Organisation	PayTM
Problem Statement	Reducing phishing attacks in online/mobile wallets and net banking
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

Our solution to providing reliable, user friendly and practical security against phishing scams especially to the special vulnerable groups is two fold. Our observation of the situation seems to indicate that a better way to integrate this kind of security in products already widely used is rather more important. Hence our focus is on building a phishing detection engine and tightly coupling it with a popular web browser. This solution can be broken down into two stages.

1. **Building a Phishing Detection Engine**: Since Phishing relies on producing and hosting similar looking sites and using it to fool users we plan to build a **visual fingerprinting engine** that will crawl huge number of popular sites and generate visual fingerprints from various **design patterns** used on the site. This central database along with the URL patterns can be used to **establish a relationship between the site design and a given URL**, this information can be used to detect phishing attacks near instantly even for sites that are not cataloged. This system will be built in a modular manner to facilitate further extension in future.

2. **Coupling the Phishing Detection Engine with a Browser**: Although some solutions are available that tend to solve this problem, usability is a major limitation due to the process involved to install and configure that software. Our solution is to **compile (make) a custom version of a popular open source web browser with our detection engine enabled and always turned on**. To improve the usability and informedness for the user the **engine along with the browser will have language local languages set to default** and any security information will be displayed in understandable manner. In extreme cases where the threat level is high, the browser will prevent access with no other workaround to unblock the site. Our version of the browser will be secure against these kinds of attacks and will have a **one click installer like the default vendor options**.

Technology Stack

Technology	Use Case
NodeJS	Phishing Detection Engine & Central Fingerprint Database
Python	ML Models
MongoDB	Handling DB Services
HTML, CSS, JS	Desktop browser extension design
Open Source Browser Source	The base of our browser & engine package
C++ and build tools such as Makefile, autoconf etc	Build tools to package our stack

Use Cases

1. **Public Computer Centers**: Since areas like computer labs, libraries, cyber cafes etc are one of the prime regions where people usually get phished, it is necessary to protect those points. Our solution to the problem enables the organization to build a safe computer station with added user experience and localisation options.

2. **Personal Computers/Mobiles**: People are increasingly starting to use internet and having personal internet devices. The proposed browser will facilitate them to have a safer internet experience.

3. **External Browsers**: The proposed solution with be built in a modular manner so it will be possible to port the engine to most of the mobile and desktop web browsers/applications. Most of the browsers also have associated stores making distributing and installing this kinds of software easy.

Future Scope of this project is wide because of the unique coupling proposition. Since our custom browsers also heavily focus on localisation and the language of the application we essentially can provide better security in turn of an even better user experience, which is highly desirable. It would be a huge benefit if vendors also promote and make it part or their standard app suite.

Fin

Organisation	MindTree
Problem Statement	Driver alertness detection
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

A vehicle driver is either directly or indirectly responsible for safety of his own and all the other's life. Our proposal is to improve alertness of the driver in two aspects.

1. **Informing the driver with road critical information**: Many mainstream navigational services provide some useful information such as traffic levels etc but that alone is not enough. Our idea is to inform the driver with some additional information using which **better driving judgements** could be made. Availability of **aggregated information such as pothole frequency, road conditions, accident frequency, speed limits etc would largely be helpful to a driver** and enable him to make better driving decisions. This information will in large part be aggregated or inferred and be made **available in a HUD kind of interface**.

2. **Driver & Passenger Assistance System**: This is the **real time component of our proposal**, all the information proposed in this section will be realtime and update live. Using advancements in **Computer Vision and Machine learning** we propose to implement **a mobile app** that will function as a **dashboard device for a driver** and will provide him with **essential analytics such as sleepiness of the driver, seat belt status, immediate driving conditions**. The application will use **pattern detection to analyze the driver behavior** and also **aggregate fellow driver patterns** on the road to inform the user about **potential precautions that might be necessary**. This app will also **function as an HUD interface** to make it easier for the driver to use our services without getting distracted.

