Shopping AI

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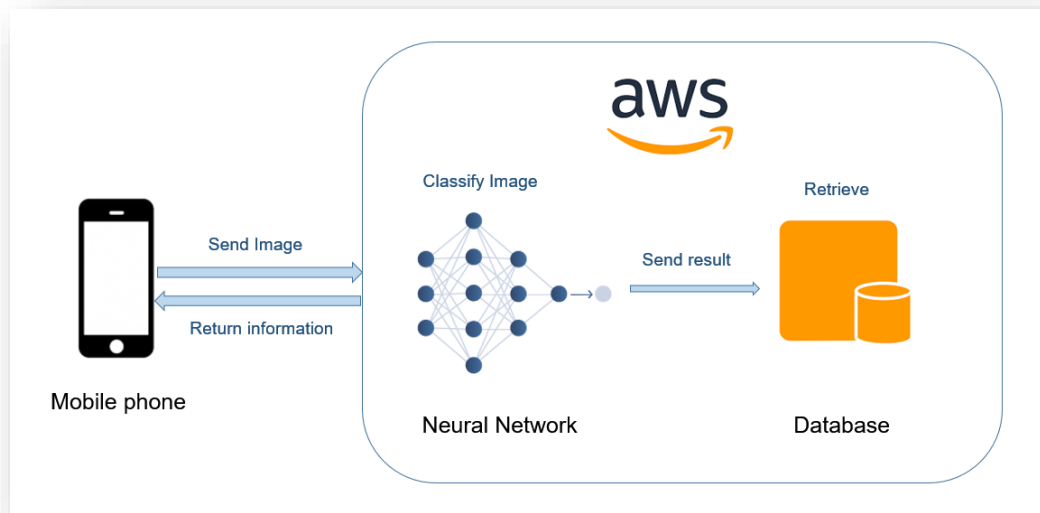a1710640

Dr. Lingqiao

Review

Aim

Android application :
help customers shop fruits at markets

Achievements

1. Recognize 10 different fruits with 90% accuracy

2. Provide fruit's information and price comparison services

