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**Semester 2 - 2021**

[](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html)

## COSC2083

## Introduction To Information Technology

## Dr. Nguyen Minh Long

# Assignment 2: The IT World

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##### [Tools](file:///D:\\Assignment%202%20-%20Our%20IT%20World\\index.html" \l "tools)

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##### [IT Technologies](file:///D:\\Assignment%202%20-%20Our%20IT%20World\\index.html" \l "IT_technologies)

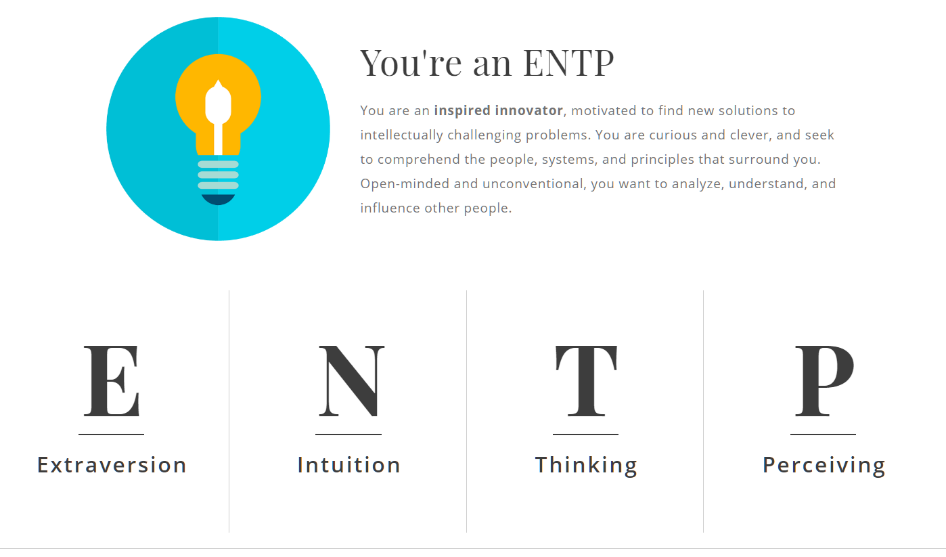
##### [IT Work](file:///D:\\Assignment%202%20-%20Our%20IT%20World\\index.html" \l "IT_work)

