

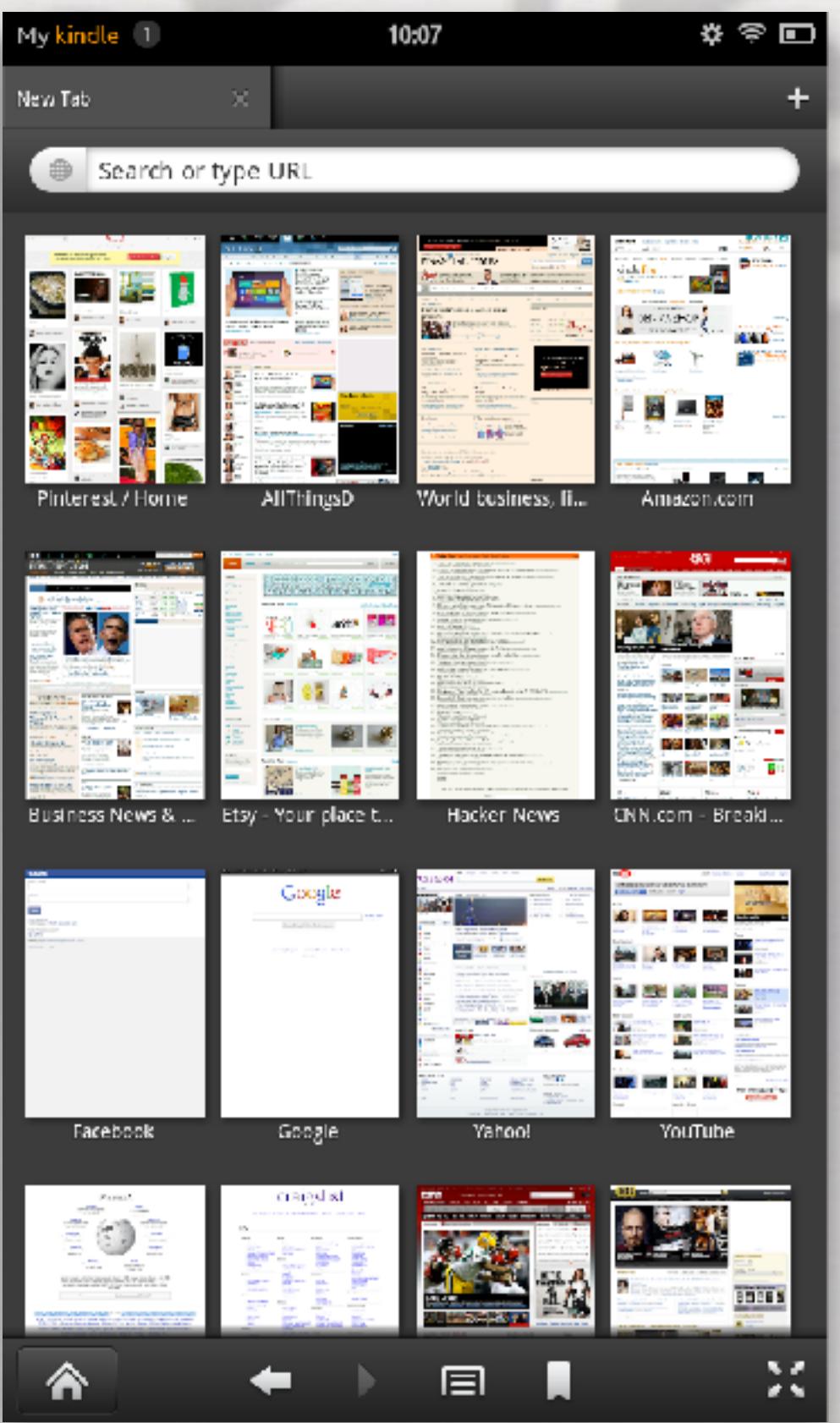
# AP Computer Science A Boot Camp

## Java Programming