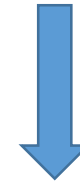# Objectives

Research fields

Image classification, Fine grained

↓

Product detection, Image retrieval, Data analysis

Software Engineering

A simple Android application with limited features

↓

A complete software platform with additional functions
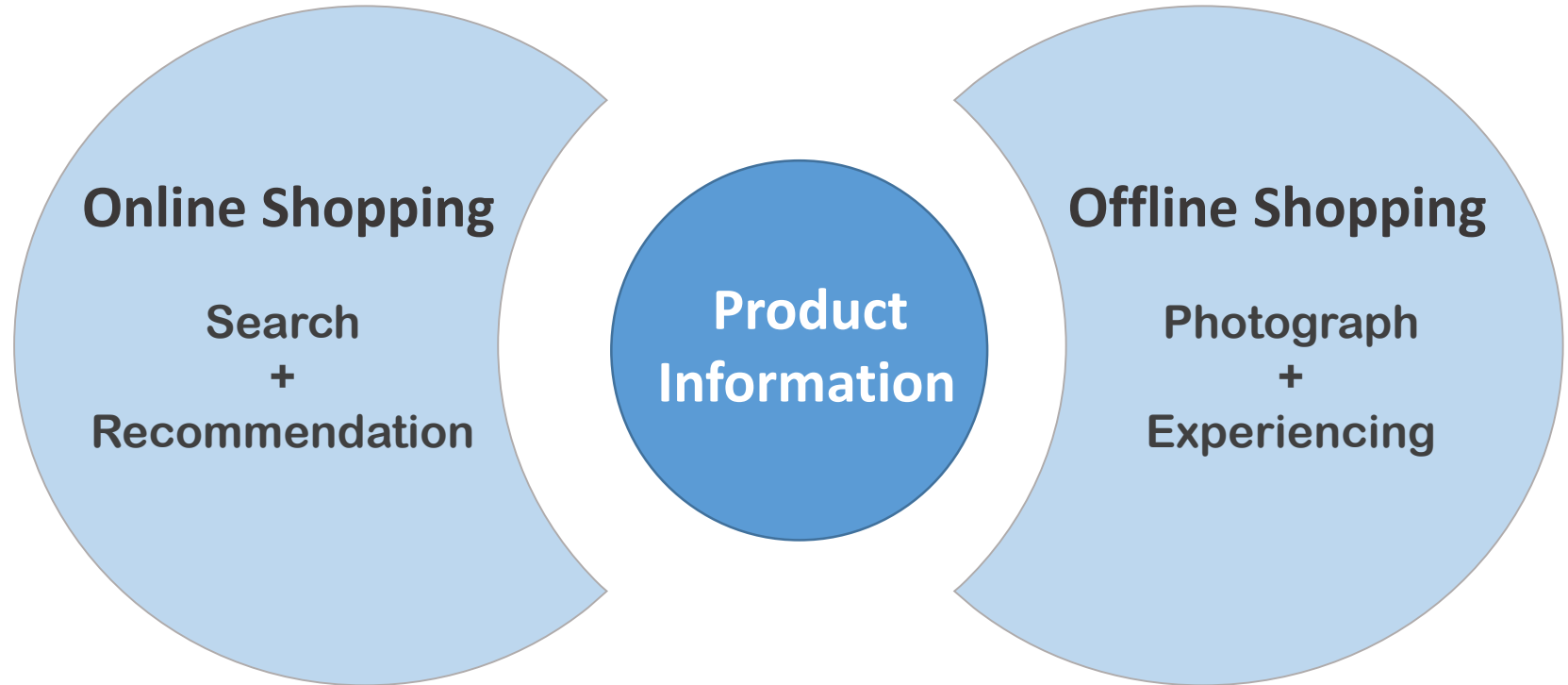
Motivations & Scenarios

