Non-fungible Tokens: Potential Star FinTech Applications in the Future World

Detailed Project Plan
FITE4801 Final Year Project, 2022
The University of Hong Kong

Xiao Chengyuan
UID: 3035638519

Supervisor: Dr. Tsz Hon Yuen
Table of Contents

1. Background
   1.1. Introduction to NFT
   1.2. Technical Background
   1.3. Problems and Criticism
   1.4. The Future of NFT

2. Objective
   2.1. The Interdisciplinary Perspective of Research
   2.2. NFT Ecology and Applications
   2.3. Criticism Analysis
   2.4. Connection with Other Industries

3. Methodology
   3.1. Architecture
   3.2. Approaches and Deliverables

4. Challenges and Risks

5. Schedule and Milestones

6. References
1. Background

1.1. Introduction to NFT

In this ever-changing era, the FinTech industry is continually shaping the whole world, especially many sectors of the finance industry. New concepts and their applications are springing up. One of the most lately popular topics is Non-fungible Tokens (NFTs). According to Forbes (Conti & Schmidt, 2022), NFT is a kind of digital security storing particular data that represents ownership in the digital form of a unique item such as audio, image, video, text, and physical object based on blockchain technology. Therefore, in theory, NFT has various application scenarios like art collectibles, intellectual property, patents, the metaverse world, the gaming industry, the supply chain, etc.

As a new digital asset growing exponentially recently, NFTs have received intense attention after their exposure to social media because of the social influence of celebrities who are showing their enthusiasm for NFT digital arts with their expensive trading amount (Binance, 2022). Society, especially netizens and young people, are witnessing the freshness and changes brought by emerging things with a sense of wonder.

1.2. Technical Background

NFTs are not a recent invention. Many people believe the first known NFT “Quantum” was created in 2014 (The Economic Times, 2022). Nowadays, NFTs are products of the development, iteration, and progress of blockchain technology. This technology uses a cryptographic hash function to create blocks that store immutable ownership records (Reynolds, 2022). The generative technology is used to mint the bulk of unique NFTs (Chandra, 2022).

In fact, the technologies that back NFTs are not a new thing. Many NFTs are in the Ethereum network, a decentralized blockchain platform where they are minted and stored (DeNicola, 2022). For example, inspired by the ERC-20 standard, the standard interface ERC-721 evolves NFTs on Ethereum (Sharma, 2022). Also, newly developed token standards were created to improve it (Chandra, 2022). Because of the characteristics of blockchains, NFTs are cryptographic tokens with unique identification codes. Moreover, anyone can access the data and ownership stored in the blockchain. That makes each minted NFT irreplaceable, authentic, and scarce. Therefore, unlike lots of the same cryptocurrencies that exist simultaneously, NFTs cannot be exchanged due to their uniqueness (Chandra, 2022). Using smart contracts in a particular blockchain, the ownership of one NFT can be assigned when the NFT is
sold between two parties. As the blockchain system (e.g., Ethereum) is decentralized,
all features mentioned before can come true, and the NFT lives forever.

1.3. Problems and Criticism

Not only is the development of technologies, but the market is also changing fast. This
kind of anytime and anywhere change was like in September 2019, Bitcoin's price was
about $10,000, and after soaring to over $60,000 and subsequent violent fluctuation, it
is below $20,000 on 1st, October 2022. The NFT world and even the whole FinTech
industry are experiencing this change. Although the prices of NFT sales were extremely
high, according to Bloomberg (Shukla, 2022, as cited in Dune Analytics, 2022), the
trading volumes of NFT have tumbled 97% from January highs to September 2022
because the monetary policy is tightening. This can significantly challenge the NFT
market as fewer people are inclined to speculate.

People and artists who embrace the concept of NFTs may see them as innovative digital
designs and fancy beautification. However, concerns and criticism have been raised
about the overheating in NFTs. Some people question the effectiveness and utility of
NFTs, while others argue that NFTs have spawned new scams and frauds. There are
critics not only who know little about the principles and functions behind NFTs, but
also who believe they are worthless investments and speculative bubbles (Awosika,
2022). In addition, how to ensure the physical object connects well with the virtual
world (in the form of NFT) when it has a material carrier?

