



Computer Science Capstone Project
Team Name: TEAM MISSION POSSIBLE
(deadly by name & game)
Team 4



A close-up photograph of a person's hand reaching into a grocery store shelf to steal candy. The person is holding a black bag with a red zipper, which is open, revealing a green bag of candy and a red bag of candy. The hand is reaching into a shelf filled with various candy bags, including one labeled "Blueberry". The text "Theft Alert" is overlaid in the center of the image.

Theft Alert



AGENDA

**Team Member
Roles and
Responsibilities**

**Improvements
made from
Professor
Feedback**

**Project
Statement**

**Project
Description**

**Team Working
Agreement**

Personas

**Minimal Viable
Product (MVP)**

Technologies

**Architecture
Diagrams**

**Product
Backlog**

**Sprint 1
Backlog**

Metrics

Retrospective

**Sprint 2
Backlog**

App Logo

Project Demo

GitHub Link

**Live Application
Demo**

TEAM MEMBER ROLES



Shiva

Data Scientist



Prudhvi

Full Stack Developer



Vinod

Data Analyst & Product Developer



TEAM MEMBER ROLES



Mayank

**Artificial Intelligence
Engineer & Project Manager**



Vishnu Raju

Software Developer

Improvements made from Feedback Professor



Change the project description to match the syllabus.



The PowerPoint presentation must also include a link to GitHub.



Adjust the sprint schedule per the syllabus.



Don't be late to sprint 1 like sprint 0; be on time.



Change the personas as per the syllabus.



Change tools and technologies as needed.



PROJECT STATEMENT



Shoplifting is a significant problem for supermarkets, leading to financial losses and higher customer prices. Current security methods often react to theft after it has already happened, which is ineffective. There is a clear need for a better solution that can prevent theft before it occurs. Our project aims to develop a Supermarket Theft Detection System that uses advanced technology to monitor customer behavior in real time, including computer vision and machine learning. This system will help identify suspicious activities and alert security personnel immediately, allowing them to respond quickly and reduce theft incidents. By analyzing data on theft patterns, supermarket managers can also make informed decisions to enhance security and improve the shopping experience for all customers.



PROJECT DESCRIPTION



Project Name:	Theft Alert
Team:	TEAM MISSION POSSIBLE (deadly by name & game)
Project Description:	<p>The Supermarket Theft Detection System uses existing CCTV cameras and machine learning to proactively monitor customer behavior, detect suspicious activities, and alert security personnel, significantly enhancing store safety and reducing theft losses..</p> <p>For retail stores who struggle with shoplifting, the Supermarket Theft Detection System is a proactive solution that leverages existing CCTV cameras and machine learning that monitor customer behavior in real time and alert security personnel. Unlike traditional reactive security measures, our application detects suspicious activities before theft occurs, significantly reducing losses and enhancing store safety.</p>
Benefit Outcomes:	<ul style="list-style-type: none">• Minimizes financial losses from shoplifting.• Enables quick responses from security personnel with real-time alerts.• Fosters a safer shopping environment for honest customers.• Provides valuable analytics on theft patterns for informed decision-making.• Adaptable for implementation across multiple store locations.• Works with existing security infrastructure for a smooth transition.• Allows for upgrades, such as improved facial recognition and behavior prediction.• Combines technology and human oversight for effective theft prevention.
Github Link:	https://github.com/htmw/2024F-Team4/wiki



PROJECT DESCRIPTION



Shoplifting poses a significant challenge for retail stores, leading to financial losses and increased prices for consumers. Traditional security measures are largely reactive, addressing theft only after it occurs. Our project aims to develop a Supermarket Theft Detection System that utilizes existing CCTV cameras and machine learning to monitor customer behavior in real-time. The system will analyze video footage for unusual movements and automatically alert security personnel to potential theft, enabling quick responses. This proactive approach not only reduces theft losses but also enhances the shopping experience by fostering a safer environment. Additionally, the system is scalable for multiple locations and integrates seamlessly with current security infrastructure. By providing valuable insights into theft patterns, our innovative solution aims to revolutionize supermarket security and improve overall safety for customers and staff.

TEAM WORKING AGREEMENT



Team Agreement

Communication:

We agree to communicate regularly and effectively, informing each other about our progress, questions, and concerns. All team members agree to have meetings via Teams twice weekly.

Participation:

We agree to participate in all team meetings and discussions actively and to contribute our unique skills and perspectives to the project.

Deadlines:

We agree to meet all deadlines set by the team and to inform the team as early as possible if we anticipate any difficulties meeting a deadline.

Respect:

We agree to always treat each other with respect and professionalism, even in the face of disagreements and challenges.

Feedback:

We agree to give and receive constructive feedback: openly and honestly, to improve our work and the project.

Roles and Responsibilities:

We agree to clarify our roles and responsibilities within the team, ensuring that each team member understands their specific tasks and deadlines.

Confidentiality:

We agree to maintain confidentiality about any sensitive or confidential information related to the project, as agreed upon by the team.

Quality:

We agree to prioritize quality in our work and to take the necessary time and effort to ensure that our contributions meet the standards of the team.

Conflict Resolution:

We agree to resolve any conflicts or disagreements that arise within the team in a timely and respectful manner, seeking input from all team members and striving for a mutually acceptable solution.

Accountability:

We agree to hold ourselves and each other accountable for our actions and contributions to the project and to take responsibility for any mistakes or errors we make.

Team Members: Mayank Singh
Prudhvi Raj
Siva Sai Venkata Krishna Ganesh
Sree Vishnu Raju
Vinod Kumar Aluru



PERSONAS

PERSONA - 1

Profile

Name: James

Age: 30

Location: Alabama, Ga

Job: Chief Security Officer

Salary: \$112000/year

Family: wife

James, a dedicated Chief Security Officer, oversees the safety of a large retail complex, drawing on years of experience to identify and mitigate potential threats. He understands that maintaining security requires not just vigilance but also the right tools to respond effectively to incidents. Faced with the daunting task of monitoring a vast area with limited resources, Officer James is eager to adopt advanced surveillance technology. He seeks a comprehensive system that offers real-time video monitoring, facial recognition, and instant alerts, allowing him to swiftly identify suspicious activities and track individuals. With the ability to review footage and generate detailed reports, he aims to enhance collaboration among his security team, streamline incident investigations, and ultimately foster a safer shopping environment for customers and staff alike.