## Team Profile

### Team Name: Cool Nerds

### Personal Profile Reflection

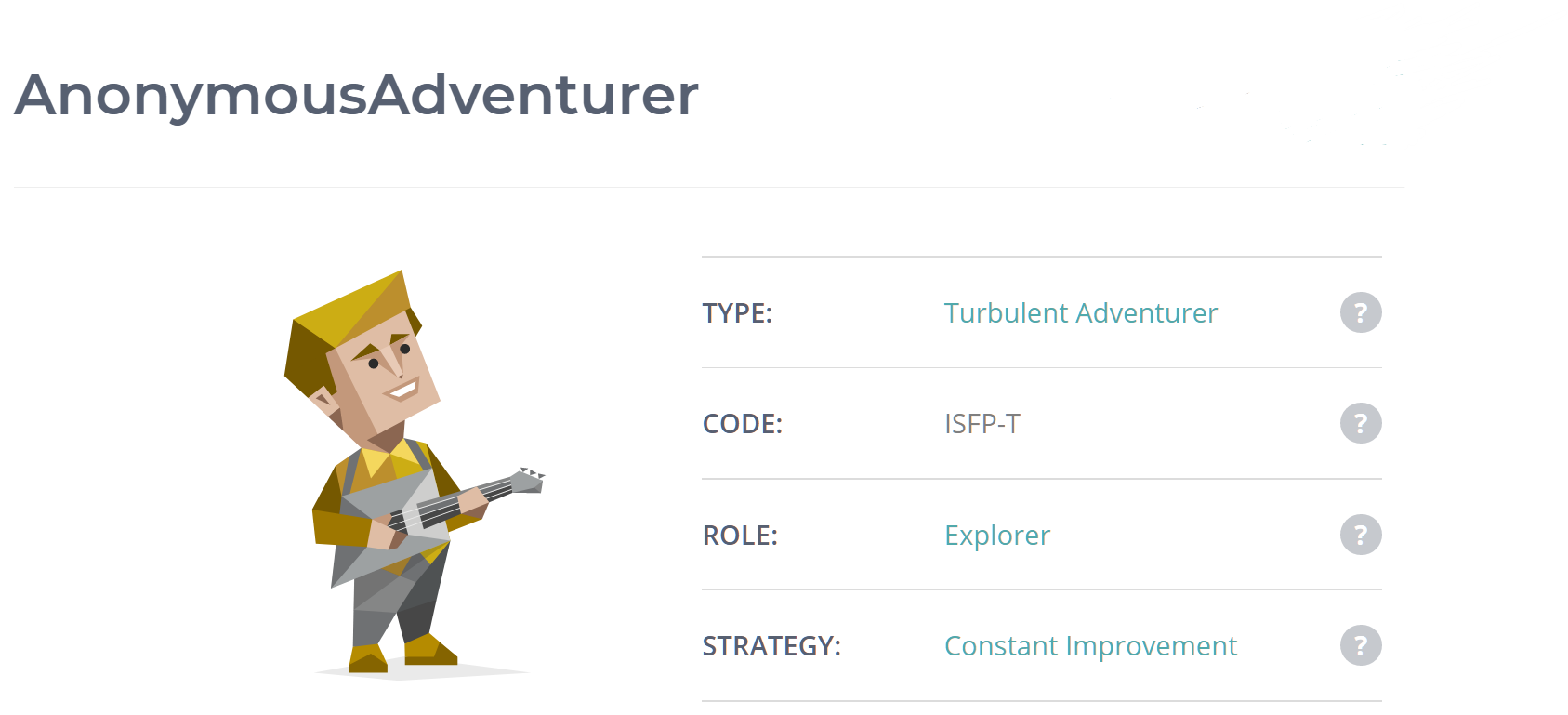
## TypeFinder-Personality Test:



[**See details**](https://www.truity.com/sites/default/files/tfsamplereport.html#facetscores)

I am an IT enthusiast

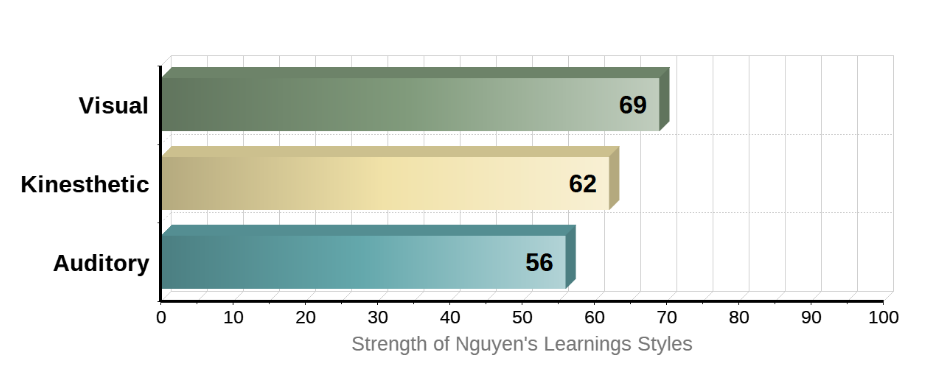
## Myers-Briggs's Test:



[**See details**](https://www.16personalities.com/profiles/4709e309dea6f)

I am an IT enthusiast

## Learning Style Test:



[**See details**](https://personalitymax.com/report/?ls=69-56-62&name_key=4cd014b8d8)

I am an IT enthusiast

### Ideal Teammates Characteristics

* + Working Attitude: I would love to see my future teammate's eagerness to do work and I want him/her to always be active for social communication and work discussion. Moreover, IT is not just for genius coders who can implement all the complex functionalities, it is also for designers who can turn those abstract functionalities into user-friendly platforms. Therefore, I would want to have at least one teammate who is/are willing to try new design ideas and freely propose them to the group if the teammate thinks that will improve the User Experience.
  + Personality: An ideal teammate treats other group members with politeness, courtesy, and respect. He or she is expected to be an active listener and knowledge sharer who listens and shares his or her knowledge to other teammates whenever possible.
  + Skills: Since I am not confident in my writing skills, I want to have at least one teammate who are excellent at this skill.