1.4. The Future of NFT

Although there are problems and criticism, NFT indeed has a lot of application
prospects and advantages where many people are still brimming with confidence. For
example, Yanto Chandra (2022) proposes the concept of NFT-enabled entrepreneurship,
and he also discusses the key mechanisms of generation, compression, substitution,
expansion, and elimination. Moreover, he classified the types of NFT application
scenarios: virtual assets, hybrid (physical/virtual) assets, physical/virtual interfaces, and
metaverse assets (Chandra, 2022). As a digital asset with diverse scope and purpose,
NFT can be either completely virtual, or has its physical material carrier. In a sense,
any privately owned item can be an NFT called “Asset Tokenization.” This final year
project will also discuss the possibility and potential of NFT applications.

Therefore, beyond the mania of the speculative boom, returning to the essence of NFT,
it is possible to find out the areas and scenarios of the application or form of NFTs with
tangible benefits for society in the future, which may make great strides ultimately. This
can be an excellent opportunity to demonstrate the mechanism and application of NFT
with excellent prospects.
2. Objective

2.1. The Interdisciplinary Perspective of Research

This project will be research-oriented. As the author’s background, this final year project will be based on an interdisciplinary perspective. Although there may not be a programming element in the project, it will track the cutting-edge potential trends of NFT in the market from other angles. If other NFT development projects are about NFT implementation in the current moment (the final point and the micro), my project is about NFT exploration of mechanisms and concepts in the future (the early and the macro).

2.2. NFT Ecology and Applications

This project will be forward-looking. The project will be a deep-down and objective reflection on the current NFT ecology (e.g., the technology, situation, relation, strengths, and weaknesses) when facing everyday challenges and potential opportunities. As mentioned in 1.4., various NFT applications represent their value. This project will research the hottest and overlooked potential areas and scenarios to analyze which will be a flash in the pan after the NFT hype and bubble, but which may change the game. The significance of the relationship between virtual NFTs and real-world material carriers should be emphasized under the views of utility and pragmatism. Eventually, possible ideal forms of the NFT world may be estimated and predicted from the author’s perspective.

2.3. Criticism Analysis

This project will be conceptional, comprehensible, and communicable (3Cs). It is found that some existing academic papers have a positive attitude towards NFT, but they lack response and analysis to the main criticism and skepticism, and lack of thinking about the core values of NFT application, which makes people question whether the development of NFT will be feasible and sustainable. Because of the constant criticism and skepticism about NFT and its technology, the current NFT may not necessarily be perfect. In fact, insightful analysis and reflection on this criticism can identify deficiencies in the current situation and possibilities for improvement. For anyone interested in this project with little computer science background, the project will also be conceptional, comprehensible, and communicable as it will not focus on the work of technical creation.

2.4. Connection with Other Industries
This project will be innovative and flexible. Remaining flexibility is vital to finding results and innovative outcomes for a research project. The discussion may not just stay in the existing field of NFT research or application, but it will explore any imaginative possibilities if possible. Other industries may be included if appropriate. For instance, in the of Chandra (2022), he mentions the “primary and secondary opportunity” model, which is derived from the financial markets. Thus, Asset Tokenization could also be discussed if an innovative idea or form of designed future NFTs will be introduced or proposed. In addition, some financial institutions could react to the decentralized world and bring innovation to the NFT ecology in a certain way.

3. Methodology

3.1. Architecture

As this is a research-oriented project, the architecture figure demonstrates the mechanism where NFT ecology develops. There will be three elements in the whole NFT ecology will be included: NFT concept (the nature, guiding principles, and theories of NFT), NFT application (the focus of this project that emphasizes the utility and functions of pragmatism of potential NFT scenarios), and NFT technology (blockchain and related technologies that back NFT). As the many bodies, these elements make up the NFT world and show the inner contribution to its development.

Criticism and macro factors (e.g., economic environment, regulatory policies, market conditions) may have a negative impact on the development of NFTs. However,
favorable macro conditions and constructive criticism and suggestions can also promote its progress and development, especially its innovation. The criticism is from both inside (e.g., experts) and outside (e.g., bankers, people with no technical background) of the NFT ecology. They help to shape the future of NFT applications.

The industry of NFT needs innovation because it is imperfect. There are problems and criticism to deal with, as mentioned above. Innovation can improve each element of NFT ecology. It can bring new versions of the technology, create a new application environment, and even change its framework and concepts. Therefore, this project will also try to add some innovative elements to explore more possibilities if conditions permit.