PERSONA - 2

Profile

Name: Mr. Wong

Age: 45

Location: New York, NY

Job: Store Owner

Family: Two children and wife

Mr. Wong is a dedicated convenience store owner managing a bustling shop in a vibrant neighborhood. With a strong commitment to customer safety and satisfaction, he meticulously oversees his store's daily operations. However, as foot traffic and transactions continue to rise, Mr. Wong finds it increasingly challenging to monitor every aspect of his business. He values efficiency and reliability, seeking solutions that allow him to safeguard his store without compromising the quality of service. As he embraces technology, Mr. Wong is eager to implement a comprehensive surveillance system that not only enhances security but also fosters a trustworthy environment for his customers and employees alike.



PERSONA - 3

Profile

Name: Rodriguez

Age: 27

Location: New Jersey, NJ

Job: Supermarket Manager

Salary: \$125000/year

Family: Lives with her boyfriend

Ms. Rodriguez is a dedicated supermarket manager, responsible for the bustling operations of a large grocery store. With a keen focus on enhancing customer satisfaction and optimizing operational efficiency, she strives to ensure that every shopper enjoys a seamless experience. However, the constant influx of customers and the dynamic environment make it challenging for her to oversee all aspects of the store effectively. To support her management efforts, Ms. Rodriguez is eager to implement an advanced surveillance system that offers insights into customer behavior through features like people counting, heat mapping, and dwell time analysis. This technology will help her identify bottlenecks, optimize store layouts, and monitor employee activity. By leveraging these tools, she aims to make data-driven decisions that enhance store performance and create a safer, more enjoyable shopping environment for her customers.



MINIMAL VIABLE PRODUCT (MVP)



Minimum viable product



MINIMAL VIABLE PRODUCT (MVP)



**The following are the features we
are covering in our MVP:**

- ☐ **Welcome Page**
- ☐ **Registration Page**
- ☐ **Login Page**
- ☐ **Main View Videos Page**
- ☐ **Manage Videos Page**
- ☐ **Upload Videos Page**
- ☐ **Setting Page**



MINIMAL VIABLE PRODUCT (MVP)



Welcome Page:

The welcome page introduces the application and provides basic information about it. The login/register button appears on the welcome pages.

Registration Page :

The user should be able to click the "register" button after entering their information in the designated fields.

Login Page :

The user should be able to click the login button after entering their credentials.

Main View Videos Page:

The user should be able to access all of the application's functionality from the Main View Videos Page. Mainly it shows the available CCTV videos with live video footage and records video footage.



MINIMAL VIABLE PRODUCT (MVP)



Manage Videos Page :

To edit or remove the uploaded videos, the user should have access to all the Video Names, Uploaded By, and Actions.

Upload Videos Page:

By providing the video name, the user should be able to submit new videos using the file upload button.

Setting Page:

This area allows users to change their profiles and provide feedback on the application to the admin team.

