Revolutionise everyday shopping experience using blockchain technology.
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Abstract

We live in a world of “big data”. We generate an enormous amount of data which large established companies profit from. Data generation and storage has significantly grown, and now individuals can take advantage of rich crowdsourced data when making decisions to buy products or order for services. The proposed new and innovative platform seeks to provide benefits to individuals rather than the established big firms who store vast quantities of our personal information and use them to turn a profit.

Our mission is to build an AI commerce technology on the Hint platform: an intuitive technology for consumers to discretely digitise the purchase history in a decentralised database. We aim to make technology work for everyone by putting an AI (Artificial Intelligence) in every home. This paper describes in detail how purchase data is collected, stored in decentralised platform and suite of tools to analyse to provide a great value to every shopper.

“Everyone here has the sense that right now is one of those moments when we are influencing the future.”

- Steve Jobs
1. Background

Artificial intelligence is transforming and revolutionising every aspect of our lives. Be it entertainment, travel, business, retail or healthcare, almost every industry is thriving to adopt new technologies and [ AI & Machine learning] is no exception. Adoption of digitalisation, analytics and artificial intelligence, and automation are creating performance and productivity opportunities for large businesses. Retail and online stores track your shopping activity for profit, gather enormous information about our purchases and shopping habits. Most retail companies will collect data about what you buy and how much you spend. At the same time, individuals are not able to use their own data to their advantage. How often you have asked yourself these questions:

- Are any of the products in my shopping list have discount prices in any store near to me?
- How can I compare and get the best value price? How much did I spend on eating-out or takeouts in the last month?
- What are the most expensive items in my shopping list last week/month?
- Have I spent more money on groceries compared to last month?

These are all pretty straightforward questions but it is extremely difficult to answer them accurately because of the ephemeral nature of the data storage when it comes to everyday data like shopping, fitness activity etc. Here are some statistics about consumer behaviour before any shopping either grocery or fashion, more and more consumers are taking to the internet to do their research and to find the best deals.

81% consumers conduct online research before they make a purchase. On average, a consumer will visit three stores before making their purchase. 35% of consumers spend 30+ minutes comparison shopping before making a decision on purchasing a commodity product; 65% spend 16+ minutes doing so;
2. The Problem

The search is broken for shopping.

Current search engines typically work by retrieving results based on matching keywords in a search query to keywords in product titles and description, without factoring in the greater context. They are fast but not convenient and efficient. And all the reports suggest that search often doesn’t work well. Most of the information that shoppers are bombarded with is sponsored ads while searching for a product or service. Search engines core business is to make money on sponsored ads while bringing more generic search results which may or may not be relevant. If not, we will have to iterate with the keyword trial and error until we find what we are looking for. More often than not, customers need to spend significant amount of time and energy searching before making any online or in-store purchases.

In this age of data abundance, customers are making their decisions with only five percent of the data. Decision making is more stressful when a limited amount of information about a products and services are available. Losing focus makes people spend more on impulse purchases. Today, shopping experiences are tailored and meticulously thought through using the data collected from the shopping patterns. Online and retail companies use these data to their competitive advantage to increase their sales. Big brands are paying loads of money to search engines, social medial platforms and e-commerce websites to display their products on the front page.

Think about what happens when you need to make an important purchasing decision like buying a new television. Most people would spend a significant amount of time in researching, comparing features, getting multiple quotes, talking to different sellers, comparing notes with friends. Imagine doing this for a whole plethora of items daily, weekly or fortnightly!

**We believe data and analytics are transformational, yet not many individuals are capturing or utilising even a fraction of their value.**
3. Solution

Search is all about data and its integrity. The rate of change in our modern world is accelerating with each passing year, but we still happen to use nearly 20-year old technology “Google Search” to find everyday products by sacrificing our privacy. Managing data is essential but cumbersome at the same time. What if all these data could be managed and retrieved from one decentralised platform without giving away our identity?

Introducing **Hint, a smart AI-commerce platform for voice assistants** on top of intelligent **Hint platform: - a decentralised, privacy enabled data analytics platform using blockchain technology**. Hint allows users to access distributed data, in-memory processing, machine learning, visualisation, natural language processing, and cognitive analytics to get answers to questions quickly and identify valuable patterns and insights that would have seemed unimaginable. We believe that by digitising, analysing and measuring our everyday shopping data can help improve our quality of life. The use of metrics by individuals are rather less widespread compared to big companies that measure everything. The raw sales information should be democratised for everyone, so we benefit from an astonishing amount of unexplored recesses of the **dark data**.

