AR Object Detection / Text Recognition for Language Learning

LangLens

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The Inspiration

A free, easily accessible, language learning tool that utilizes recent AR advances

Dr. Okim Kang

Who? — **Anyone** trying to learn a new language with access to a mobile device
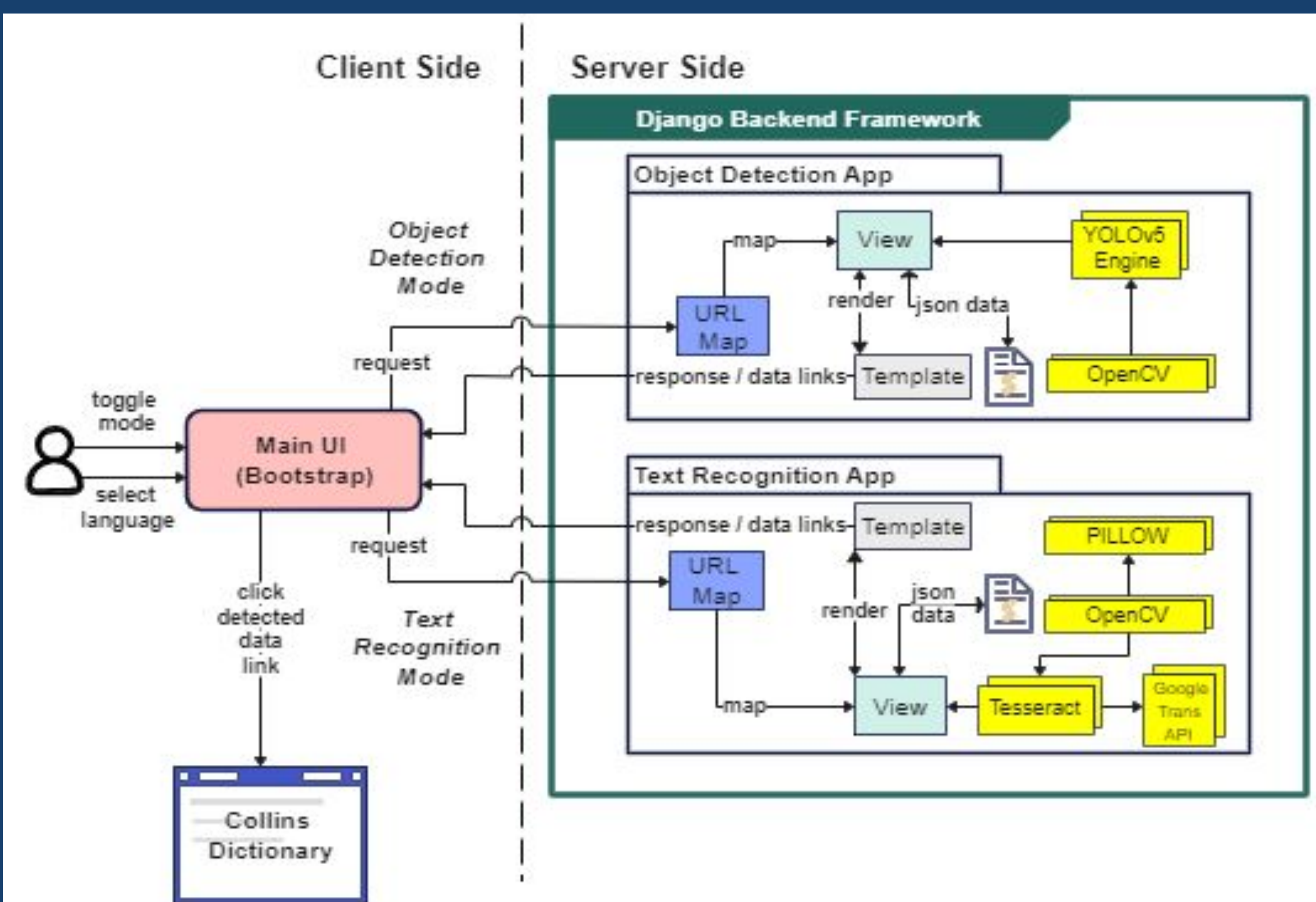