Motivations

Keep further study and Provide better user experience

Scenarios

Online Shopping

Search
+
Recommendation

Product Information

Offline Shopping

Photograph
+
Experiencing

Problems

1. How to recognize more products ?

2. How to do recommendations?
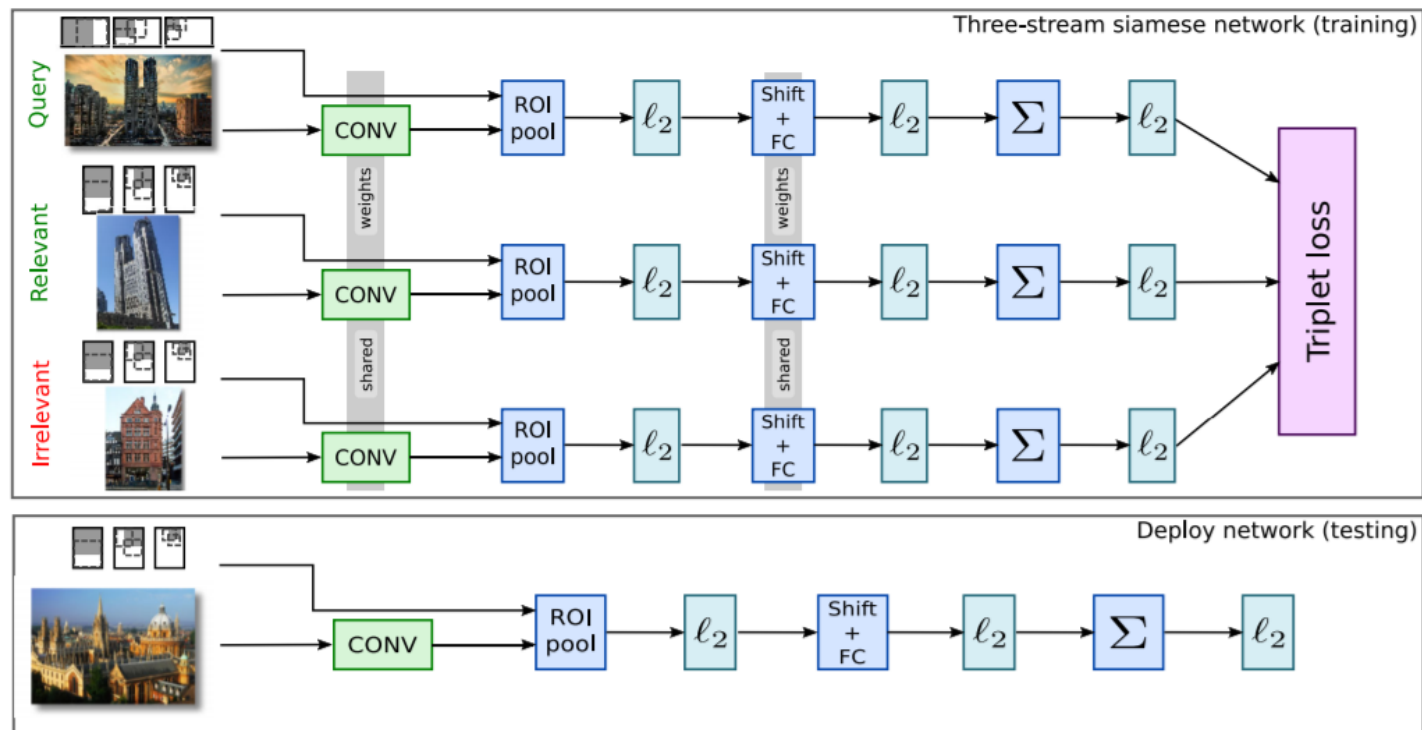
3. How to build cross-platform app ?

Research – Image Retrieval

How to recognize more products ?

1. Fine-grained

2. Few-shot learning

3. Image Retrieval

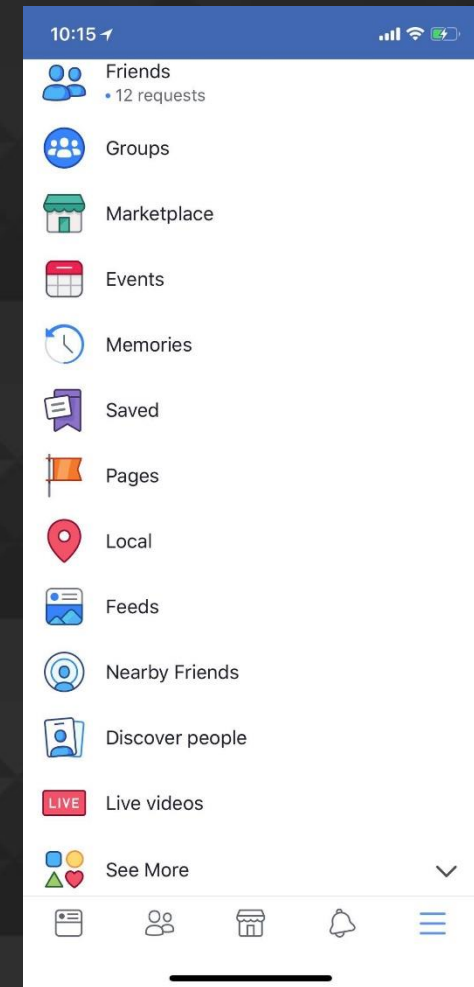# Research – Data Analysis

How to do recommendations?