Technology Stack

Technology	Use Case
Kotlin	Android Application
Python	ML Models & Aggregation Server
OpenCV	Core Computer Vision Library
SQLite, MongoDB	Various Database Functions
PhantomJS	Aggregation Automation

Use Cases

This application using its two factor driver alertness maintenance system could be a very useful companion of a driver. A few key ways we achieve the set safety goals are listed below:

1. **Aggregated Road Conditions**: A driver can make better decisions pertaining to the route, passenger capacity, speed etc using this critical information presented.
2. **Driving Pattern Analysis:** Analysing the driving pattern data and alerting fellow users if a fellow driver is seen as a threat etc.
3. **Visual Analysis**: The application will also regularly perform visual analysis of the driver to test the physical alertness of the driver making sure he is physically awake.
4. **HUD** (Heads Up Display): The information so presented will be displayed using a mobile being used as a dashboard with camera so continuous feedback is possible.

Future Scope of this project is wide with improvements that can be made to integrate these systems into regular car electronic systems. Supporting and extending real time components of this can lead to a very robust and useful application.

Fin

Organisation	MindTree
Problem Statement	Identity (KYC) secure sharing
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

Modern computer applications and solutions often depend upon some form of identity and trust establishment hence maintaining accountability of private user information retrieval and usage by third party agencies is one among the very few ways to practically and reliably ensure privacy. Our innovative feeless **Directed Acyclic Graph Blockchain/Protocol** based solution aims to build one such trustful ecosystem of information retrieval while providing **fine-grain control** to the user all the while **automating the process**. Our system will establish a unique **trust score** on the basis of user and agency interaction thereby affecting the automation process. A brief step by step run down of the process follows:

1. **A user installs our mobile application** that is also a lightweight client for the blockchain and generates a set of public-private key pairs. The private key never leaves the mobile phone and is used to encrypt information.
2. Using the aforementioned mobile app the **user uploads digital copies of the documents** intended to be **managed by our blockchain**, these documents will be **encrypted** with the user's keys so they have are not publicly accessible.
3. **Agencies will have a base trust rating established by their activity on the blockchain**. The rating will be **affected when a user denies access to of a particular record to the agency**. This also acts as a spam prevention system and enables for automation.
4. The user's **mobile app will receive the request** and **based upon the agency's trust rating, the sensitivity of the documents and user preferences either provides or denies access or change the status to pending and await for user confirmation.**

This system thus **provides a robust mechanism to prevent malicious agencies** from collecting and misusing private data of its users without consent. It also **empowers users** by enabling them to be able to track their information.

Please note that. **a detailed explanation of the proposed protocol would be lengthy** and thus was avoided from being mentioned here. Our protocol is based on the DAG Protocol of Nano (https://nano.org/en/whitepaper).

Technology Stack

Technology	Use Case
Go	Core Blockchain Node Software
Kotlin	Android Client Application
Python	File Preprocessing
MySQL & Realm	Persistent blob and data storage
Git, Makefiles	Build and collaboration tools

Use Cases

With such a robust information flow tracking mechanism the proposed system could be invaluable for many applications. A few of them are listed below:

1. This blockchain **can enable users to efficiently share their private information** with third parties.
2. It can essentially also be used as an **centralized document/information hub**.
3. This proposed system can also be **used as an internal system for managing sub-organizational information flow** where the parent organization acts as an delegatory authority.
4. Could possibly be used by public institutions for providing access to their data.
5. It could be **used as an open referencing archive** for users to cross reference origin of information like Google Scholar. (Agency on the blockchain can also host its own data).
6. This system could also help **establish the credibility and intent of an organization** using its activity on the blockchain.