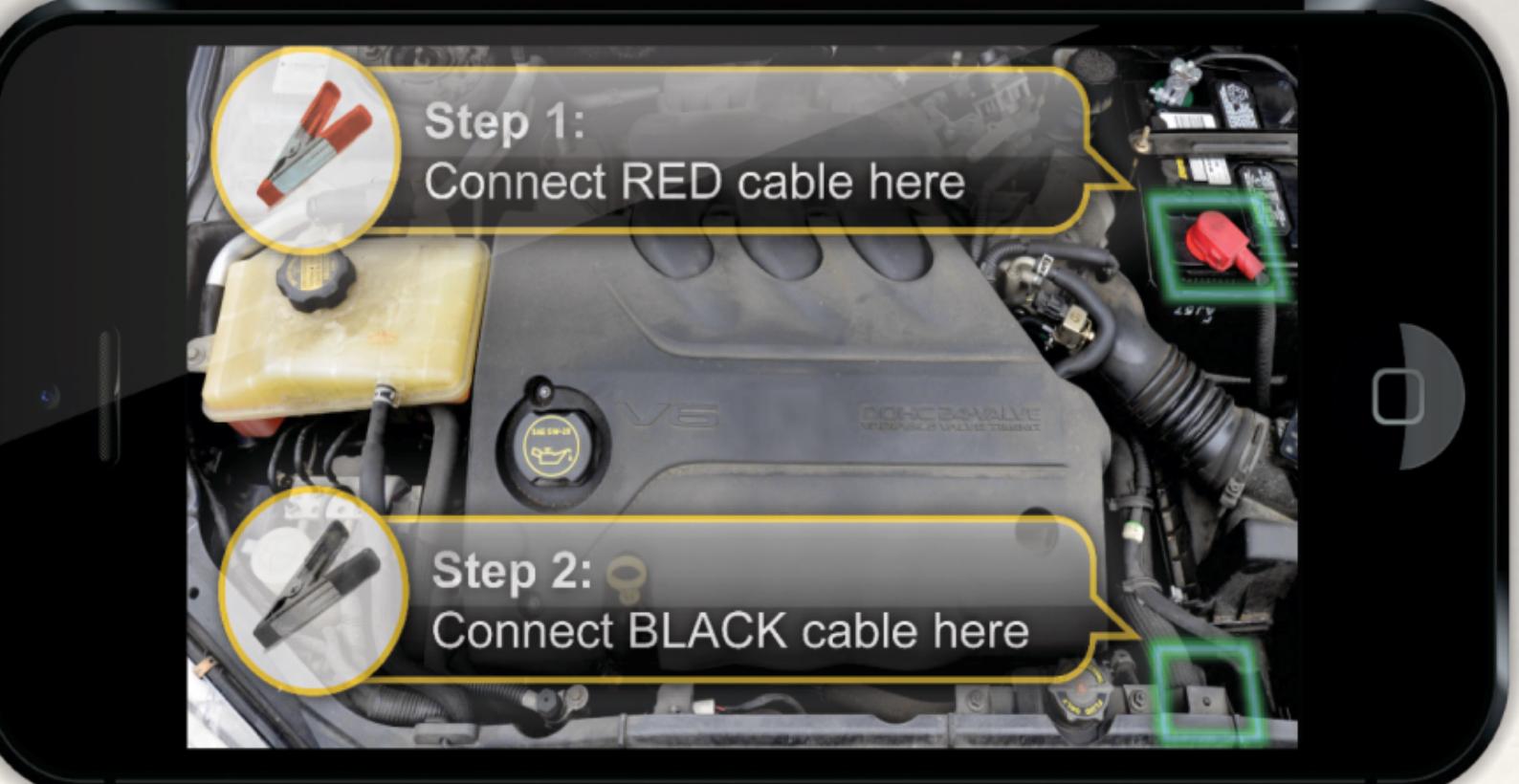
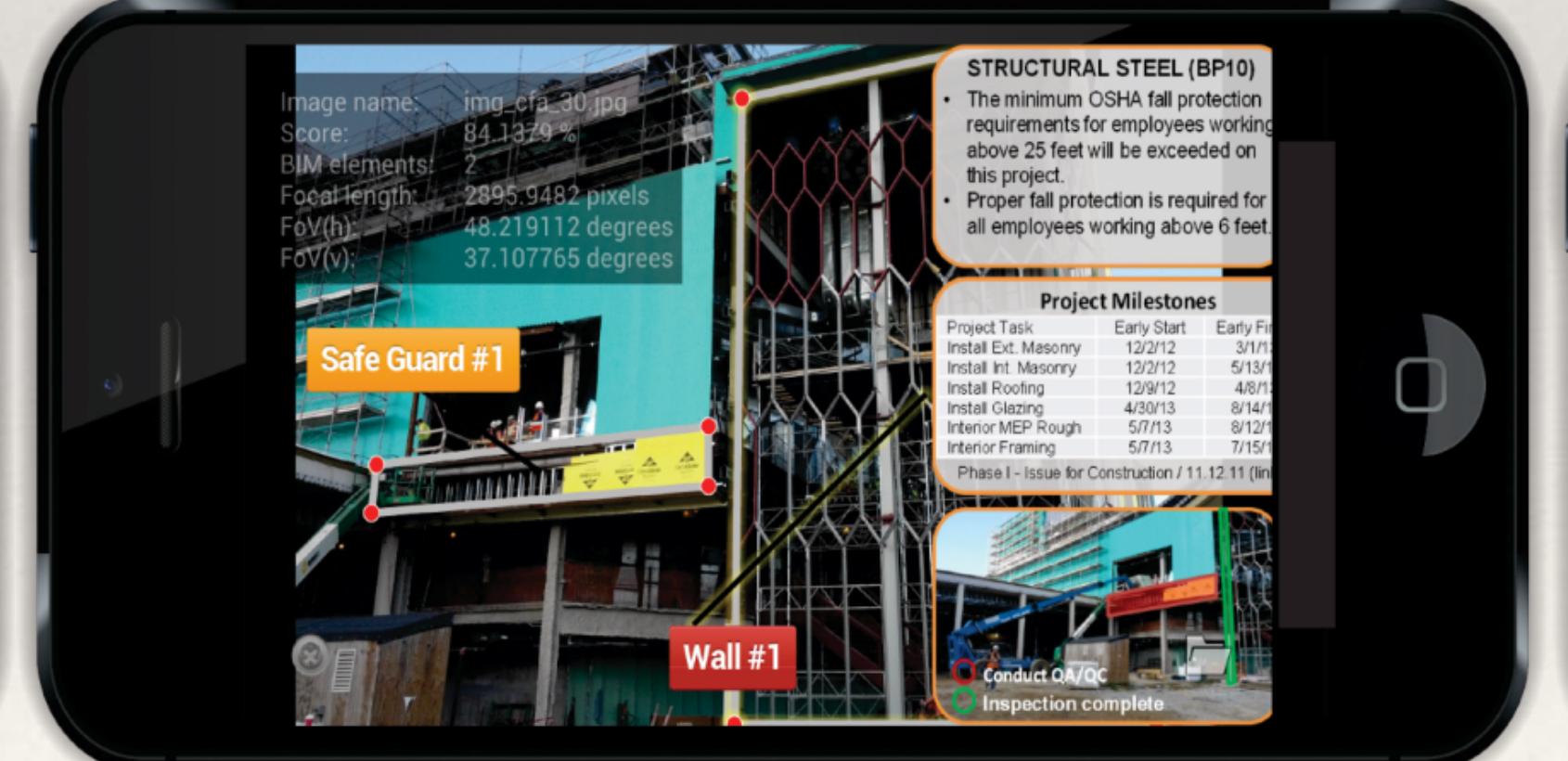
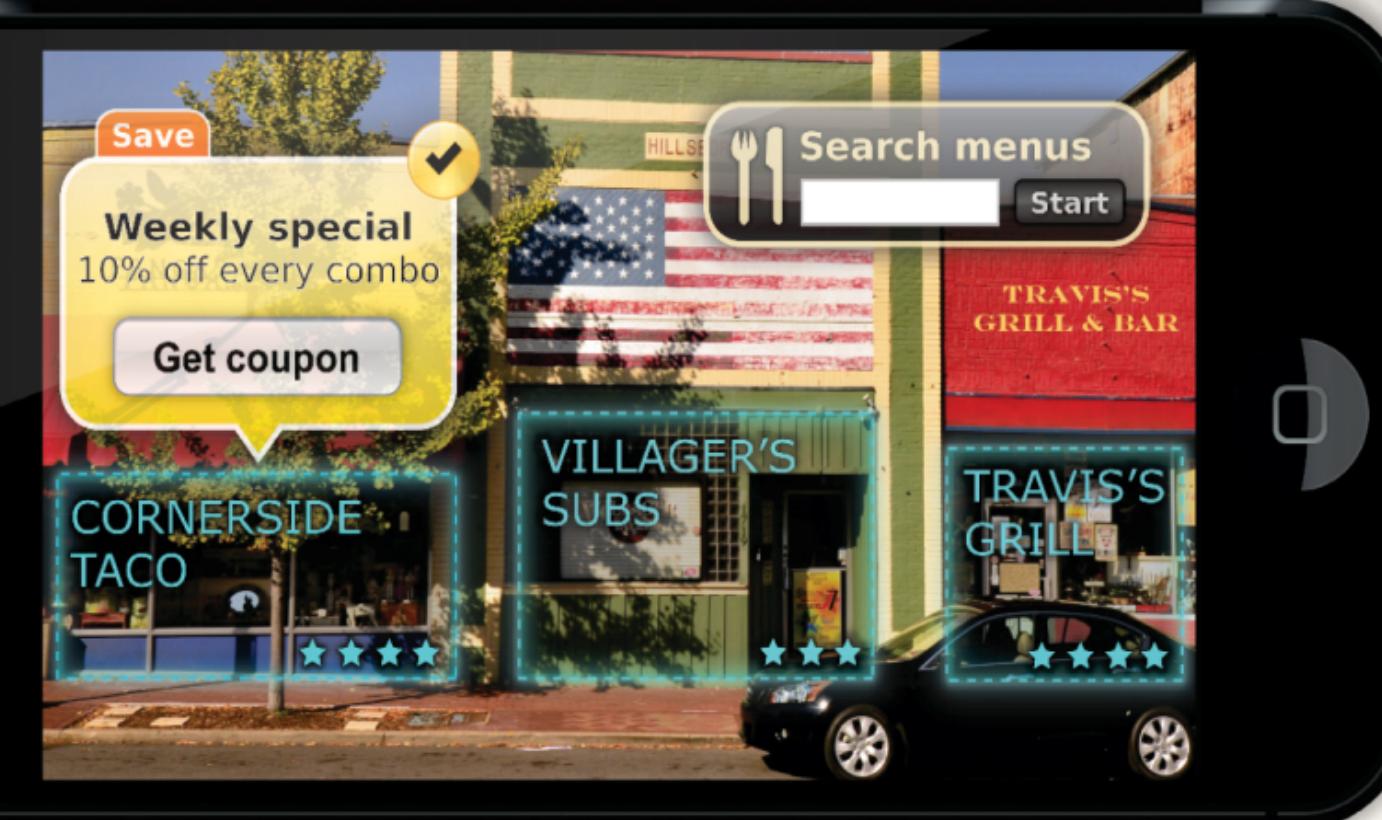