TECHNOLOGIES

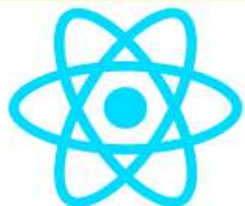


Programming languages, Frameworks/Libraries

JavaScript



HTML



Database



Firebase

Tools



Visual Studio
Code



OpenCV



Google Meet



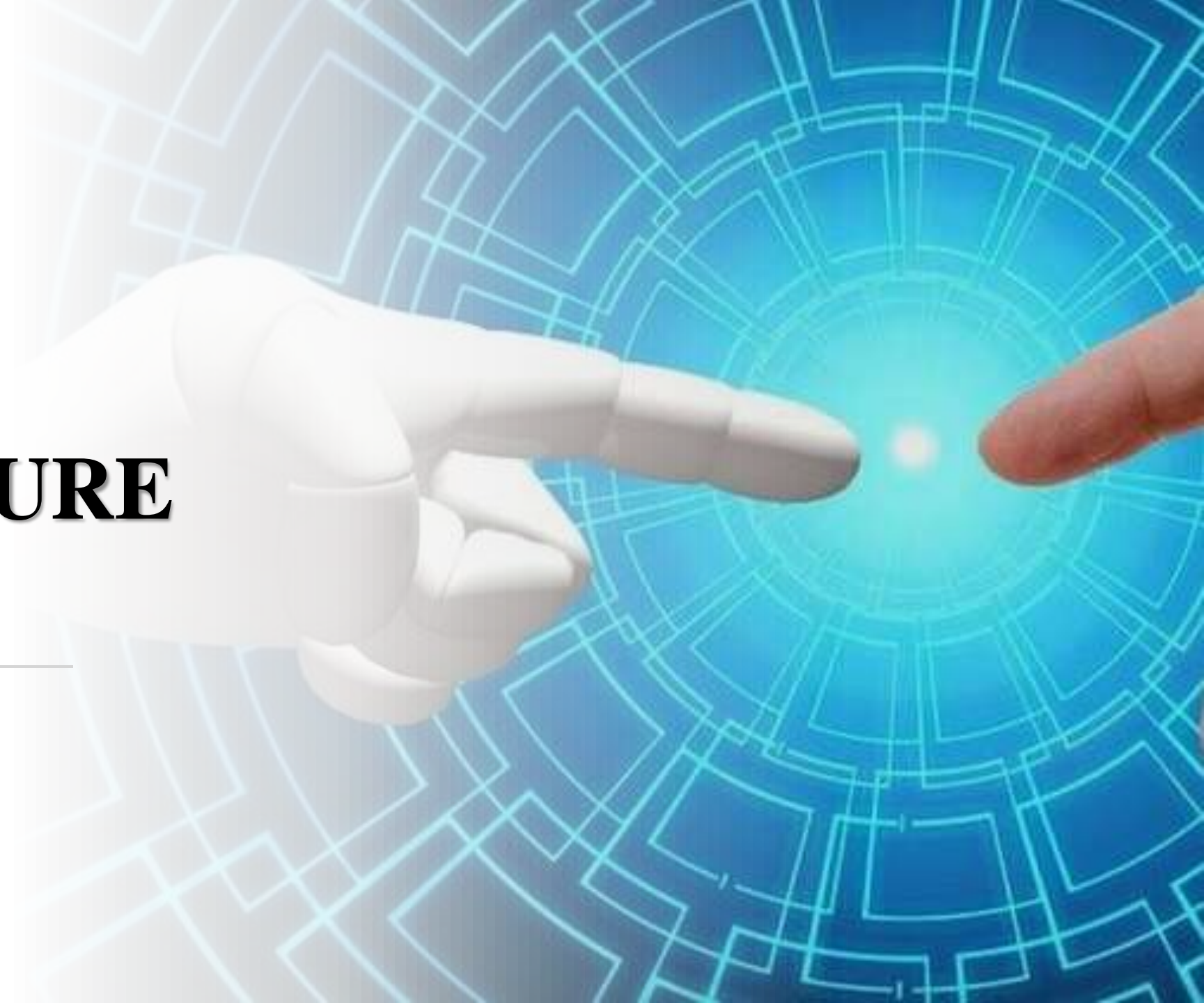
Zoom



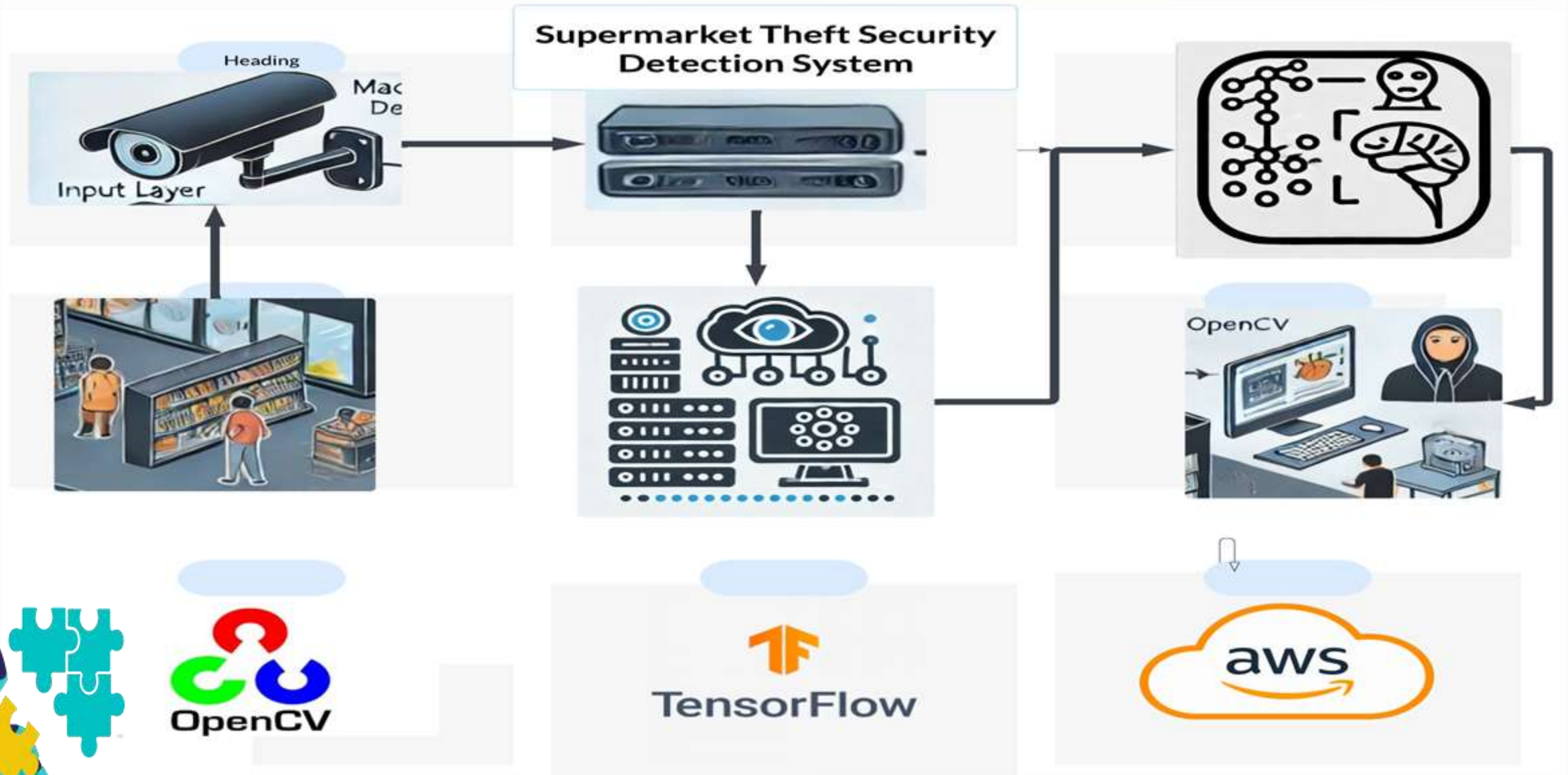
GitHub



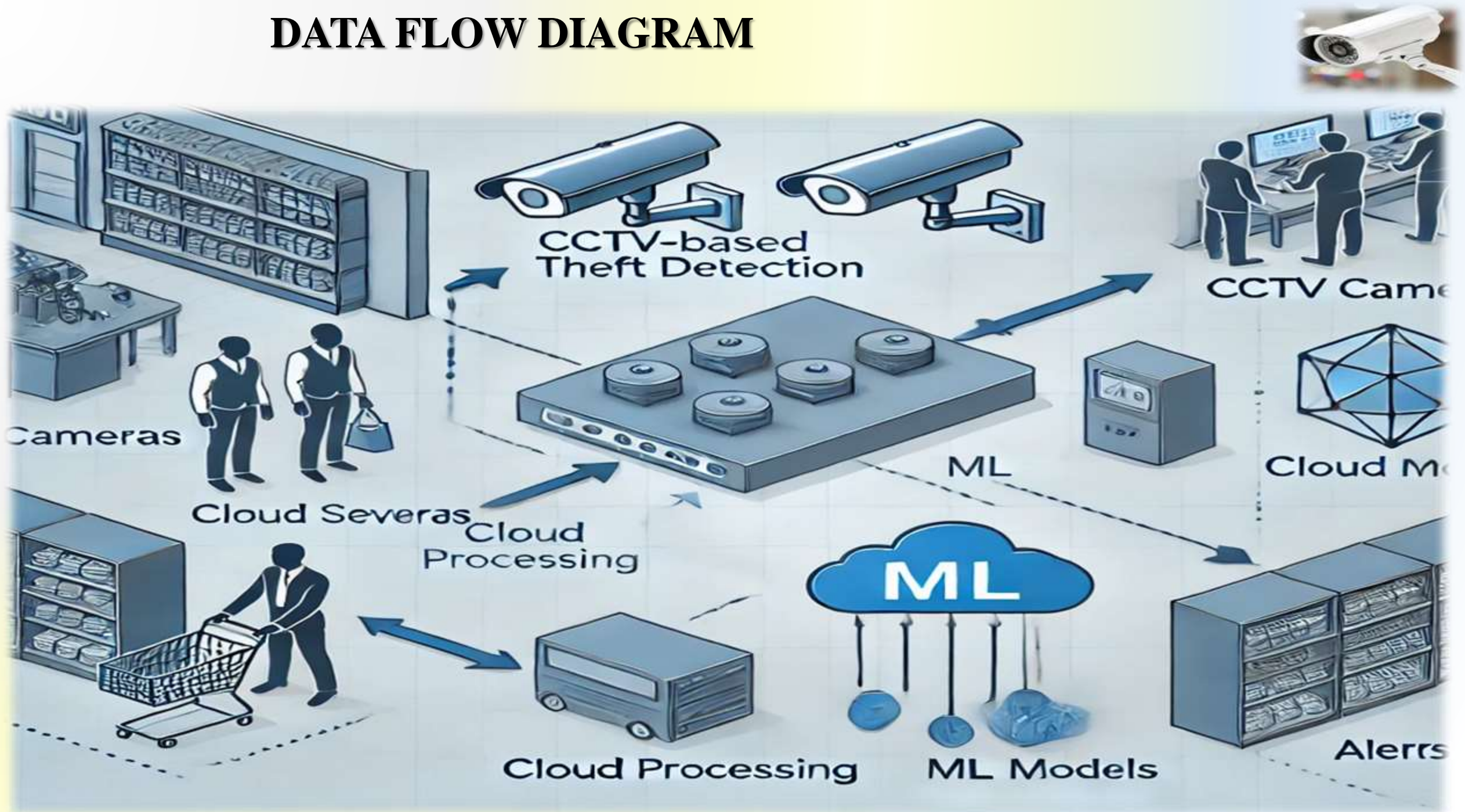
ARCHITECTURE DIAGRAM



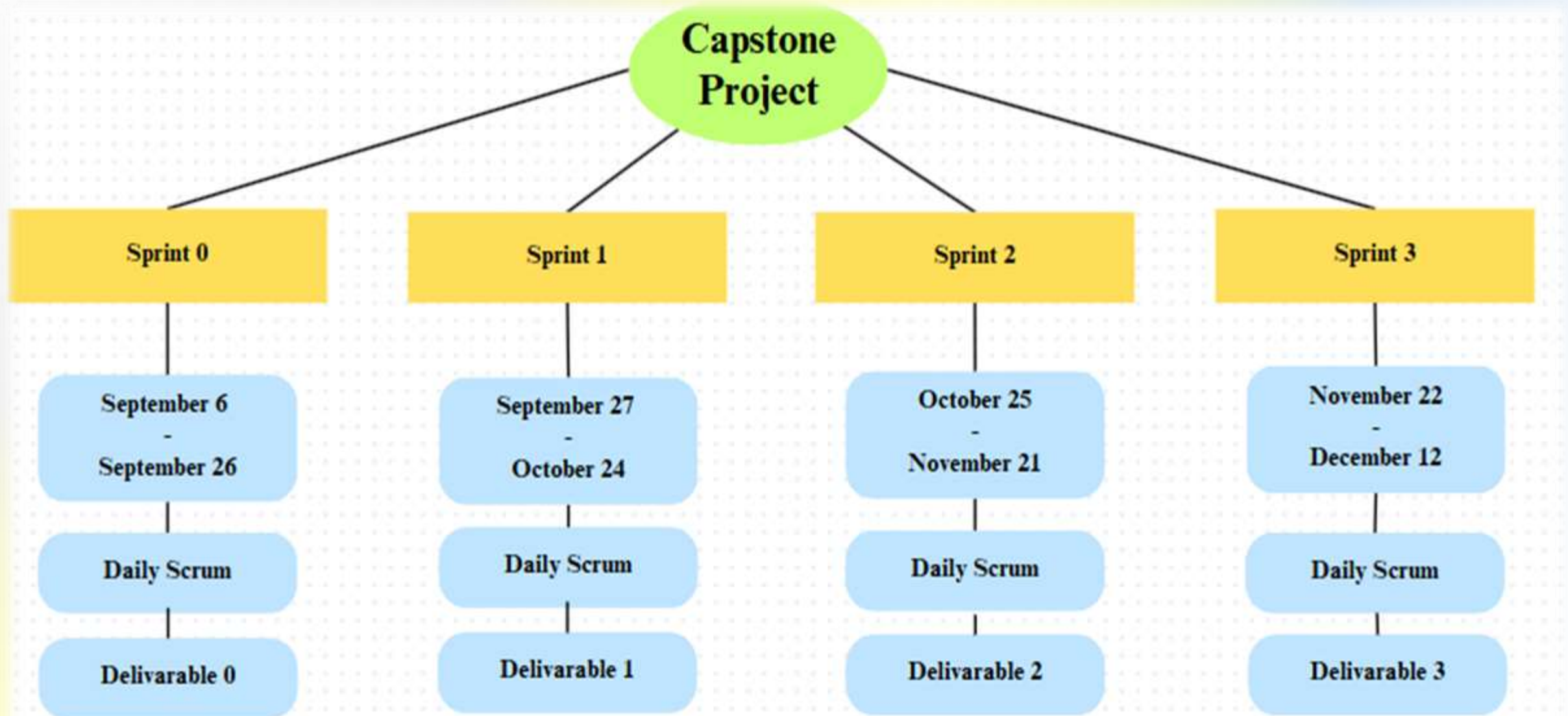
CONCEPTUAL ARCHITECTURE DIAGRAM



DATA FLOW DIAGRAM



SCHEDULE



PRODUCT BACKLOG



User Story ID	Issue Type	User Story	Story Points
TA - 1	Task	To gather all the requirements for the project.	8
TA - 2	Task	As a team we should have team work agreement with all rules and regulations.	3
TA - 3	Task	As a team we should divide roles and responsibilities among ourselves to develop the project.	5
TA - 4	Task	As a team we should develop required technical and functional knowledge required to complete the project.	5
TA - 5	Task	As a team we should plan the product requirements and development plan for the project.	3
TA - 6	User Story	As a user, I should be able to see the Knowledge page after the welcome page, which has information on how the application works.	3
TA - 7	User Story	As a user, I want to create my account for the application so that I can keep my account private and Signup Using my Name, Email, and Password.	8
TA - 8	User Story	As a user, I should be able to the user name and get registered in the application.	3
TA - 9	User Story	As a user, I want to log in using my user ID to access my account.	5
TA - 10	User Story	As a registered user I should be able to see the Main page, once I login into the application.	5