Salient Features

Accountability • Automated Approval • Instantaneous • Trustful • Built in Anti Spam Features • Low Entry Barrier • Free • Mobile Application Support • DAG Based Scalable Solution • MultiSig Support • Verifiable

Fin

Organisation	Mahindra & Mahindra (FarmEQ)
Problem Statement	Parking Spot indicator in vicinity
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

India is the world's fourth largest automobile market but it is also seriously limited by the availability and usage of parking spots. We intend to solve this problem by providing a **self sustaining platform for both parking spot providers and users**. Our platform **enables parking providers to lend their spots** to users by simply adding a camera covering the entire parking space and connecting it to our platform by a **trivial process**. **Our platform will then be responsible for managing the spots available and charging users for their usage**. This will facilitate us to create a **unified ecosystem** for parking finding parking spaces and providing one. Using Computer Vision systems our technology stack can calculate duration of stay, find vehicle registration numbers etc and use it to manage the credibility and availability of spots. Our **proposed solution is almost completely automated**. A breakdown of our solution follows:

1. **Parking Space Owner's Perspective** : The owner will have to **install a camera** near the parking space (could be a mobile camera) and a mobile application. We also register the GPS location of the space and using owner's input and Computer Vision estimate the number of spots available. Once the spot is available through our platform users can use it to find parking spots nearby and park. The driver can make **payment via the mobile app which is transferred to the parking space owner**.

2. **Driver's perspective** : The driver **will have to install our mobile app** and can use it to **find parking spaces nearby and be notified when one is available**. Then the driver will **be able to monitor vehicles in real-time**. Payment for the space usage can also be made using the mobile app. This kind of comfortable availability and experience **enables drivers to make use of more parking spaces** and could reduce traffic jams.

Our application will not only **provide security to the vehicle** but also helps us to keep a track of all the vehicles in an area. Our platform will also **incentivize owners to better maintain the space** thereby providing a long term stability of the system and the users will be able to get a viable and reserve parking spot for their vehicle at their desired locations with **ease**.

Technology Stack

Technology	Use Case
NodeJS	Application Server
Python	OpenCV & ML Models
MongoDB	Handling DB Services
Git, Gradle	Build and Collaboration tools

Use Cases

This application could be a very useful companion of a driver as well as the owner. A few key ways we achieve this high productivity and save resources are :

1. This system enables the drivers to dodge the high traffic areas by providing them with multiple locations.
2. It could also be used as business venture for some small landowners which currently do not have much capital to build over the empty lots.
3. Our application provides availability of a low cost connected ecosystem which will help identify the nearest parking spot and by extension also be working to provide one.
4. This also provides security as our application provides real-time detection and surveillance over the lot and gives more control over a distributed fleet of vehicles.
5. This system provides a central control of the organisation over a large number of vehicles currently running in the city.
6. This proposed system can also be used keep a track of number of vehicles in a region.

Future Scope of this project is wide because of the unique level of involvement from the users as well as the landowners. This can be a booming business venture with the organisation holding this application as the central body. This application will have an impact on the traffic conditions throughout the city if it reaches the certain number of users in the region.

Fin

Organisation	Infosys
Problem Statement	Autonomous Bot for Retail
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

Reliable in-store navigation systems and practical, specific, targeted means to promote products would bring along a **massively improved shopping experience**. Having such systems could make the entire experience a lot **faster & efficient** for all the parties involved. Our proposed solution involves building an infrastructure-less store navigation system for the consumers and a system for the store staff to manage it. Our solution is to build **two mobile apps** and **integration with Google Assistant** while reusing existing facilities both on devices and provided in the store to enable us to build a system which puts **minimum usability requirements**/constraints on the user and the store. A breakdown of our proposal:

1. We propose to build a minimal **client facing Android Application with Google Assistant integration** with **focus on ease of access** and providing contextual information and an **companion app for the store staff** using which they can update the navigational records of the store, product placement and the associated promotional information.