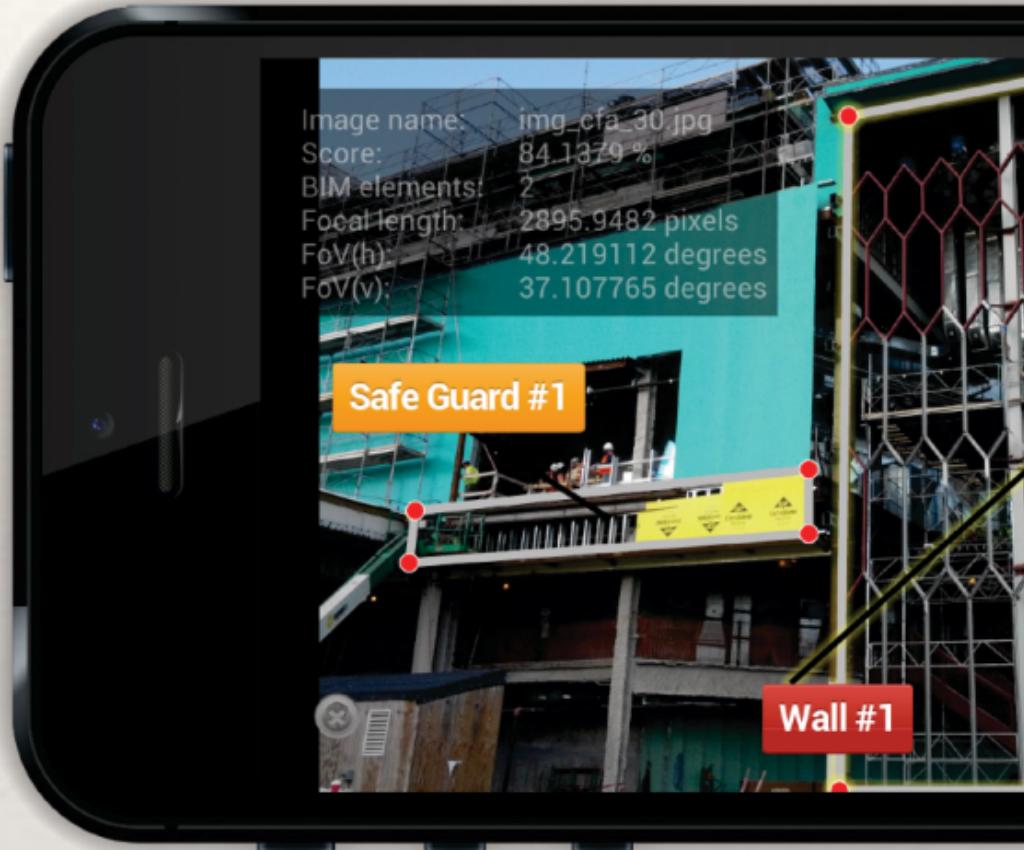
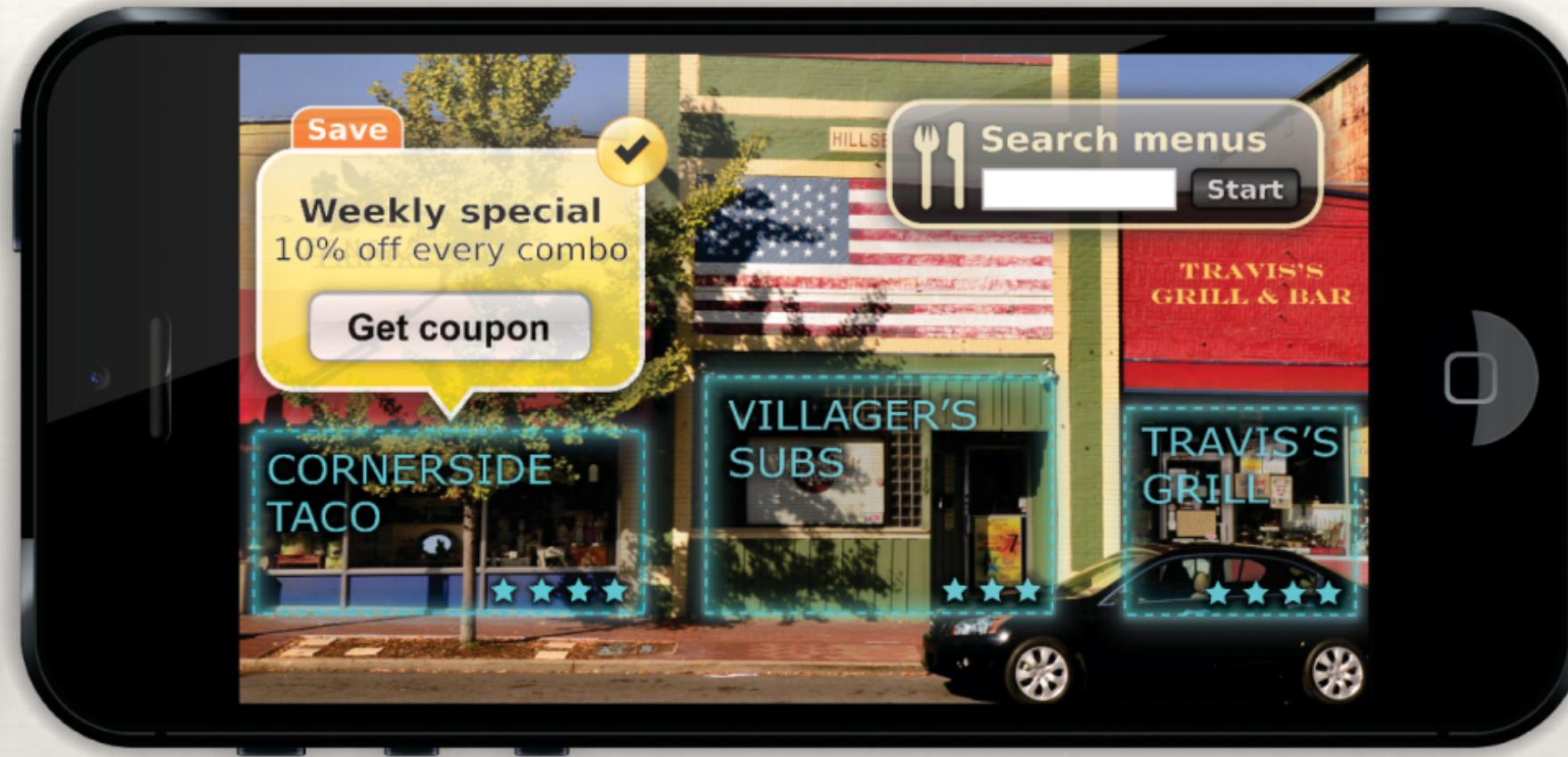
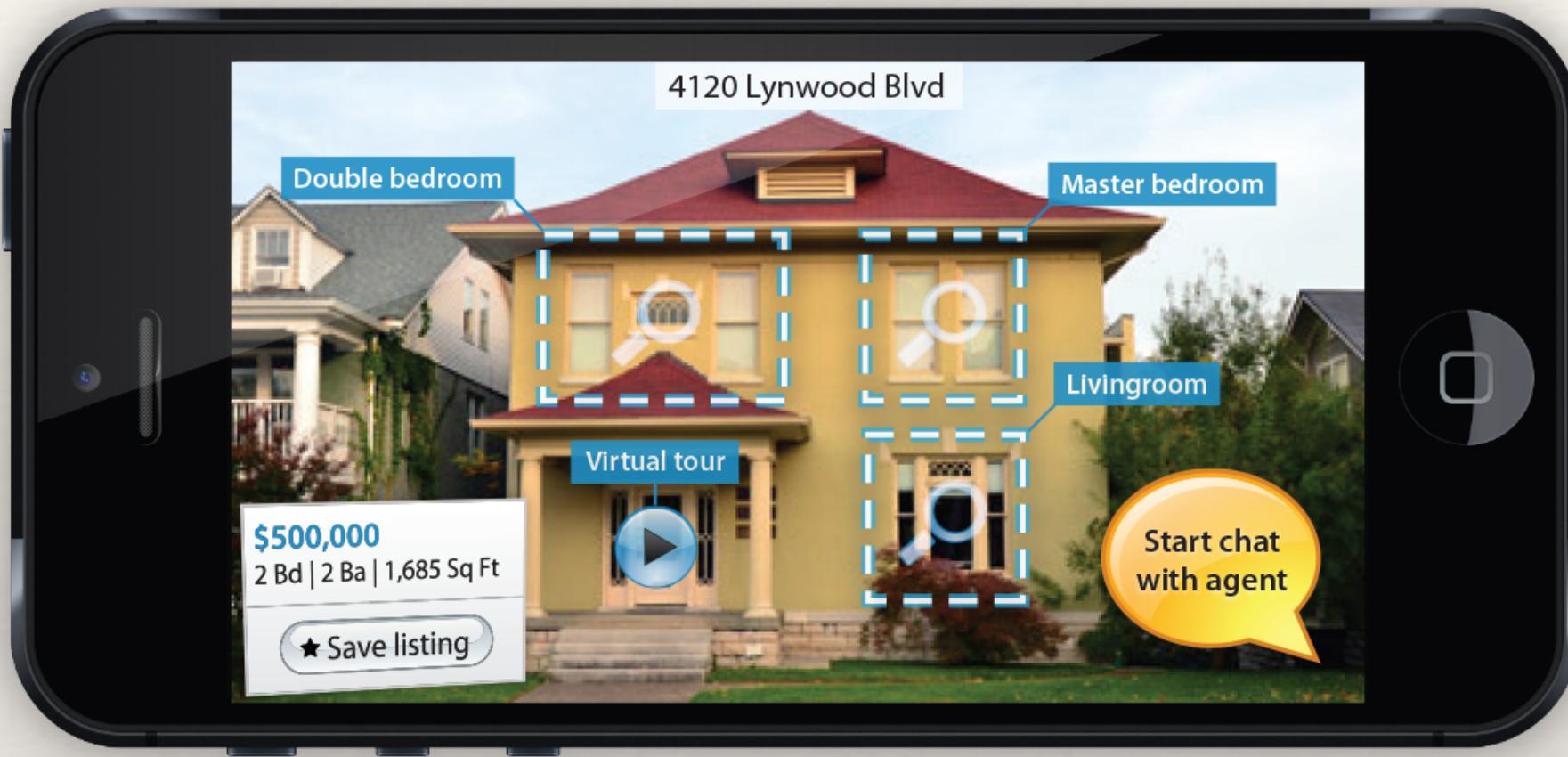