PRODUCT BACKLOG



User Story ID	Issue Type	User Story	Story Points
TA – 11	User Story	As a registered user I want to logout from the application so that I can log in again whenever I want.	3
TA – 12	User Story	As a user, I want to access the feature on the home page	3
TA – 13	User Story	As a user, I want to navigate between pages so that I can quickly access the features I need.	5
TA – 14	User Story	As a user, I want to upload fresh videos so I can watch them.	8
TA - 15	User Story	As a registered user, I want to see the option to change the user's name in the settings page so that I can do so.	3

SPRINT 1 BACKLOG



User Story ID	Issue Type	User Story	Story Points	Status
TA - 6	User Story	As a user, I should be able to see the Knowledge page after the welcome page, which has information on how the application works.	3	Done
TA - 7	User Story	As a user, I want to create my account for the application so that I can keep my account private and Signup Using my Name, Email, and Password.	8	Done
TA – 8	User Story	As a user, I should be able to the user name and get registered in the application.	3	Done
TA – 9	User Story	As a user, I want to log in using my user ID to access my account.	5	Done
TA - 10	User Story	As a registered user I should be able to see the Main page, once I login into the application.	5	Done

ACCEPTANCE CRITERIA TABLE



User Story ID	User Story	Acceptance Criteria	Place
TA - 6	As a user, I should be able to see the Knowledge page after the welcome page, which has information on how the application works.	Given I'm a user of the application When I try to install the application using the APK file Then I should be able to install the application without any errors.	Mobile
TA - 7	As a user, I want to create my account for the application so that I can keep my account private and Signup Using my Name, Email, and Password.	Given I'm in the role of the user, trying to create my account to the application When I open the app Then the app asked me to sign up or log in, And I clicked on the signup, I was able to create my account for the application using my Name, Email, and Password.	Sign Up
TA - 8	As a user, I should be able to the user name and get registered in the application.	Given I'm a user of the application When I enter my username in the registration page Then I should be able to click on the register button And get registered in the application.	Registration Page
TA - 9	As a user, I want to log in using my user ID to access my account.	Given I'm the user of the application When I open the app, I should be able to see the app's login page. Then I should be able to enter my registered User ID and my password in the password field. After entering my details, I should be able to Login. If my credentials are valid, I should be able to access my account	Log In
TA - 10	As a registered user I should be able to see the Main page, once I login into the application.	Given I'm a user of the application When I completed the registration and gave all the required permissions Then I should be able to see the Main page And features of the application.	Main Page



TEST CASES



Test ID	User Story ID	User Story	Test Data	Steps to be taken	Expected Result	Actual Result
TT ID-1	TA - 6	As a user, I should be able to see the Knowledge page after the welcome page, which has information of how the application works.	Username: Vinod Password: Vinod@99	When the User should be able to download the application from the Play Store/Appstore.	Application should be installed and display basic functionalities.	Application will be installed with basic functionalities without any errors.
TT ID-2	TA - 7	As a user, I want to create my account for the application so that I can keep my account private and Signup Using my Name, Email, and Password.	Username: Vinod Password: Vinod@99	When the User clicks on the "Register" button then the user should be directed to the Registration page.	User should be on the Registration page.	User will be on the Registration page.
TT ID-3	TA – 8	As a user, I should be able to the user name and get registered in the application.	Username: Vinod Password: Vinod@99	When the user clicks the submit button after entering a valid username, then the user should be registered in the application.	User should be registered successfully in the application.	User will be registered successfully in the application.