## Tools

### Link to the Website: <https://nguyen-huu-huan.github.io/Assignment-2---Our-IT-World/>

### Link to the GitHub repository: <https://github.com/Nguyen-Huu-Huan/Assignment-2---Our-IT-World.git>

## Project Ideas

### Overview

  I will use the abbreviation BITAI which is a combination of Bitcoin and AI to name the project. BITAI will center around building multiple machine learning models at a time to predict the up and down falls of Bitcoin so as to plan out an effective investment strategy for our target customers (i.e., Bitcoin Investors). Each model has a score determined/calculated by several standardized metrics to help users choose the best available algorithm option. In addition to that, BITAI also uses the Artificial Intelligence technology to detect important events gathered from global news in different fields, and turn them into parameters which will affect the final score. BITAI will initially release a beta version which is implemented as a computer application users to experience. Users' feedbacks in this initial phase helps us improve the quality of the project before scaling it up. When all the conditions are met, we scale it up to mobile and web platforms and then the cloud (if possible).

# CRYPTOCURRENCY

# ⇢    See Details    ⇠

### Motivation

  Bitcoin has been one of the hottest digital coins for citizens around the world ever since it was born. In fact, according to https://www.veriff.com/blog/six-of-the-hottest-cryptocurrencies-right-now, Bitcoin possesses up to 60% share of the crypto market. No wonder the majority of investors revels in this crypto coin; its secured trading mechanism and volume of transactions indeed allow many long-term users to benefit from without worrying about risks regarding cybersecurity. Acknowledging the worldwide trend of Bitcoin with more than 100 million "in-house" investors, I would like to help a portion of this huge market of users to achieve higher profit rates and better futures.

Graphical user interface, text

Description automatically generated

[**Figure 1:**](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html#figure1-destination) Bitcoin user statistics.

  Since traditional investment strategies (i.e., using chart visualizations for making decisions) have been a risky gamble in this harsh and bleak competition, I want to use a different investment approach to differentiate myself from the majority. Fortunately, with the help of AI and machine learning, I can build several tech-based models to scientifically and automatically forecast the Bitcoin marketplace to get a higher chance of profitable investments.

### Description

  The project is a GUI-based application which has many algorithms implemented for predicting the Bitcoin market. It will have:

* + Dashboard: to feature which algorithm has the highest score using metrics from machine learning.
  + Subscription Plan: By default, the app only supports Bitcoin with a limited trial period (e.g., 1 month) for users to experience a narrow set of features, when users' demands for other digital coins increases, they can go for a subscription plan that allows them to have access to more cryptocurrencies in the market such as Binance, eToro, Ethereum and so forth.
  + Extra Back-end Algorithm: During the process of making this application, I would like to implement an extra algorithm to update and convert the world news into considerations before showing the recommendation results. In that way, the app will guarantee users zero to little loss investment. This feature is only available for users who have a subscription plan.
  + Cash Out Methods: This feature will allow users to conveniently convert their Bitcoin and other coins available in their digital wallet to money and the money will be transacted directly to their bank account. For clarity, I will add a Currency Converter section for users to get more information about the conversion rate. The application will charge users commission fees based on their volume of transaction and the amount of fees will be determined by their subscription plan.
  + Auto Investment: This handy feature may become the most valuable feature as it will help save a lot of traditional investors who have to spend days and nights hunting for their ideal trades. It will have a default minimum budget of 3000$ worth of Bitcoin and a maximum budget threshold specified by users. In addition, if specified, users can choose for themselves the loss limit to rest assured the application does not empty out their wallets when it malfunctions. IT Professionals can config this feature to their needs such as modify default investment strategy, maximum amount of budget per trade and so on.
  + User Interface: Users can go to setting, set their favorite application themes and customize the application appearance as they wish. By default, the app will support light, dark, solar, and material themes for users.
  + Crypto Request & Feedback: Acknowledging that there are so many existing coins and newborn coins in the market, I want to add more coins to the system using the help of user requests. If this application trading strategy is not applicable to certain coins, users can report this to let the owners know what to adjust. Moreover, feedback regarding functionality requests or user interface recommendations are welcome in this section.
  + Cashback Policy: For VIP/Subscribed clients, this feature allows them to make request for a percentage of cash return for their trading loss. Users will have to show proofs of trading using the app service to become eligible for money return.
  + Donate: User can take part of their profit gained from the app to donate and support the project. Part of the users' donations will be used for charity and environment associations.
  + Report & Statistics: Charts and statistics regarding profit will be shown to users. This section will be detailed with a variety of chart types and short reports to help users visualize their investment status. Users are allowed to customize the chart to view different perspectives of it like view by hour, day, month, year, etc.