Yu Sun, Ph.D.

<http://CodingMindsAcademy.com>



# Mobile Augmented Reality



# Mobile Indoor Navigation

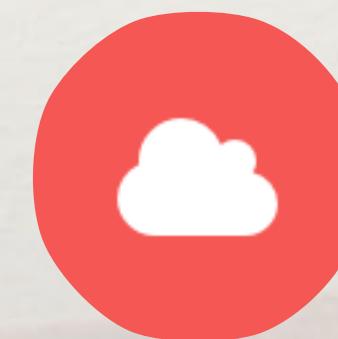


CAL POLY POMONA

iSoftCom  
Lab



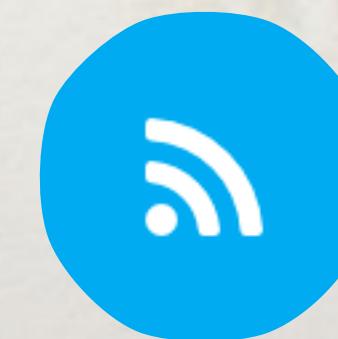
Computer Vision



Cloud Computing



Machine Learning



Internet of Things



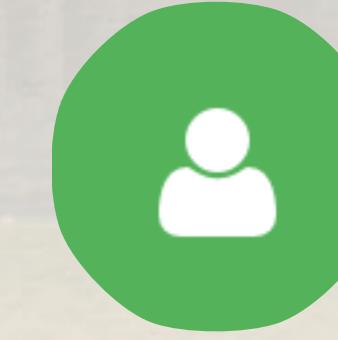
Mobile Computing



Web Services



Big Data



Security

# Why Computer Science?

# Software is Everywhere



Google

x



<https://www.google.com>

Search

Images

Maps

Play

YouTube

News

Gmail

Drive

Calendar

More

