-finance/</a>	Pledge Fin: \$27,420,00	WEBSITE: <a href="https://pledge-finance.com/">https://pledge-finance.com/</a>	TOKEN SALE: 30 SEF	Role of Tol	FAQ: <a href="https://www.youtube.com/channel/UCyMmR68x3zHh">https://www.youtube.com/channel/UCyMmR68x3zHh</a>				
2 The Bee Tc	<a href="https://icodrops.com/the-bee-token/">https://icodrops.com/the-bee-token/</a>	Decentraliz: \$15,000,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SABEE	token Role of Tol	Bounty program: <a href="https://bitcointalk.org/index.php?topic=231">https://bitcointalk.org/index.php?topic=231</a>				
3 GIFT0	<a href="https://icodrops.com/gift0/">https://icodrops.com/gift0/</a>	GIFT0 is a: \$10,000,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SA GTO	token Role of Tol	Android app: <a href="https://www.youtube.com/channel/UCQjmTBnd">https://www.youtube.com/channel/UCQjmTBnd</a>				
4 Nsure Netv	<a href="https://icodrops.com/nsure-network/">https://icodrops.com/nsure-network/</a>	Nsure is an: \$2,120,000	WEBSITE: <a href="https://twitter.com/NsureNetv">https://twitter.com/NsureNetv</a>	TOKEN SANSURE	tol Role of Token: Utility					
5 Persistence	<a href="https://icodrops.com/persistence/">https://icodrops.com/persistence/</a>	Persistence: \$450,000	WEBSITE: <a href="https://www.reddit.com/r/persistence/">https://www.reddit.com/r/persistence/</a>	TOKEN SA XPRT	token Role of Tol	Token Sale Information: <a href="https://www.youtube.com/channel/UCPm">https://www.youtube.com/channel/UCPm</a>				
6 Dether	<a href="https://icodrops.com/dether/">https://icodrops.com/dether/</a>	Dether is a: \$13,440,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SA DTH	token Exchanges: The tokens will be tradable 48 hours after the token sale.	Num				
7 Indorse	<a href="https://icodrops.com/indorse/">https://icodrops.com/indorse/</a>	Decentraliz: \$9,250,000	WEBSITE: <a href="https://www.facebook.com/indorse/">https://www.facebook.com/indorse/</a>	TOKEN SA IND	token Social Acti	Indorse App: <a href="https://joinindorse.herokuapp.com/">https://joinindorse.herokuapp.com/</a>				
8 INCX	<a href="https://icodrops.com/incx/">https://icodrops.com/incx/</a>	INCX - A: \$5,130,000	WEBSITE: <a href="https://www.facebook.com/incx/">https://www.facebook.com/incx/</a>	TOKEN SA INCX	token Exchanges: August 2018	Team from: India	Role of Token: Utility	Register		
9 CyberMile	<a href="https://icodrops.com/cybermiles/">https://icodrops.com/cybermiles/</a>	CyberMile: \$30,880,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SA CMT	token Social Acti	CyberMiles Executive Team Interview: <a href="https://icodrops.com/">https://icodrops.com/</a>				
10 SUN	<a href="https://icodrops.com/sun/">https://icodrops.com/sun/</a>	SUN is a: \$10,000,00	WEBSITE: <a href="https://twitter.com/SunMarke">https://twitter.com/SunMarke</a>	TOKEN SA SUN	token Role of Tol	Smart Contract Security Audit Report: <a href="https://t.me/SunMarke">https://t.me/SunMarke</a>				
11 Project SH	<a href="https://icodrops.com/project-shivom/">https://icodrops.com/project-shivom/</a>	World's lar: \$35,000,00	WEBSITE: <a href="https://www.facebook.com/projectshivom/">https://www.facebook.com/projectshivom/</a>	TOKEN SA OmIX	token Role of Tol	Bounty program: <a href="https://www.youtube.com/c/ProjectShivom">https://www.youtube.com/c/ProjectShivom</a>				
12 Oracles Ne	<a href="https://icodrops.com/oracles-network/">https://icodrops.com/oracles-network/</a>	Ethereum-l: \$12,640,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SA POA	token Social Acti	ICO Wizard DAPP: <a href="https://www.youtube.com/channel/UCPp">https://www.youtube.com/channel/UCPp</a>				
13 Robonomic	<a href="https://icodrops.com/robonomics/">https://icodrops.com/robonomics/</a>	Ethereum r: \$1,590,000	WEBSITE: <a href="https://www.facebook.com/robonomics/">https://www.facebook.com/robonomics/</a>	TOKEN SA XRT	token Role of Tol	Keypoint Presentation: <a href="https://www.youtube.com/c/AiralabXI">https://www.youtube.com/c/AiralabXI</a>				
14 Plasm Netv	<a href="https://icodrops.com/plasm-network/">https://icodrops.com/plasm-network/</a>	Plasm is a: \$35,990,00	WEBSITE: <a href="https://github.com/stake-technology/">https://github.com/stake-technology/</a>	TOKEN SALE: 31 AU	Role of Tol	Lockdrop Dashboard: <a href="https://medium.com/stake-technology/">https://medium.com/stake-technology/</a>				
15 Wanchain	<a href="https://icodrops.com/wanchain/">https://icodrops.com/wanchain/</a>	Wanchain: \$35,990,00	WEBSITE: <a href="https://www.hype-rate.com/">https://www.hype-rate.com/</a>	TOKEN SA WAN	token Social Acti	Whitelist check tool: <a href="https://www.youtube.com/channel/UCW">https://www.youtube.com/channel/UCW</a>				
16 Bullperks	<a href="https://icodrops.com/bullperks/">https://icodrops.com/bullperks/</a>	BullPerks: \$2,120,000	WEBSITE: <a href="https://www.facebook.com/bullperks/">https://www.facebook.com/bullperks/</a>	TOKEN SA BLP	token Role of Tol	Tokenomics: <a href="https://www.youtube.com/channel/UCIY2Vz-X3">https://www.youtube.com/channel/UCIY2Vz-X3</a>				
17 APEX	<a href="https://icodrops.com/apex/">https://icodrops.com/apex/</a>	APEX pass: \$25,000,00	WEBSITE: <a href="https://twitter.com/apex/">https://twitter.com/apex/</a>	Hype rate: TOKEN SA CPX	token Number of Team Members: 35	Team from: China	Role of Token: Utility			
18 dotmoovs	<a href="https://icodrops.com/dotmoovs/">https://icodrops.com/dotmoovs/</a>	dotmoovs: \$1,000,000	WEBSITE: <a href="https://www.facebook.com/dotmoovs/">https://www.facebook.com/dotmoovs/</a>	TOKEN SA MOOV	token Role of Tol	IDO Info: <a href="https://www.youtube.com/channel/UC7ekcwCylL9">https://www.youtube.com/channel/UC7ekcwCylL9</a>				
19 Vodi X	<a href="https://icodrops.com/vodi-x/">https://icodrops.com/vodi-x/</a>	Vodi is a: \$2,410,000	WEBSITE: <a href="https://twitter.com/vodi/">https://twitter.com/vodi/</a>	TOKEN SA VDX	token Role of Tol	Information Deck: <a href="https://www.youtube.com/channel/UC-Pe">https://www.youtube.com/channel/UC-Pe</a>				