01
User information

02
Product score

03
Scan data

04
GPS

System Characteristics

OS

Cross-platform

not depend on the operating system

nor on the hardware environment

IOS Android

Portability

Embedded Mini programs

Facebook   WeChat

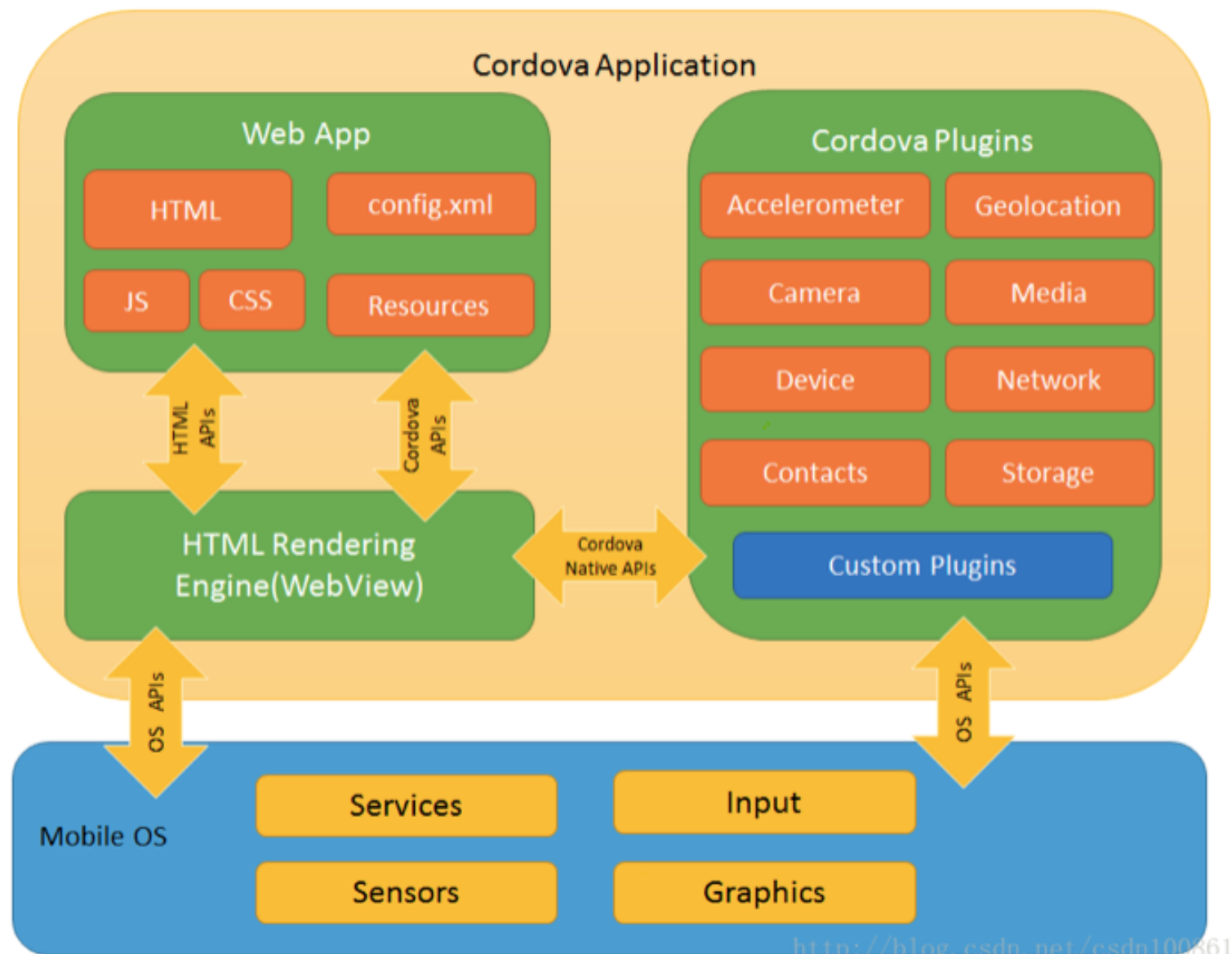# Cross-platform Approaches

01

ReactNative

Weak compatibility

WebView

02

Higher learning costs

03

Flutter

Advantages: Low development cost；Iterative update easily; Core functions perfect support

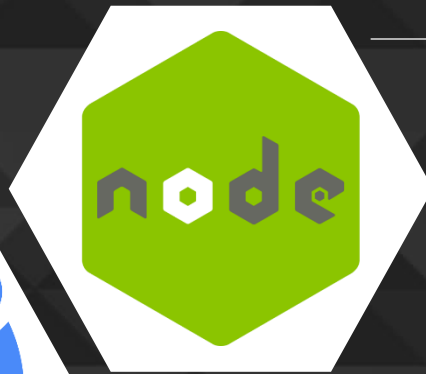# Solution Architecture

Apache Cordova

HTML5

CSS

JavaScript

Encapsulation

Bridge

Advantages

AngularJS
Templates are powerful and abundant
Front-end MVVM framework

NodeJS

Server

Single thread :