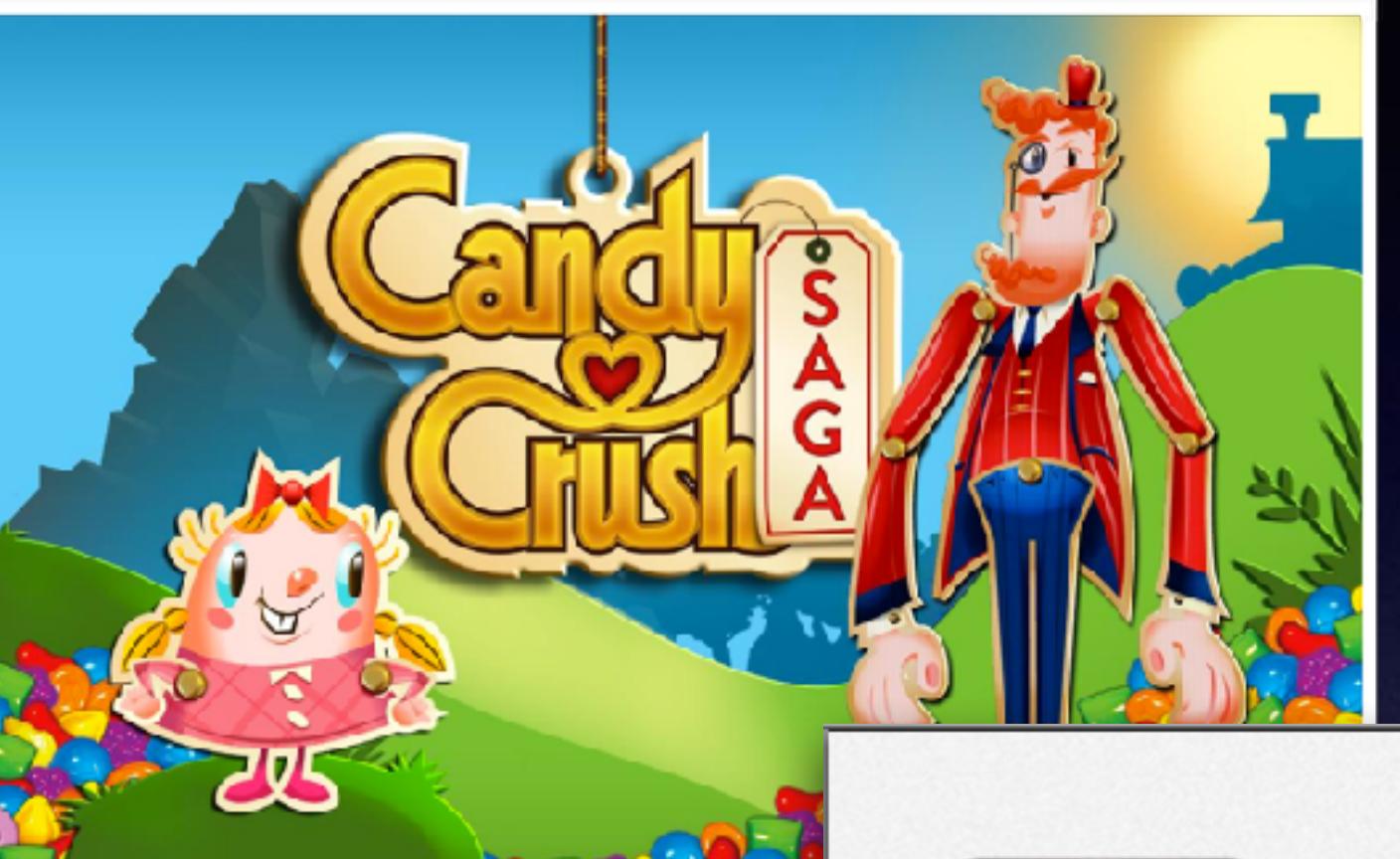
# Google



Google Search

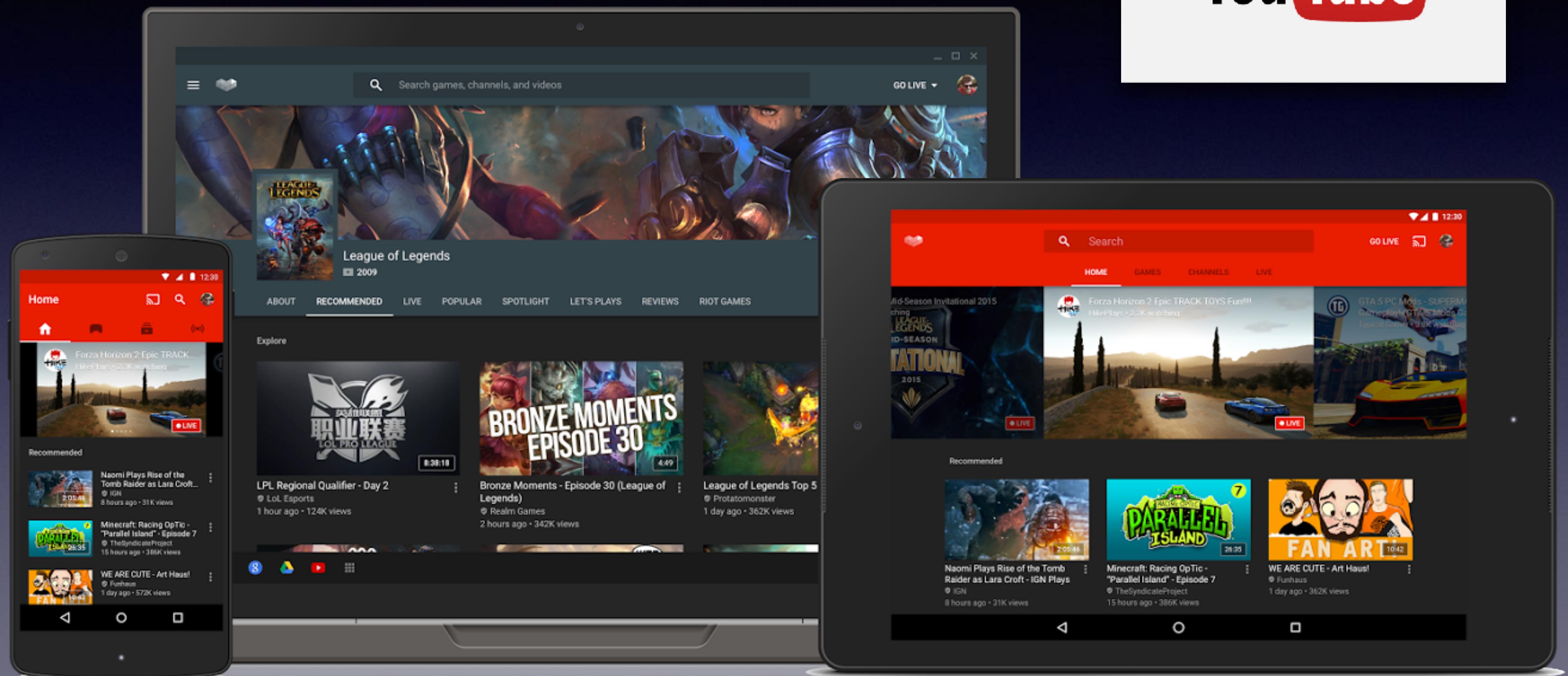
I'm Feeling Lucky

Think of some of the things that entertain and enrich your daily life













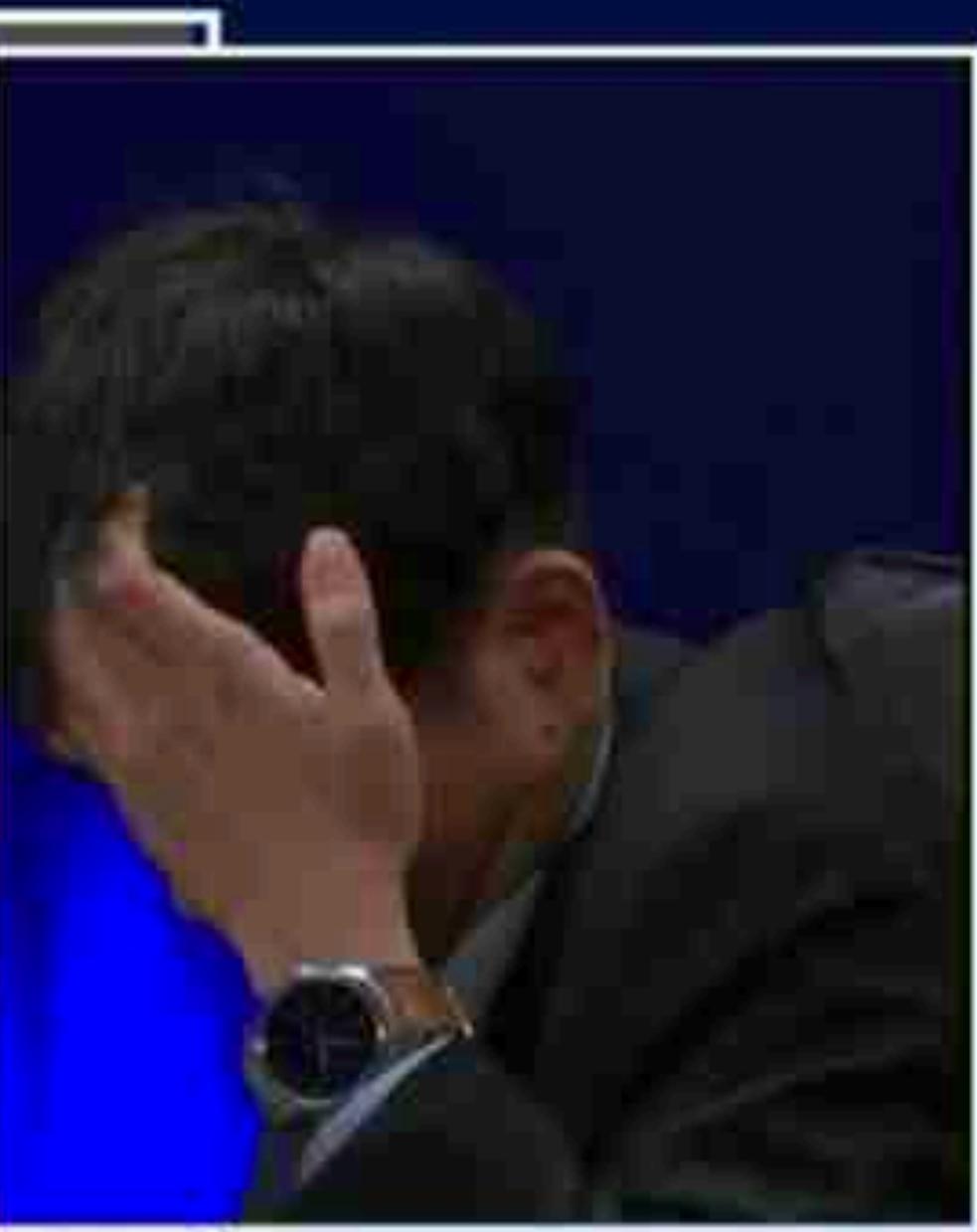
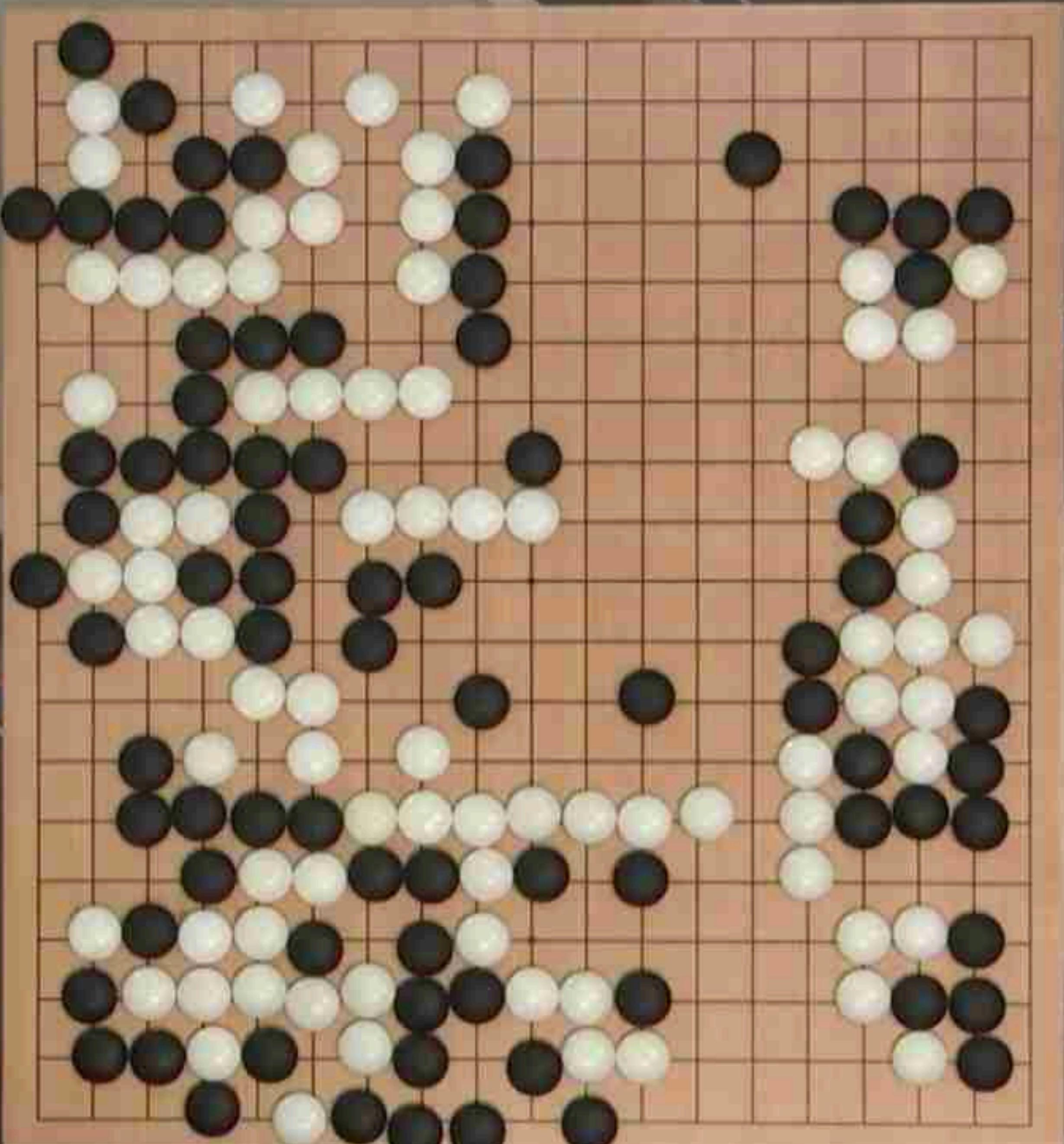


A white Google self-driving car is shown from a rear three-quarter perspective, parked on a road. The car features a distinctive rounded body, a black roof-mounted sensor array, and a small blue light bar on the side door. It is positioned in front of a blurred background of trees and a sunset sky.