2. The major challenge involved is building an navigation system. Our proposed solution provides **an reliable, minimal and infrastructure-less indoor navigation system**. We propose to build this system **primarily based on not-so-widely used Magnetic Positioning techniques assisted by Machine Learning**, which provides high degree of accuracy (leveraging magnetometer on mobile devices) also using mobile signal strength and optionally WiFi for further even more accurate location triaging. This enables us to ensure that **every store can use this** system regardless because of the **Zero Setup Cost** involved. https://bit.ly/2DsYQbq

3. We also intend to support **Audio-Video promotions** so a **consumer can actively engage** with them both while using the app for catalog browsing or while listening to navigational instructions.

Technology Stack

Technology	Use Case
NodeJS	Application Server
Python	Machine Learning Applications for Navigational Services
Kotlin	Android Application, Google Integration
SQLite, MongoDB	Database Requirements
Git, Gradle, WSGI	Build and Deploy Tools

Use Cases

With such a robust indoor navigation system the proposed solution could be invaluable for many other applications. A few of them are listed below:

1. Location based Promotions in a store like setting (for example, malls etc).
2. Accurate indoor navigation systems for any institutions.
3. This system could also be a base for self serving kiosks.
4. Coupling our solution with additional systems would enable very accurate traffic analytics which could be invaluable in a host of different business decisions.
5. Improves store accessibility for disabled people.

Salient Features

Zero Setup Cost • Works on all Smartphones • Promotions via Audio/Video • Elegant User Experience
Simple Tools for Store Management • Google Assistant Integration • Minimal Maintenance • Android

Fin

Organisation	ISRO
Problem Statement	Seamless Indoor-Outdoor Navigation
Team Name	8080
Team Leader Name	Shashank Srivastava
College Code	C - 51763

A reliable indoor navigation system can enable a whole lot of new and interesting applications while making many industrial and consumer processes fast and efficient. Our proposed solution involves building an infrastructure-less indoor navigation system primarily using Magnetic Positioning (based on known indoor field variations and magnetometer on mobile devices) which has been proven to provide high accuracy, additionally we also intend to use various other sensor systems available on devices such as Mobile Signal Strength, WiFi, BLE to make the triangulation process even more accurate (Please refer **https://bit.ly/2DsYQbq**). A simple breakdown of our solution follows:

1. We propose to build **an reliable, minimal and infrastructure-less indoor navigation system primarily based on not-so-widely used Magnetic Positioning techniques assisted by Machine Learning**.

2. Counter to how systems like GPS work (using local absolute calculations) our detection system works be approximately localising location of the user into one of the cells the indoor landscape was previously divided. Our intent is to use **Machine Learning models trained on normalized magnetic field strength distribution** (or their differences) of the landscape. This enables us to **stay independent of the sensor quality on each mobile**. We could **optionally** also extend the system to use other signals such as **Mobile Signal Strength WiFi, BLE to help with improving the accuracy of the system**, but this might often require some infrastructure thereby inducing setup cost which this proposal is ideally against. Our solution will have **Zero Setup Cost**, be usable on all Smartphones.

3. Our system **will require mapping of the indoor landscape at least once manually using our mobile app** so training can be performed on the data which will further be used to facilitate detection.

Technology Stack

Technology	Use Case
Python	Application Server & Machine Learning Applications for Navigational Services
Kotlin	Android Application
SQLite, MongoDB	Database Requirements
Git, Gradle, WSGI	Build and Deploy Tools

Use Cases

With such a robust indoor navigation system the proposed solution could be invaluable for many other applications as well. A few of them are listed below:

1. Accurate indoor navigation systems for any institutions.
2. This system could also be a base for self serving kiosks.
3. Coupling our solution with additional systems would enable very accurate traffic analytics which could be invaluable in a host of different business decisions.
4. Improves public accessibility for disabled people.
5. Location based Promotions in a store like setting (for example, malls etc).
6. Provide real time physical user analytics.

Salient Features

High Accuracy • Zero Setup Cost • Works on all Smartphones • Elegant User Experience
Compatible with Outdoor Navigation Systems • Minimal Maintenance

Fin