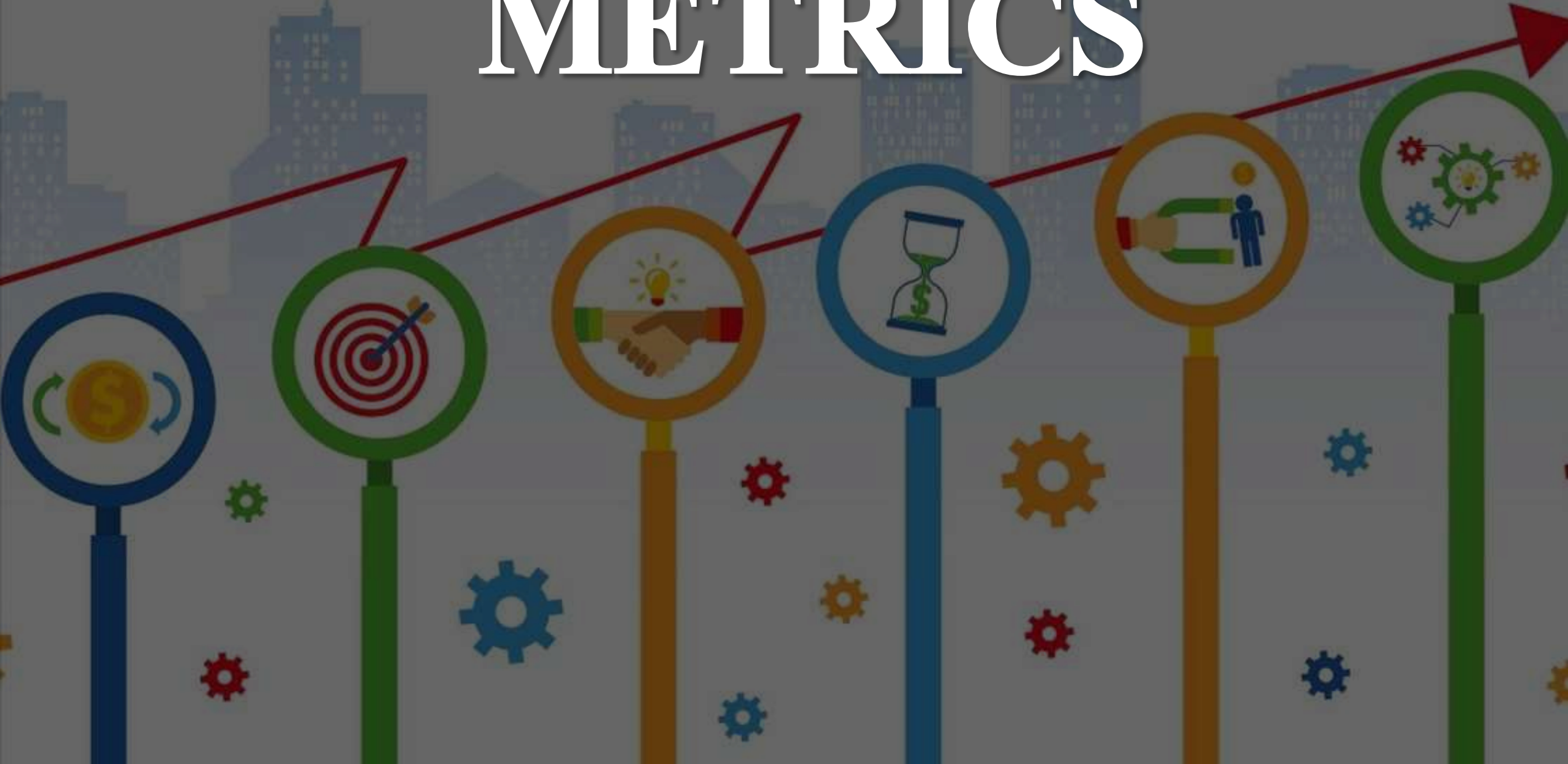


TEST CASES

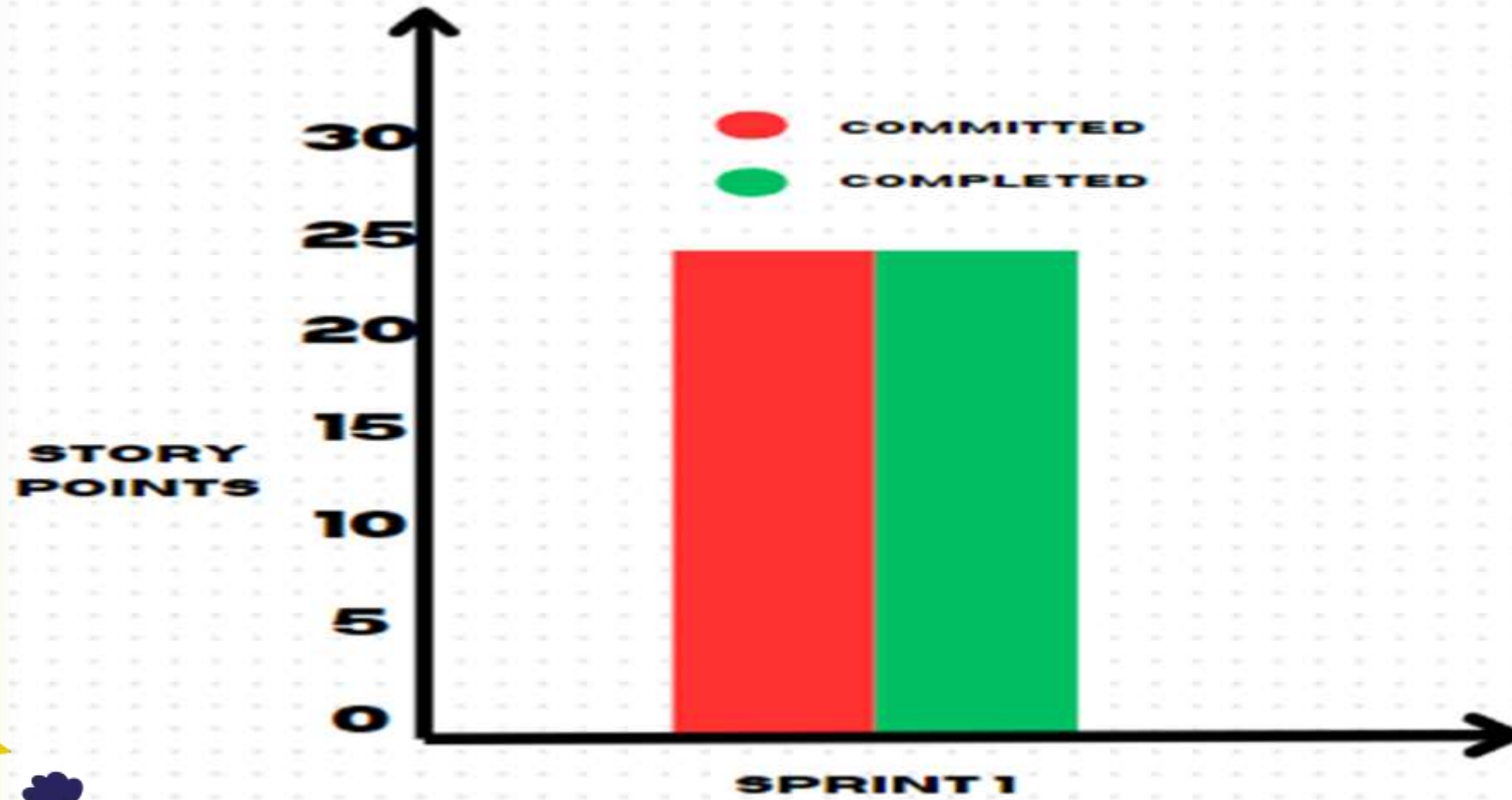


Test ID	User Story ID	User Story	Test Data	Steps to be taken	Expected Result	Actual Result
TT ID-4	TA - 9	As a user, I want to log in using my user ID to access my account.	Username: Vinod Password: Vinod@99	1. When the user enters a valid User ID and password then the user can login into the application. 2. When the credentials given by user are invalid then the user will not be able to access to users account in the application.	User should be able to login into the application by giving valid credentials.	User will be logged into the application successfully.
TT ID-5	TA - 10	As a registered user I should be able to see the Main page, once I login into the application.	Username: Vinod Password: Vinod@99	When the user enters their login credentials correctly then the user should be taken to the home page	User should be taken to the Main page successfully.	User will be taken to the Main page successfully.