### Tools and Technologies

  I will use C# (an object-oriented programming language) to create a GUI for BITAI. Afterwards, I will use Beautiful Soup to crawl data from the Bitcoin websites, feed these data to TensorFlow or Keras to work with the machine learning algorithms. During the algorithm building process, I want to leverage AI's power to work with world news (including innovations, politics, technological advance, etc.), turn these news into the algorithms' considerations so as to optimize the investment strategies before showing the prediction results. Although these tools require many years of education, I still have a great passion for it due to its mesmerizing future picture.

### Skill required

#### Beta Phase

* + GUI coding platforms: C# or other tools for creating GUI application such as Python Tkinter, Python Pyqt, Java, and so forth are required to do this project.
  + TensorFlow: It is a programming language for coding machine learning algorithms so skills and experience using this tool is required

#### Scaling Phase

* + Blockchain: knowledge in this field is a must as Bitcoin and many other cryptocurrencies are using this technology to store users' information in a with guaranteed security. Having full control of this breakthrough technology will allow BITAI to stabilize its immunity against cybercrimes.
  + Security: Security is a must when it comes to any service with Bitcoin as Blockchain is not enough to fully prevent leakage of users' sensitive data. Therefore, I will build up the skill myself and take consultancy from cyber security experts if possible.
  + Mobile development experience in this field would be nice for further scalability of the project. It is not required but a precious skill to have
  + Web programming: experience in this field would be nice for further scalability of the project. It is not required but a precious skill to have

#### Ultimate Phase

* + Cloud Computing: experience in this field would be nice for further development of the project. After the scaling phase, this project will have to handle an enormously huge user database which will require a reliable information storage. Having a limited knowledge of this field, I could not build a storage system and configure it by myself. Therefore, I will use cloud computing service to help me solve the problem. It is not required but a precious skill to have

#### Non-technical skills

* + Life-long learning: This skill is a mandatory requirement and a pivotal factor that determines the success of the project. Since technology is always changing, if the project only sticks with the old technologies, it will not be able to keep up with current situation. Therefore, constant lookups for new and efficient technology is a must.
  + Communication skills: BITAI is a large project, therefore implementing it requires me to collaborate with many other teammates. In order to recruit them, I have to possess social and communication skills to get to know them and then I can pitch my ideas to drag their attentions and interest to the project. Same with life-long learning, this skills is pivotal.

### Outcome

  If the project is successful with enough positive feedbacks from at least 10000 active users, it will be released to the general public using advertisements on various platforms including: YouTube, Google, Instagram, Twitter, etc. From there, if the project achieves more than 50000 active users, I will consider transitioning the project to a web-based service to help more and more Bitcoin investors. At this stage, the project is proven to be a truly reliable investing pal to other investors around the world. Having access to effective tools from our project, investors can now enjoy worry-free investments without losing all money like their traditional investing strategies. Speaking of positive impacts, this project will simultaneously guarantee users consistently profitable investments and exterminate all the risks of losing money that can leave negative consequences to the Bitcoin investors.

## Feedback

  The following is the opinions and feedbacks of two students in the Introduction to IT course. The invited guests will elaborate on my project ideas and give their comments regarding the feasibility, difficulty, scalability, and other aspects of the project

## Phan Quoc Thang



S3881388

Quoc Thang is currently taking the Introduction to Information Technology course. He is one of my future teammates for Assignment 3.