Google



SPACEX



ALPHAGO  
00:10:29

AlphaGo  
Google DeepMind

LEE SEDOL  
00:01:00

# Computer Science is Everywhere





Computer Science for All



Computer Science



Mathematics

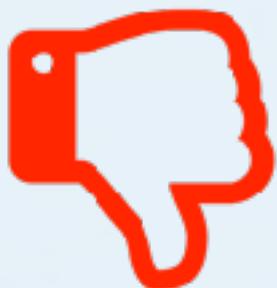
**I ❤ Computer  
Science**



# How to Prove Your CS Background?

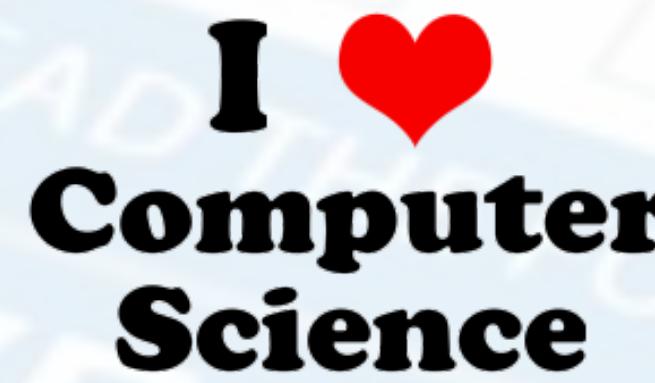
# Facts

**“I studied really hard and I did well in every subject.**

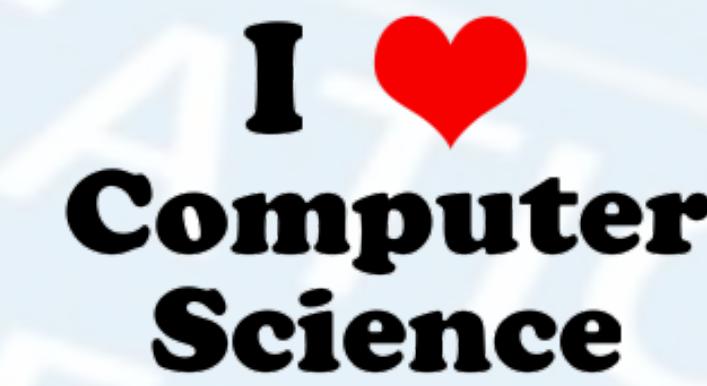


**“My GPA is 4.0**





“I like computer science and I have learned a lot about programming.



“My recent app in the App Store has got over 4,000 downloads.



## **Build Your CS Facts**

I ❤  
**Computer  
Science**

The AP logo consists of the letters "AP" in a bold, sans-serif font. The "A" is blue and the "P" is green. A small registered trademark symbol (®) is located at the top right corner of the "P".

AP Courses



## Facts / Goals



College Courses



Tech Internship



Programming Contest



# Facts / Goals



Publish Apps



Science Fair



Paper Publications



Startup Company

# Why AP Computer Science?

# AP CS

- AP Computer Science A (30+ years)
- Java Programming
- 40 Multiple Choices & Free Response
- = College CS1 Course



AP CS focuses on building the solid Java programming skill

# AP CSP

- The Newest AP Course from College Board
- Focus on General Computing Topics
- 70 Multiple Choices Questions
- 2 Assessment Projects





# 7 Big Ideas

Big Idea 1

Creativity

Big Idea 2

Abstraction

Big Idea 3

Data and Information

Big Idea 4

Algorithms

Big Idea 5

Programming

Big Idea 6

The Internet

Big Idea 7

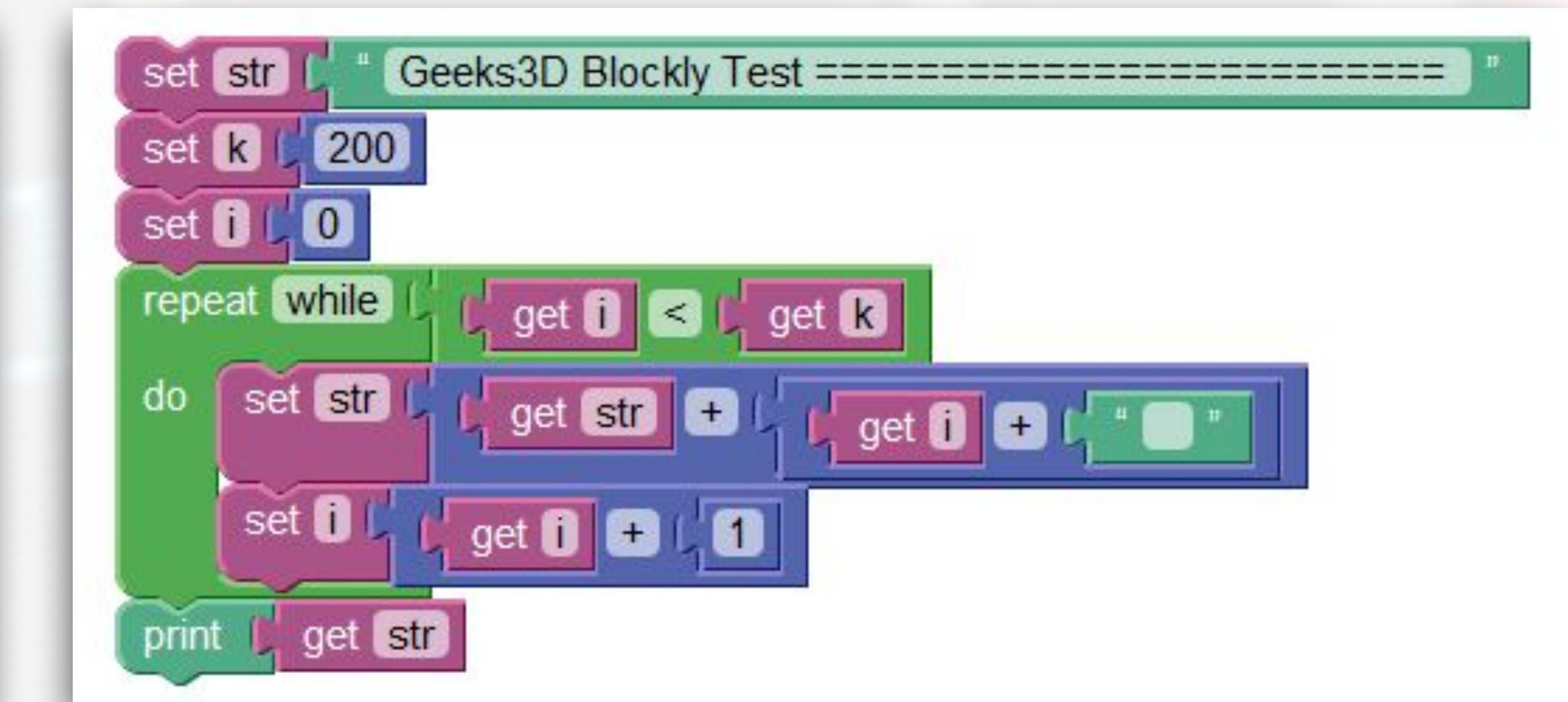
Global Impact

<b>Language/Product</b>	<b>Description</b>
<b>Alice</b>	This 3-D modeling environment allows students to create and animate 3-D worlds. This environment lends itself well to creating stories and games.
<b>App Inventor</b>	This open-source Web application allows students to create their own applications on mobile devices.
<b>App Lab</b>	This is a programming environment for creating web applications with JavaScript. It allows students to develop programs and toggle back and forth between block-based and text-based programming modes.
<b>EarSketch</b>	This browser-based application allows students to create their own music using either JavaScript or Python.
<b>Greenfoot</b>	This Java IDE is designed for use in education to create two-dimensional graphic applications, such as simulations and interactive games.
<b>Java</b>	There are several IDEs that can be used to write in Java. The Java language allows students to create and solve problems that vary widely in difficulty.
<b>JavaScript</b>	This language is commonly used to create interactive effects within Web browsers.
<b>Lego Mindstorms NXT</b>	This product integrates programming with Lego bricks and sensors to create and program robots. The instructions are assembled by linking together function blocks.
<b>Processing</b>	This programming language was initially created to serve as a software sketchbook, and it can be used to teach programming using a visual context.
<b>Python</b>	This language has the benefit of readability that might be helpful to new programmers.
<b>Scratch</b>	This blocks-based programming language allows students to build scripts to run animations. This product can be downloaded and installed on a computer or run in the browser.
<b>Snap!</b>	This Scratch-style programming language is block-based and allows users to define new primitives in JavaScript. Users can read and write information from the Internet using server-defined APIs and make mobile applications.
<b>Swift</b>	This programming language is designed for use with iOS, OS X, tvOS and watchOS. This environment allows students to create their own Apple apps and includes interactive environments that allow students to see the effects of changes or additions to code as they type.