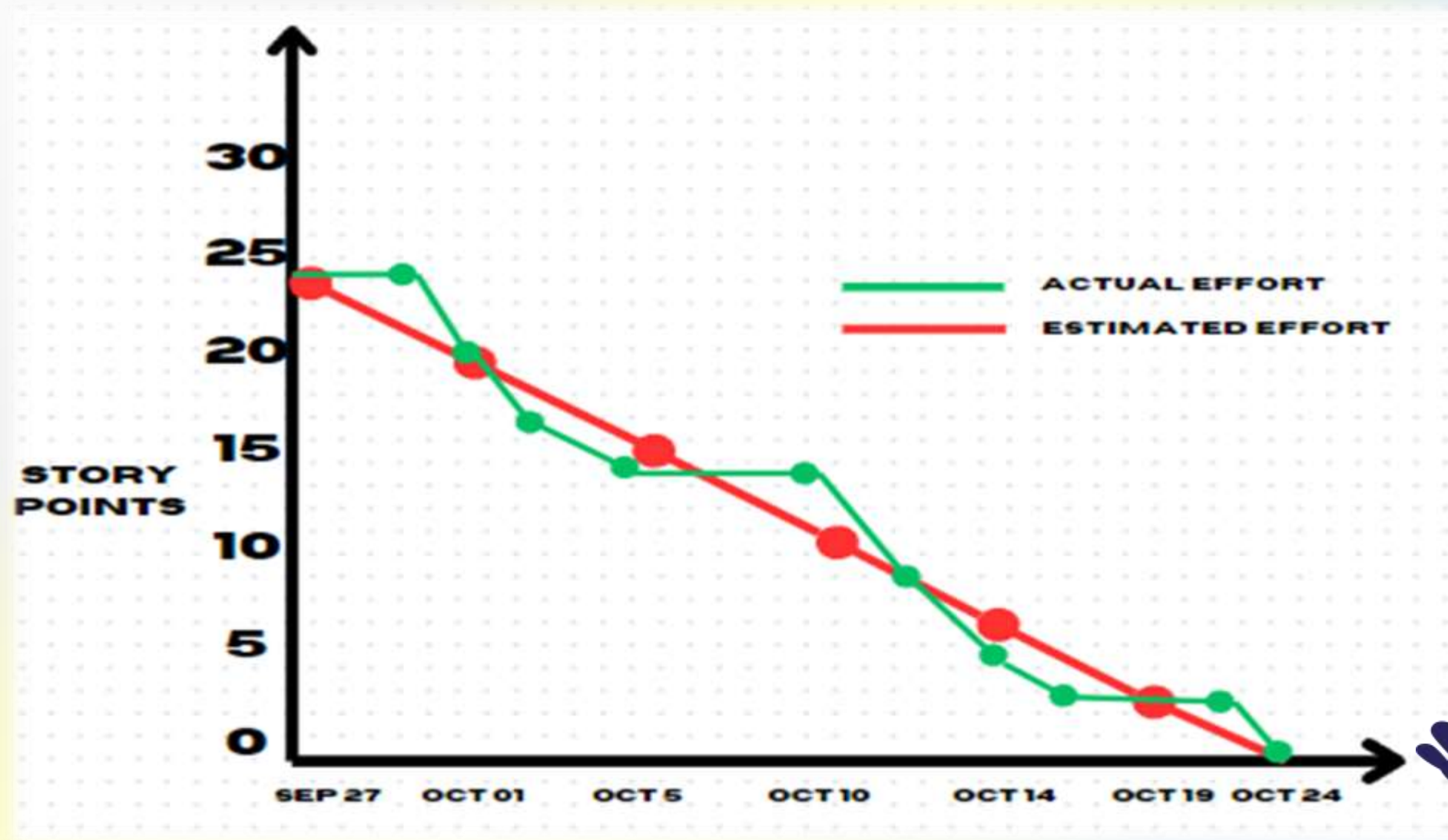
METRICS



Team Velocity Chart



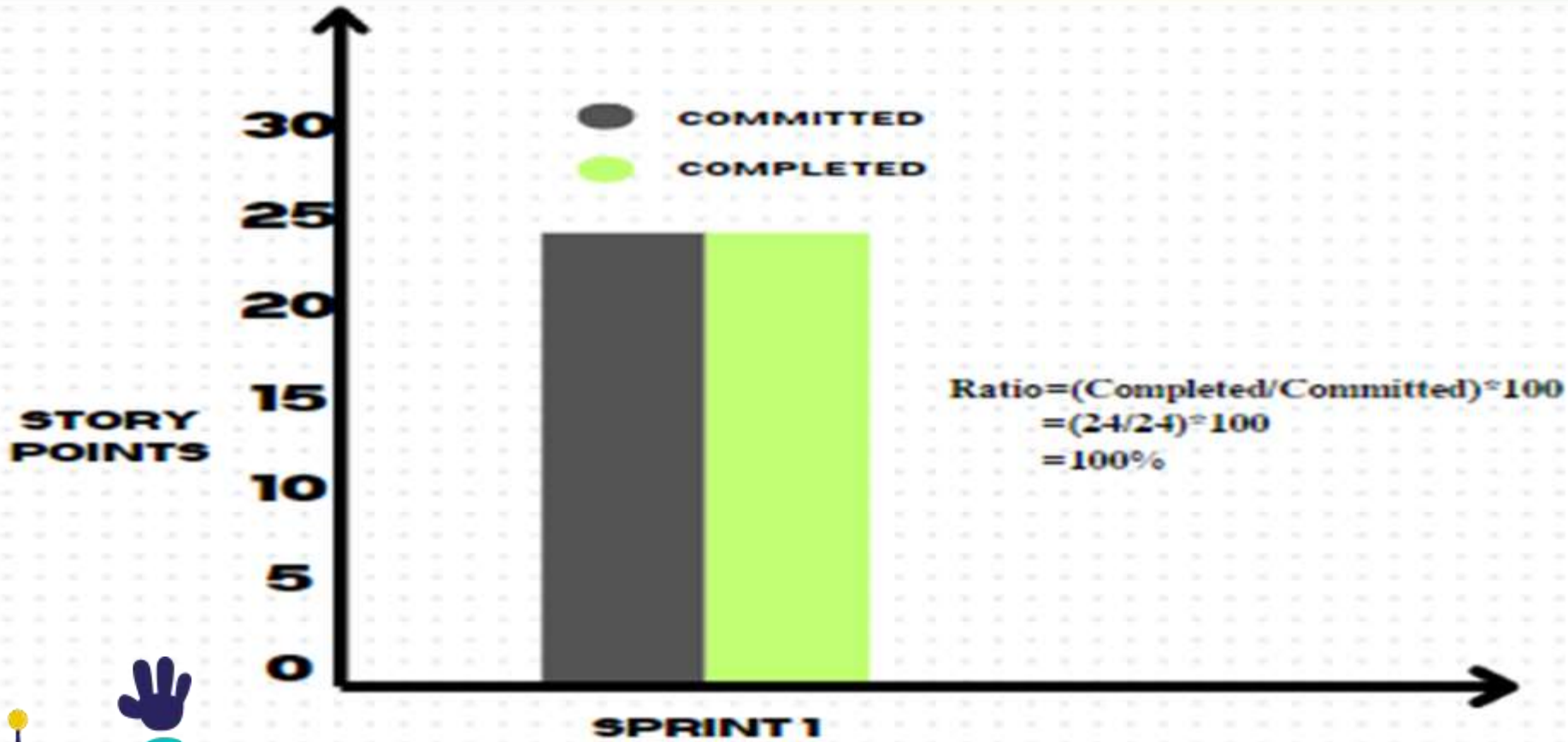
Burndown Charts



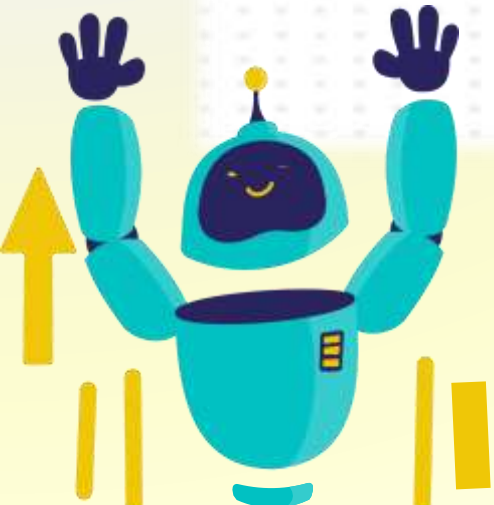
We committed to 24 story points and completed 24 story points.



Completed/Committed Ratio



Sprint	Sprint 1
Committed	24
Completed	24
Ratio	100%



RETROSPECTIVE



WHAT WENT WELL?

Everything has been planned and carried out according to schedule.

Despite being overburdened with paperwork and work from the previous sprint, every team member put in a lot of effort to achieve the deadlines.

Engagement was great for the whole team.

Improved story refinement and documentation.

WHAT NEEDS IMPROVEMENT?

A few last-minute problems that needed to be fixed throughout the sprint were found.

Team members' inability to communicate with one another caused work to be completed later than expected.

communication gaps for some common feature modules

NEXT STEPS?

We can make sure in sprint planning, prerequisite tasks, and mandatory things are identified early.

We can ensure that their team members consistently attend the scrum calls and monitor the status updates to prevent a breakdown in communication.

Do daily stand-ups instead of 4 day standup

Start reviewing each others work

SPRINT 2 BACKLOG



User Story ID	Issue Type	User Story	Story Points	Status
TA – 11	User Story	As a registered user I want to logout from the application so that I can log in again whenever I want.	3	To Done
TA – 12	User Story	As a user, I want to access the feature on the home page	3	To Done
TA – 13	User Story	As a user, I want to navigate between pages so that I can quickly access the features I need.	5	To Done
TA – 14	User Story	As a user, I want to upload fresh videos so I can watch them.	8	To Done