Figure: Project Detail Excel

### 3.6 Email Agent

The agent is based on smtplib library and email library. Firstly, it sets the server host, port and corresponding authorization code. Next, it defines sender email and receiver emails, as well as the email title and email content, and then calls send\_email function to start sending email.

In addition to setting the encoding, title and content, an important feature of the send\_email function is that it can read the generated "Daily Report. pdf", "PROJECT SUMMARY.xls" and "PROJECT DETAILS.xls" in the form of binary text and add it to the email via adding attachment. The agent supports sending this email to multiple users at the same time. The effects presented on the user end are as follows:

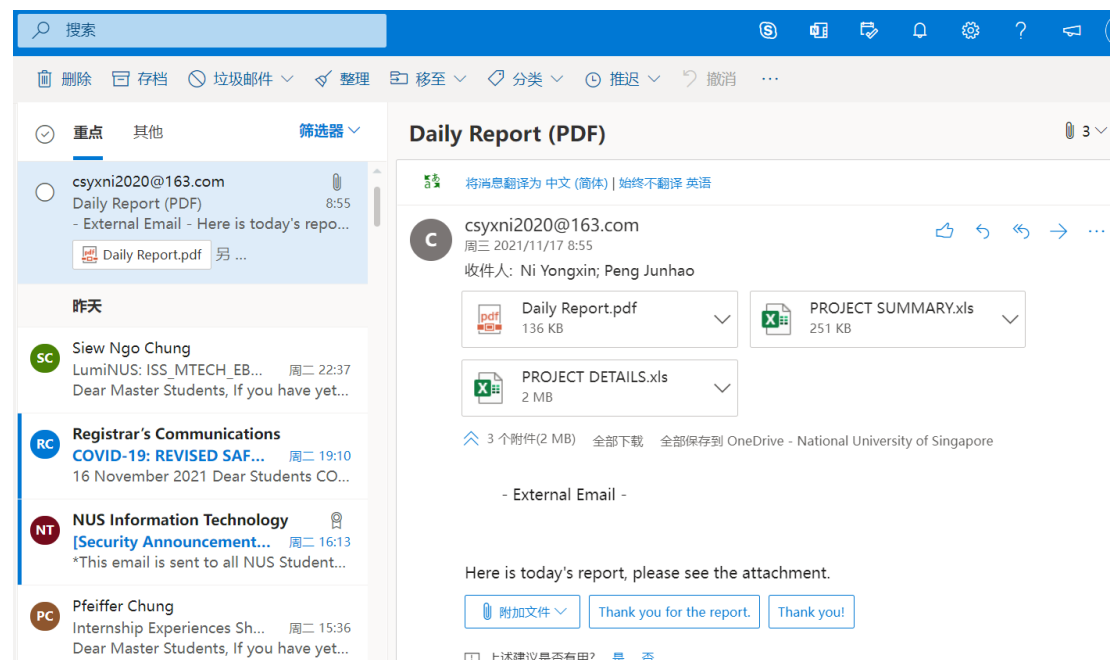


Figure: Email sent by agent

## 4 Effect Demonstration

The effect is shown in the video. Run the crawler agent, we can see that a browser is automatically opened and pages are automatically turned down (triggering lazy loading of web pages). The agent first collects all records of the main page, and then opens their corresponding detailed pages one by one according to these records. The data of the main page and the detailed page will be uploaded to the two tables of the cloud database respectively. Then we run the email agent, which starts the excel agent and pdf agent first., the two generate Excel files and PDF reports respectively based on the latest data (there are various descriptions and legends in the PDF report, which are established based on the crawled data). Finally, the email agent summarizes these attachments and sends them to our mailbox at the same time.

Please see the video in the attachment.