# Choose Your Programming Language

# Code vs Blocks

```
19  public static void hasilBagi(double x, double y) {
20      DecimalFormat angka = new DecimalFormat("###,###");
21      double c = x/y;
22      System.out.println
23          ("Hasil Dari "+angka.format(x)+" : "+
24           angka.format(y)+" = "+angka.format(c));
25  }
26  public static void hasilKurang(double x, double y) {
27      DecimalFormat angka = new DecimalFormat("###,###");
28      double c = x-y;
29      System.out.println
30          ("Hasil Dari "+angka.format(x)+" - "+
31           angka.format(y)+" = "+angka.format(c));
32  }
33 }
```



# What can you do with Java?



Google



<https://www.google.com>

Search

Images

Maps

Play

YouTube

News

Gmail

Drive

Calendar

More

# Google



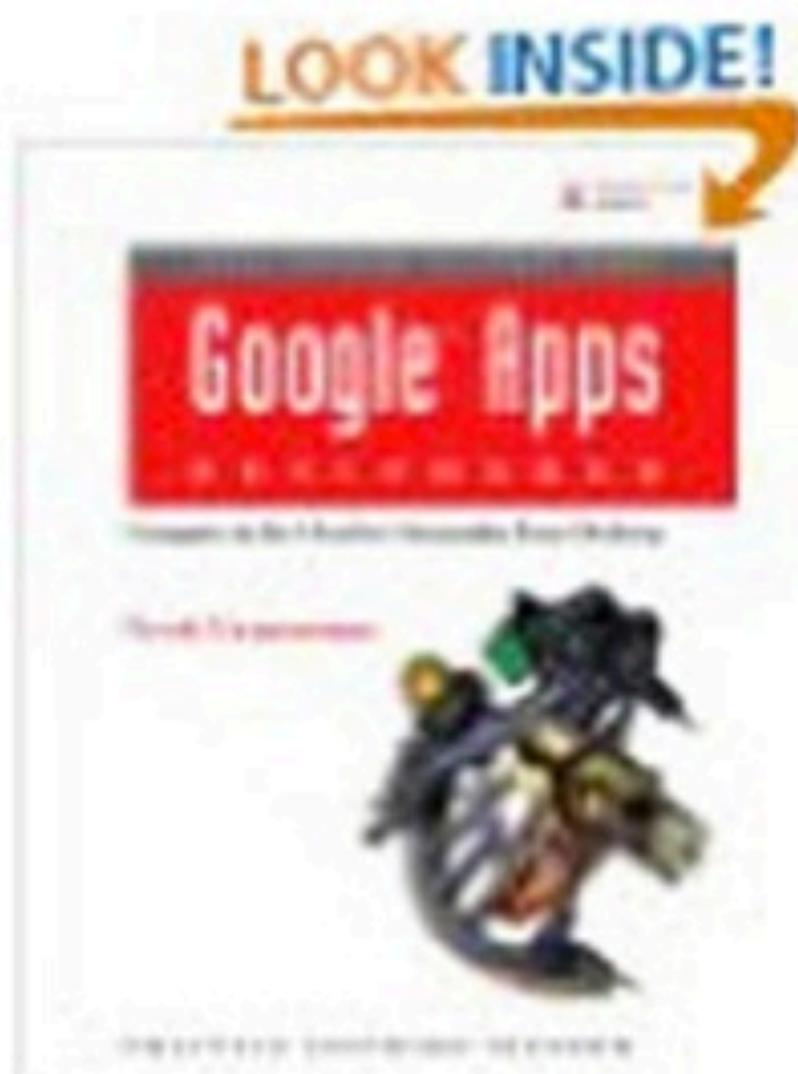
Google Search

I'm Feeling Lucky



## Recommended for You

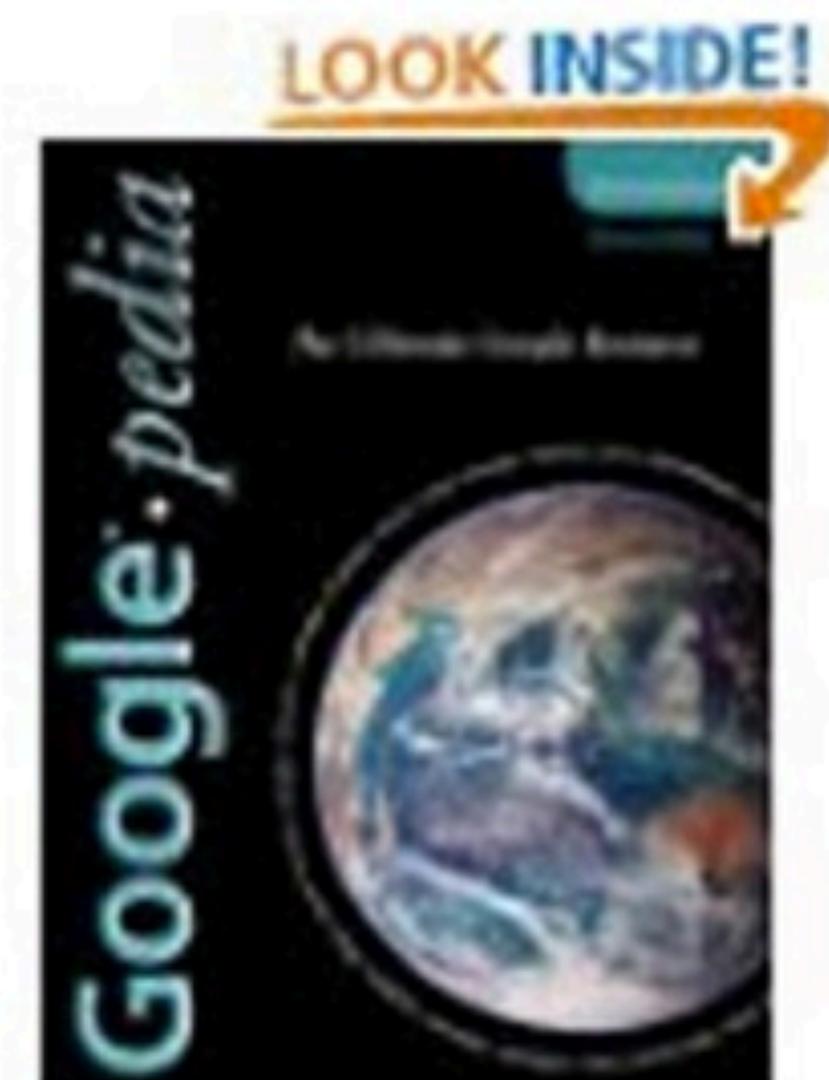
Amazon.com has new recommendations for you based on items you purchased or told us you own.