  low memory usage
  different from Java PHP
  8GB 4000 users <->4w

Non-blocking I/O:

  database
  event dispatching

Ionic

Simple
Practical
Beautif

Event-driven :

  asynchronous
  event cycle

System Architecture

Database (crawler)
Training images
Price & Description

Upload to the Could Server

Collect Information

APP → AWS → Model → Databas → Result

Take photo

Or

Typing

Security

GPU->CPU
Fine-tune

Return - App
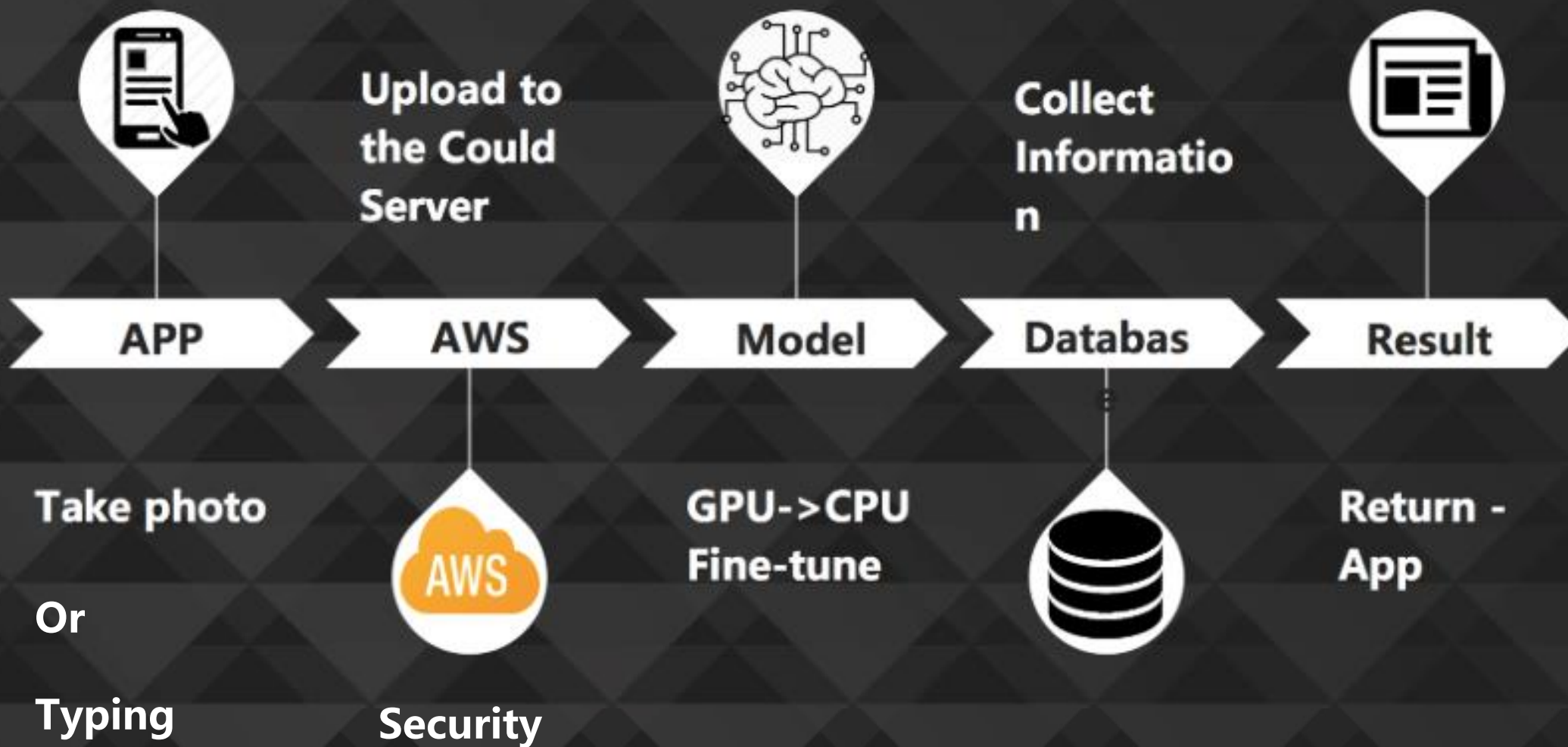
User ID

Register to login

Password

Information

Scan Products

Better experience
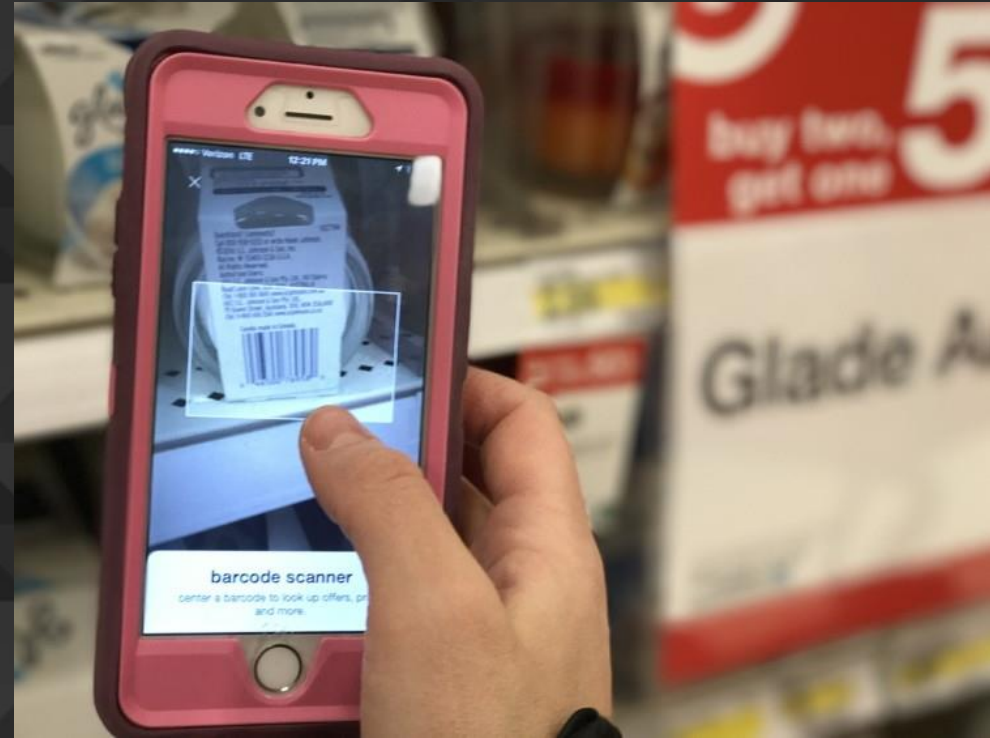
Final delivery – Products information