In the context of data, “dark” describes something that is hidden or undigested. Dark data is an increasingly searched and used expression, simply because dark data is growing very rapidly with the evolution of technology. According to Gartner, dark data is “the information assets organisations collect, process and store during regular business activities, but, fail to use for other purposes”. This can be applied to our day-to-day activities too. Everywhere, people are building up an immense amount of data based on our private lives.
3.1. What is Hint?

Hint is an AI-commerce technology integrated into digital or voice assistant built on Hint platform; a privacy enabled data analytics platform using blockchain technology to collect, analyse and share purchase information with the Hint community.

3.2. Why does Hint Matter?

With a comprehensive understanding, what is happening with the crowdsourced shopping data helps you make fast and efficient real time purchasing decisions based on your personal/family needs. Visibility of product information is essential for reducing wasted effort on endless “Google search” and comparing websites.

3.3. With Hint:

- Users can share and find products & services faster and more efficiently.
- Make better-informed decisions about all the shopping.
- Have total visibility into all products available in your locality and globally.
- Personal data analytics dashboard will provide users with advanced analytics capability and friendly user interfaces that would enable independent and informed decision making.
- Hint platform users will be able to share data and collectively pull valuable insights whenever and wherever, they want, as an open tap on the community-sourced data.
4. Hint Features

1. Digitise receipts and reprint anywhere, anytime using mobile app and web app.

2. Receive Hint tokens to your secure Hint wallet and may instantly convert Hint to other cryptocurrencies.

3. Spend Hint Tokens in Hint ecosystem and may globally on shopping online and in-store.

4. Aim to enable AI-Commerce in voice assistants like Google Home to ask any product question and also provides insights on real time spending and forecast expenses.

5. Advanced Analytics on crowd sourced data and apply machine learning and AI Algorithms.

6. Search, Real time Dynamic Data Visualisation, Personalised Hints, Automatic alerts etc.

Our objective is to shift the power of data intelligence from big, established firms back to individual users.
4.1. Powering AI-Commerce in Voice Assistants

- Talk to Hint 24/7, helps you with your day to day shopping tasks, hassle-free reminders and proactively finds best prices on products you buy regularly.
- Ask about anything weather, events, reminders and also play songs.
- Improve your quality of life by assisting you with all the data you need in decision making process.
- Hint reminds you what needs to be stocked in your pantry at all times.
- Automatically orders groceries from your favourite store.
- Behavioural science applied to your finances.

4.2. Web Dashboard (Personal Data Analytics Dashboard)

- Fast search for products in real time
- Unified timeline for all your purchase history.
- Hint helps you to keep receipts in one place and store forever.
- Your purchase history under your full control and reprint them anytime.
- End-to-End visibility into shopping patterns
- Real time dashboard and spending overview
- Provides historical versioning of your shopping data and makes it simple to search all your shopping history from one platform.
- Setup alerts on products
4.3. Mobile App

- Digitise shopping receipts and incentivise with Hint Coins.
- Your personal chatbot that help you with the decisions while shopping online or in-store.
- Sends you personalised hints via push notifications which are real time tips that apply to your spending habits and life events
- Automatic categorisation of all purchases
- You can tag a receipt as personal or work
- Deliver personalised hints in real time push notifications. Aims to widen cryptocurrency footprint by rewarding users with Hint tokens when they shop. This will facilitate cryptocurrency growth as whole.
- Intelligent Chat Bot that helps when you are on the move

4.4. Hint Debit Card

- May spend Hint coins globally on shopping online and offline
- You may instantly convert Hint coins to other crypto tokens or cryptocurrencies
- Transfer Hint coins to friends and family

4.5. Hint Wallet

- Receive Hint Coins for every receipt scan to your secure Hint Wallet
- May instantly transfer Hint coins from Wallet to Hint Debit card
- May instantly convert Hint coins to other cryptocurrencies
4.6. Use Cases to Apply Hint to your everyday life

**Personalised Hints examples**

**Hassle-Free shopping**

Hint searches the specific product in the decentralised database and send you customised push notifications in real time.