## Chau Loan



s3880115

Chau Loan is currently taking the Introduction to Information Technology course. She is one of my future teammates for Assignment 3.

## Quoc Thang

He shared that he had seen many trading bot using AI technology in the marketplace, so he advised me to be prepared for some potential competitors in the upcoming years. He advised me to experience some of the most successful and existing AI bots to learn more about what functionalities and features they offer to their customers. He also suggested me to build a user-friendly GUI because this application's category is quite unique, thus, it needs to have a nice design to be able to approach more people. During the interview, he was curious about direct transaction feature (i.e., convert Bitcoin and other crypto coins and send the money directly to the clients' bank accounts) and how it could be done it the future. He said: "it would be super useful for many cryto clients to have that feature in BITAI.".

## Chau Loan

She made some inquiries about how I transition the project to the cloud, how can BITAI handle all cashback request when subscribed users usually spend a lot of financial resources for their investment. After my clarification, she admitted having interest in the project, but she told me that she is uncertain of its success. Moreover, she also warned me of crawling data from Bitcoin website, saying that it is possible, yet difficult to crawl large amount of data in long term from the source. In addition to the project idea feedback, she also gave me a detail advise regarding my writing style and then helped me to improve it by pointing out some vague thesis, hypothesis, grammatical errors and inconsistent sentence structure. She also recommended me to provide more example from credible sources such as academic or government sources to strengthen my project pitch.

  These feedbacks are very helpful and constructive for me in achieving my dream goal as they help me slightly adjusting my goal to fit with the current scenarios. In particular, feedback from Quoc Thang helps me recognize the existence of some other potential competitors so I have to work harder and spend more time for this project so as to have a chance of success. Chau Loan, on the other hand, makes me realize the what the BITAI is missing and recognize the realistic challenges of project. I will use these as two of the lodestars for developing and improving my project

## IT Technologies

# Artificial intelligence and machine learning

Logo, company name

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[**Figure 2:**](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html#figure2-destination) TensorFlow - something.

* What does it do?

A picture containing graphical user interface

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[**Figure 3:**](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html#figure3-destination) AI - something.

**Artificial Intelligence**

  The state of the art of Artificial Intelligence relies on one of its word components: Intelligence. Traditionally, computers solve problems by using developers and coders' instructions. Nowadays, with the help of AI, coders can teach computers how to become an independent thinker using algorithms such as Reinforcement learning algorithm, neural network, etc. There are diverse applications of AI in our Vietnamese society such as voice, image recognition, spam email filtering, AI robot (e.g., Trí Nhân robot from ), AI X-ray Reader.

Depending on authors' intentions, AI is classified into 3 levels:

**Machine Learning** is one of the greatest applications of Probability and Statistics. Machine Learning uses principle of Probability and Statistics serve prediction purposes. The process of applying machine learning includes:

* + Crawl from other sources or get existing datasets available (e.g., from the Internet, Organizations/Companies, etc.)
  + Data cleaning and processing using data manipulation techniques. In a table, some columns are unnecessary so they can be dropped. In some cases, data in desired columns are null or not presented in the right format, they have to be fixed before proceeding to the next step
  + Data visualization using processed data from the previous step. In other words, draw charts to present data in a more comprehensive way.
  + Split data into training and testing with proportion specified. Use appropriate pre-built machine learning models or re-build a new/existing one and feed data to these model for prediction.
  + Use metrics for comparison between the models/algorithms' accuracy of prediction (i.e., compare how accurate the prediction of testing data is with respect to the original data) and choose the algorithm with the highest score.

There are so many types of Machine Learning algorithms such as:

A picture containing text

Description automatically generated

Machine Learning is a subset of AI. Machine learning uses information extracted from

### Supervised Learning:

* + Linear Regression: This is generally used to predict future data in number format. For Bitcoin, it collects previous data of Bitcoin price and use them to forecast the next price
  + K-Nearest Neighbors: this is generally used for classification. For example, Bitcoin may be affected with

### Unsupervised Learning:

* + K-means Clustering: This is generally used for
  + Hierarchical Clustering:

Circle

Description automatically generated

Diagram

Description automatically generated

* What is likely the impact?
* How will this affect you?