Products info

Rating

Price comparing

For Merchants…

Final delivery – Data analysis

Know customers better

recommendations

Customers ←→ Merchants

Specific Merchant

Accurate information

GPS – Detection combination

Final delivery – Interface for Merchants

Milestones

Milestone 1

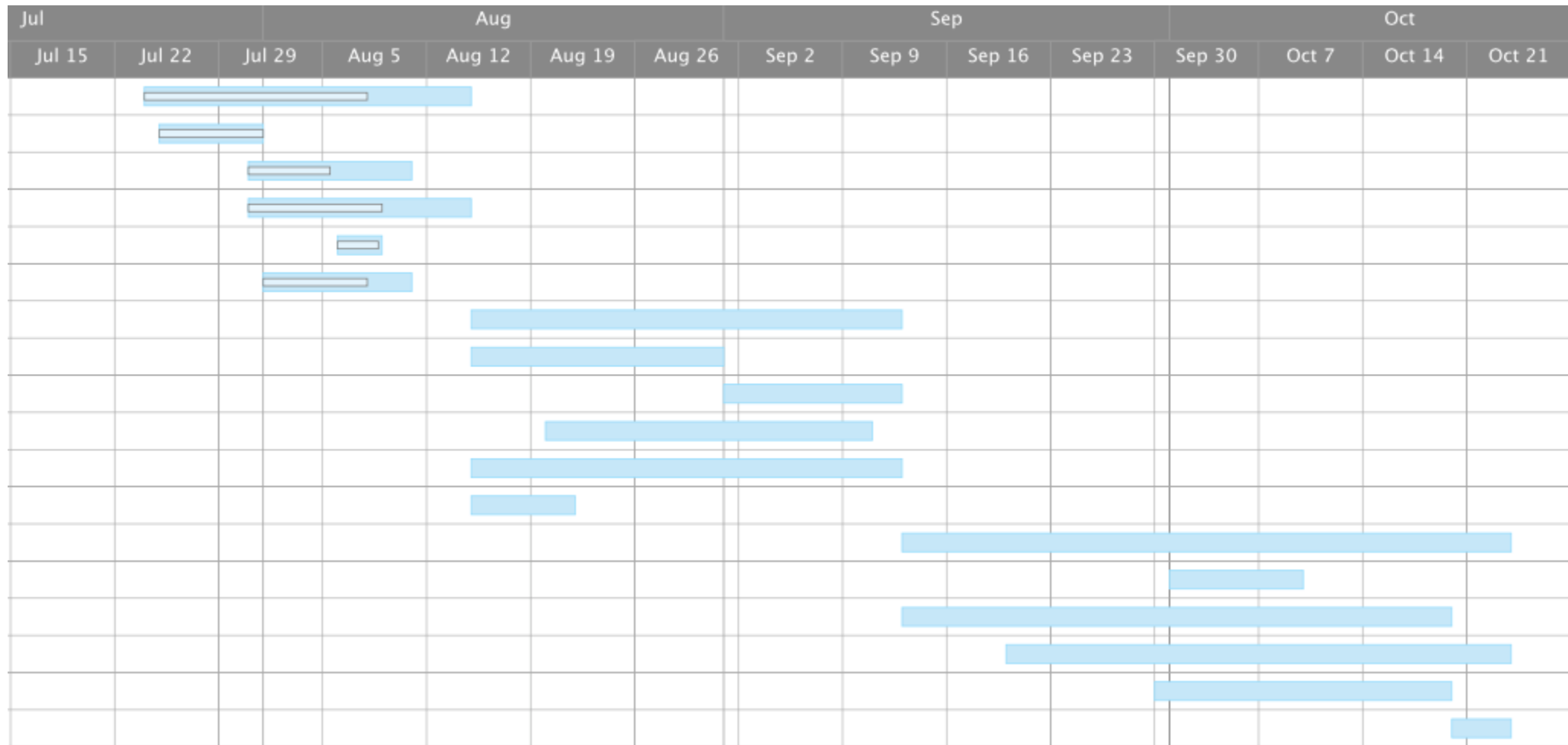Set up environment, read paper, learn tutorials

Milestone 2

Cross-platform app development, model training

Milestone 3

Test, complete app functions, further research study

	Task Name	Duration	Start	Finish	% Complete
1	Milestone 1	16d	07/24/18	08/14/18	68%
2	Meeting with supervisors	5d	07/25/18	07/31/18	100%
3	Reading Research Paper	9d	07/31/18	08/10/18	50%
4	Learning Cross–Platform techniques	11d	07/31/18	08/14/18	60%
5	Presentation	3d	08/06/18	08/08/18	90%
6	Setup Development environment	8d	08/01/18	08/10/18	70%
7	Milestone 2	21d	08/15/18	09/12/18	
8	NodeJS server deployment	13d	08/15/18	08/31/18	
9	Crawler –> Test Database	9d	09/01/18	09/12/18	
10	AngularJS + Ionic App implementation	16d	08/20/18	09/10/18	
11	Optimizing Neural Network model	21d	08/15/18	09/12/18	
12	Mid–project Presentation	5d	08/15/18	08/21/18	
13	Milestone 3	29d	09/13/18	10/23/18	
14	Final Presentation	7d	10/01/18	10/09/18	
15	Image retrieval model	27d	09/13/18	10/19/18	
16	Test and Debug	24d	09/20/18	10/23/18	
17	Documentation	16d	09/30/18	10/19/18	
18	Review + Version	3d	10/20/18	10/23/18	

Gantt Chart

Conclusion