NFT is not an isolated world. It connects with other industries and fields in terms of many aspects. For example, NFT developers and application users can be financial institutions for some reason. NFT also creates new areas that promote innovation and progress in other industries.

3.2. Approaches and Deliverables

The research approaches are divided into different stages during the final year project. In this stage, the webpage and this project plan are completed. In Phase 2, early fundamental research should be conducted to overview the NFT world and gain some insights and inspiration. Then, both qualitative and quantitative research will be conducted to analyze different application scenarios of NFTs. After that, questionnaire and interview approaches will be used to understand what real-world people are thinking and commenting on and obtain valuable primary materials. Site view is also a great way to collect information from the industry if that could be possible in reality. After the first presentation, a detailed interim report will be submitted based on preliminary implementation results. In Phase 3, the primary approach will be an introduction of new ideas based on previous work. The model and mechanism of NFT may be included. Eventually, the final report and final presentation will be prepared to show the final outcomes of the whole project.

4. Challenges and Risks

The challenges of this project exist due to the limitation of conditions and related resources of the author. It is a one-person team. There may be somewhere imperfect, and the workload could be significant because the research boundary of NFTs is extremely broad.

Another challenge comes from the uncertain outcomes due to external risks. Fluctuating markets show that the cold winter of NFT may come, as mentioned in 1.3. Strict regulatory and monetary policies will add uncertainty to the project. Moreover, the
recent economic recession will affect people's attitudes to NFT and further affect the development of the whole NFT ecology. The project’s period is one year, and the world will change rapidly. Therefore, there is a high risk of changes in the focusing areas of this project that may be studied in the future.

Additionally, internal risks could also be challenging. NFT itself is an emerging thing. From the history, self-evolution and development is a gradual process. There is no denying that NFT still has room for improvement from the perspectives of environment, technology, and design. Also, due to the broad scope of NFTs, there is still a long way to go to find, choose, and analyze the industry and potential applications.

5. Schedule and Milestones

The tentative schedule is given to seek feedbacks, make adjustments, and finally achieve objectives. The details may depend on the actual situation.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Timeline (2022–2023)</th>
<th>Task &amp; Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: Inception</td>
<td>Jul – Sep</td>
<td>Early research of NFTs</td>
</tr>
<tr>
<td></td>
<td>2 Oct</td>
<td>Deliverables of Phase 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Detailed project plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Project webpage</td>
</tr>
<tr>
<td>Phase 2: Elaboration</td>
<td>3 Oct – 7 Nov</td>
<td>First round research on NFT ecology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Insights and inspiration gaining</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Mechanism summarization</td>
</tr>
<tr>
<td></td>
<td>8 Nov – 7 Dec</td>
<td>Second round research on NFT application scenarios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Application review and classification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Pragmatic analysis and scenario selection</td>
</tr>
<tr>
<td></td>
<td>8 Dec – 8 Jan</td>
<td>Real world reaction to NFT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Questionnaire distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Subject interview</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Site visit (if conditions permit)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‣ Qualitative and quantitative analysis</td>
</tr>
<tr>
<td></td>
<td>9 – 13 Jan</td>
<td>First presentation</td>
</tr>
<tr>
<td>Date Range</td>
<td>Deliverables of Phase 2</td>
<td>Summary of ideas and comments</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>22 Jan</td>
<td>Preliminary implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detailed interim report</td>
<td></td>
</tr>
<tr>
<td>23 Jan – 22 Feb</td>
<td>Criticism analysis</td>
<td>Summary of ideas and comments</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 Feb – 22 Mar</td>
<td>Connection with other industries</td>
<td>Possibility of NFT innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>future model (e.g., in financial market)</td>
</tr>
</tbody>
</table>

**Phase 3: Construction**

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Deliverables of Phase 3</th>
<th>Final presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 Apr</td>
<td>Finalized tested implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final report</td>
<td></td>
</tr>
<tr>
<td>17–21 Apr</td>
<td>Final presentation</td>
<td></td>
</tr>
<tr>
<td>3 May</td>
<td>Project exhibition</td>
<td></td>
</tr>
</tbody>
</table>
References


Shukla, S. (2022, September 28). *NFT trading volumes collapse 97% from the January peak.*