TA - 15	User Story	As a registered user, I want to see the option to change the user's name in the settings page so that I can do so.	3	To Done



APP LOGO



PROJECT DEMO



PROJECT
DEMO

PROJECT DEMO SCREENSHOTS



Welcome Page

[Home](#) [Signup](#) [Login](#) [Videos](#)

Welcome to Supermarket Surveillance Web App

This platform provides real-time surveillance video monitoring for supermarkets, allowing security personnel to upload, view, and manage video feeds securely.

Log in or sign up to access the CCTV footage or upload new surveillance videos for monitoring supermarket activity and preventing theft.

PROJECT DEMO SCREENSHOTS



Registration Page

Signup

Username: Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Password:

- Your password can't be too similar to your other personal information.
- Your password must contain at least 8 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

Password confirmation: Enter the same password as before, for verification.

Email address:

Sign up

Login Page

Login

Username:

Password:

Login

PROJECT DEMO SCREENSHOTS



Main View Videos Page

[Home](#) [View Videos](#) [Manage Videos](#) [Upload Video](#) [Login](#)

Available CCTV Videos

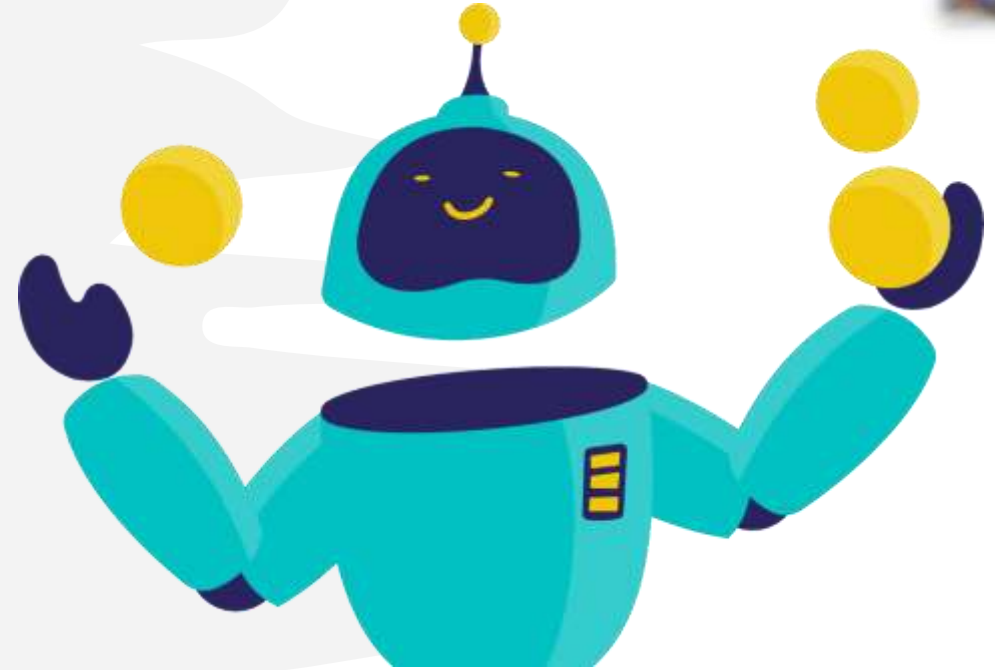
Show Live Footage

CCTV FOOT



Grocery Footage





GITHUB LINK

<https://github.com/htmw/2024F-Team4/wiki>

LIVE APPLICATION DEMO



[Home](#) [Signup](#) [Login](#) [Videos](#)

Welcome to Supermarket Surveillance Web App

This platform provides real-time surveillance video monitoring for supermarkets, allowing security personnel to upload, view, and manage video feeds securely.

Log in or sign up to access the CCTV footage or upload new surveillance videos for monitoring supermarket activity and preventing theft.



Thank You!