## IT Work

### What kind of work is done by the IT professional?

* + Chirag - Airbnb AI & Machine Learning Engineer: An example of him working in a start-up called troo.ly is given, saying that his job was to solve problems of sex offenders and drug traffickers using data gathered from external sources. He then made an example describing what his job is in Airbnb Corp. To be more specific, he uses machine learning to extract information of bad people from news articles and the Internet, and then, make prediction of "potential candidates" to deter them from the Airbnb platforms.
  + Jeevan - Facebook Data Scientist: he does Data Science jobs for Facebook. According to Jeevan, data scientists make hypothesis using their prior knowledge of the problem and then they try to evaluate how true the hypothesis is using different dataset and methods to process and disseminate the data. Furthermore, he also mentioned that data scientists are pivotal contributors to basketball leagues and teams. He further made an example of his friends in California (original word use: Cal) who became data scientists for NBA teams and he described how they helped NBA teams with recruitment (i.e., "value players properly") and player evaluation (i.e., "picking the most efficient player")tasks.

### What kinds of people does the IT professional interact with? Are they other IT professionals? Clients? Investors? The general public?

* + Dr.Yuan Tian: During the interview, she made an example of her past research where she did the data mining job to help her software developer colleagues improve their softwares building process.
  + Jeevan - Facebook Data Scientist: During the interview, he admitted that data science is not solo work so he has to constantly work with other data scientist colleagues to open his perspective and colleagues from other department to be influenced to solve the problem in different ways. He made an example of his current team - Oxygen Delivery at Facebook where he had to work with not only his data scientist colleagues but also people from various departments, including Sales, Marketing, Business to maximize users and advertisers' benefits of using advertisements.
  + Chirag - Airbnb AI & Machine Learning Engineer: When he was asked about what his day-to-day work and teams that he interacts with, he answered that he usually works with his product manager and his ops team. Chirag adds in that he also works with his ML engineer colleagues (original word use: "fellow engineering colleagues") and teams from other departments to brainstorm the optimal method to get label data.

### Where do the IT professionals spend most of their time?

* + Dr.Yuan Tian: Dr. Yuan, she made an example of her past research where she did the data mining job to help her software developer colleagues improve their softwares building process.
  + Jeevan - Facebook Data Scientist: Not applicable!
  + Chirag - Airbnb AI & Machine Learning Engineer: Not sure :(

### What aspect of their position is most challenging?

* + Dr.Yuan Tian: Dr. Yuan , she made an example of her past research where she did the data mining job to help her software developer colleagues improve their softwares building process.
  + Jeevan - Facebook Data Scientist: A lot of his projects have undefined scopes (i.e., uncertain if it is possible to solve the project). He made an example of doing a project that is planned to be done in weeks or months and he ended up realizing that the project can take years to accomplish. Moreover, one additional challenging aspect is mentioned in the video, which is the adversity of measuring how good basketball players in defense position are.
  + Chirag - Airbnb AI & Machine Learning Engineer: The process of extracting crimes' names from news articles and various web sources to Airbnb blacklist, according to him, is challenging. He explains this by providing an example of two different articles titles to show the off limit of his machine learning model. In fact, while the model can detect the crime's identity from this basic article's title: "Chirag committed a crime in Pennsylvania", it cannot identify the same crime from this source's title: "Chirag was last seen in Pennsylvania, he committed a crime there". Another challenging aspect of his job is to get unbiased label data

# Reference

* **[1]:**Testing: [Management System](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html)
* **[Figure 1]:**Source: [Https://Www.Buybitcoinworldwide.Com/How-Many-Bitcoin-Users/](https://www.buybitcoinworldwide.com/how-many-bitcoin-users/)
* **[2]:**[Dashboard](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html)
* **[3]:**[More.....](file:///D:\Assignment%202%20-%20Our%20IT%20World\index.html)
* **[Figure 2]:**Source: [Https://Datasolut.Com/Einfuehrung-In-Tensorflow/](https://datasolut.com/einfuehrung-in-tensorflow/)

# Contact Me

**Developed By Huan**

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