[Google Apps](#)  
[Deciphered: Compute in the Cloud to Streamline Your Desktop](#)



[Google Apps](#)  
[Administrator Guide: A Private-Label Web Workspace](#)

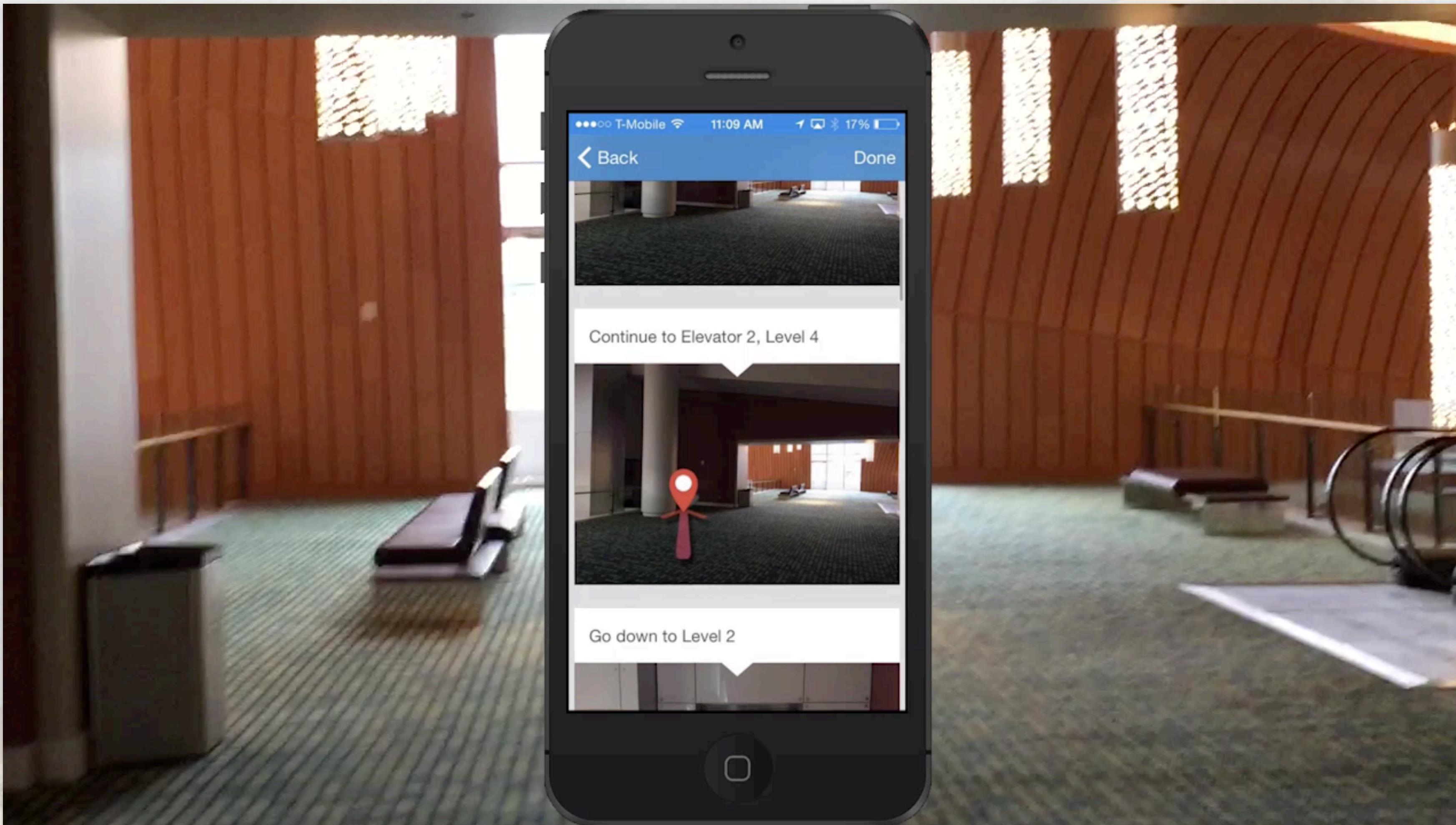


[Googlepedia: The Ultimate Google Resource \(3rd Edition\)](#)









Ziiio Indoor Navigation Demo

<http://zii.io/>

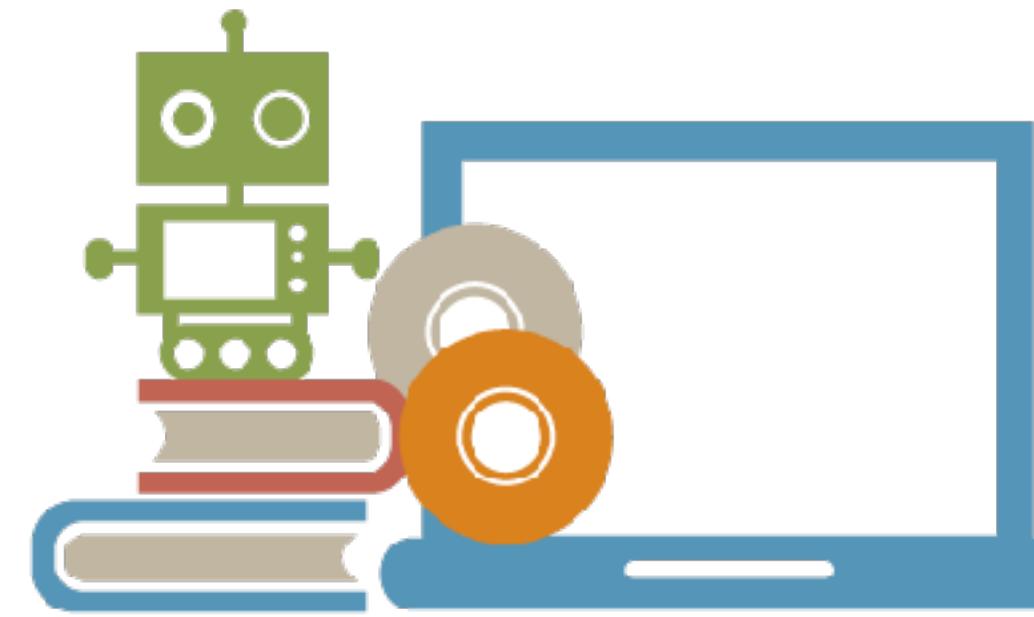




# Focus on the Trending Topics



App Development



Machine Learning



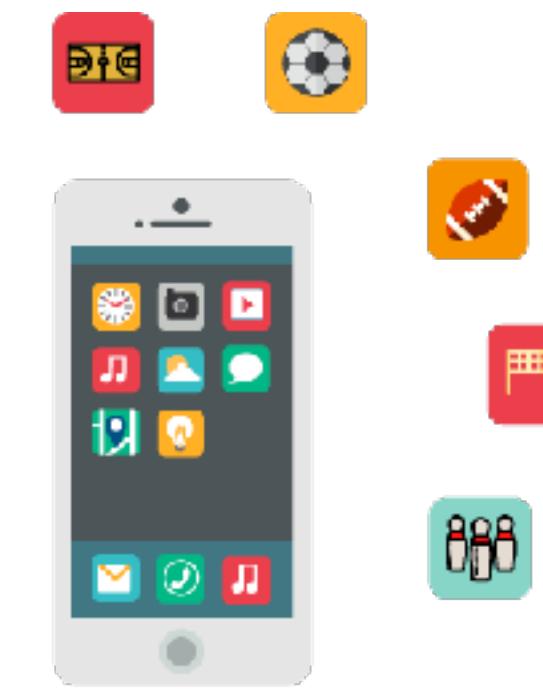
Internet-Of-Things



Web Development



Entrepreneurship



Game Development



# Our Goals



AP Courses



College Courses



Tech Internship



Programming Contest



Publish Apps



Science Fair



Paper Publications



Startup Company



# Learn by Doing





# Practice, Practice and Practice



# A Fun Learning Experience



# Get More Out of the Course



# Write Your First Java Program

# First Program

```
class Hello {  
    public static void main(String[] arguments) {  
        // Program execution begins here  
        System.out.println("Hello world.");  
    }  
}
```

# Java Basics

- Each Java Program is written in a File
- Each Java Program file has a ***public class***
- The class name needs to be the same as the file name
- You need to have a ***public static void main(String[] args)*** method in order to run your program

# Java Output

- *System.out.println(some String)* outputs to the console
- e.g.
  - `System.out.println("output");`

# Java Basics

- Java is a programming **language**
- A language has its syntax (grammar)
- Your program needs to confirm to the syntax 100% correctly
- Java is a case-sensitive language

# Second Program

```
class Hello2 {  
    public static void main(String[] arguments) {  
        System.out.println("Hello world."); // Print once  
        System.out.println("Line number 2"); // Again!  
    }  
}
```

# Java Basics

- ***public static void main(String[] args)*** is the entrance of the program
- The Java program is executed **sequentially** line by line
- Each line ends with a **semicolon**
- Each method is wrapped with a pair of { }