**Kitchen**

Hint keeps track of all the items in your pantry & fridge and generate a shopping list as required according to your shopping pattern.

Hint finds best recipes from the internet sources based on the items in your pantry and fridge.

**Finance**

Hint makes tracking your receipts seamless, through a mobile app that learns about yourself and your spending habits and helps you to improve your finances.

**Life Style & Entertainment**

Hint helps you make better decisions by comparing curated crowd sourced receipt data from the community.

Hint can play songs, add reminders, find events and much more.

AI device in the home could monitor everything in the decentralised database, check with the past spending patterns and hint you: “For e.g. Aptamil Baby Formula - Stage 3 is on sale $18, which you usually buy from this favourite store for $24.”

This week you spent more money on takeaways as well as groceries. You might want to consider “grocery shopping” as non-necessary expenditure for this week.
5. Technical Overview

- **Scan**
  - Hint Mobile App
  - IPFS: Store scanned receipts
  - BigChainDB: Structured Data
  - Hyperledger: Analytics
  - Ethereum: AI Machine Learning, NLP, Real time Indexing
- **Dashboard**
  - Hint Card Mak
  - Hint Mobile App
  - AI powered, personal assistant

**HINT Token**
5.1. Core concepts

Three factors make Hint platform so innovative - AI and Block chain powered, digitise receipts with a single click and send personalised hints in real time.

- Smart contracts on Ethereum Blockchain to incentivise consumers for digitising their receipts.
- Secure - you own your data, period.
- Anonymous - Ownership of the receipt will always be private and visible only to the owner.
- Store receipts in IPFS and Blockchain database.
- Apply machine learning and AI Algorithms on individual purchase data set along with the crowdsourced data.
- Natural language processing
- Real time Aggregation.
6. Global Market

Total global retail sales in 2017 are projected to amount 26.83 trillion U.S dollars.

Retailers indicate that customers like to browse the Internet to research major products, but when it comes to making an actual purchase, they prefer to do it in person, in the store, according to almost half of retailers (46%).

Grocery is the product category with the highest percentage of shoppers and 70% of the make in-store purchases. U.S is the world's biggest consumer market regarding purchasing power.
Total Retail Sales Worldwide

Number of digital buyers worldwide from 2014 to 2021 (in billions)
Digital Universe Snapshot

An estimated 90 percent of all data in existence today was generated during the last five years. The digital universe—comprising the data we create and copy annually—is doubling in size every 12 months. Indeed, it is expected to reach 44 zettabytes (that's 44 trillion gigabytes) in size by 2020 and will contain nearly as many digital bits as there are stars in the universe.

Figure 1. The expanding digital universe, 2013–2020

In 2020, the digital universe is expected to reach 44 zettabytes. One zettabyte is equal to one billion terabytes. Data valuable for enterprises, especially unstructured data from the Internet of Things and nontraditional sources, is projected to increase in absolute and relative sizes.

7. Token Launch

7.1. Pre-ICO

**Role of Coin/Token** - Used to pay for AI services on Hint Mobile and AI Platform.

**Symbol**: HINT

During the pre-ICO, 30M Hint tokens will be available for sale on the Ethereum blockchain to pre-purchase before the main ICO. Hint tokens will be issued on Ethereum blockchain using the ERC20 token standard.

7.2. Pre-ICO Timing

Start Date: Feb 8th 2018

End Date: March 8th 2018

7.3. Pre-ICO Funds Allocation

| Engineering and Product Design | 65% |
| Marketing                      | 20% |
| Legal                          | 5%  |
| Team, Advisors & Experts       | 10% |
8. Roadmap

Our objective is to put AI in every home and improve the quality of life of every individual.
9. Business Strategy

The democratisation of consumer data is achieved by incentivising users to digitise their purchase information. It will belong to every individual stored in blockchain. Hint aims to widen cryptocurrency footprint by rewarding users with Hint tokens whenever they shop. This will facilitate cryptocurrency growth as a whole. Imagine data out there as a single source of truth that no one on the planet owns or controls per se. Our objective is to put AI in every home and improve the quality of every individual’s life.

10. Conclusion

Hint aims to revolutionise shopping experience like never before using a decentralised global platform. Please join in ICO to help us in achieving our goal to democratise information.

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