What? — A **web-based mobile app** that accesses the users' mobile camera to scan the environment around them for **immediate** translations in a chosen target language
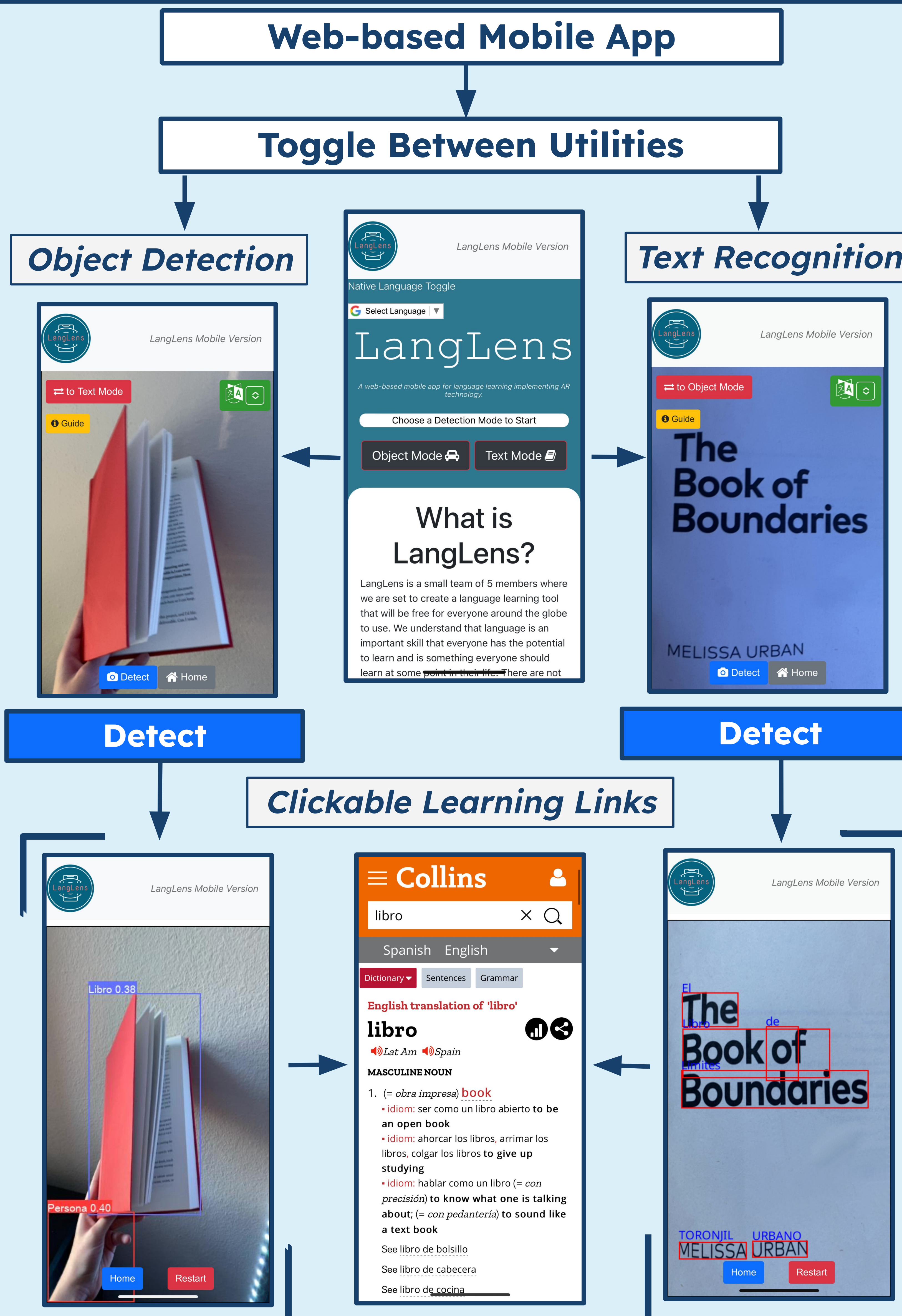
Why? — A lack of **free** language learning tools that incorporate both object **AND** text recognition technology

- **Target Language Selector** (English / Spanish / French / Korean available for initial development)
- **Two Detection Modes:** Object / Text
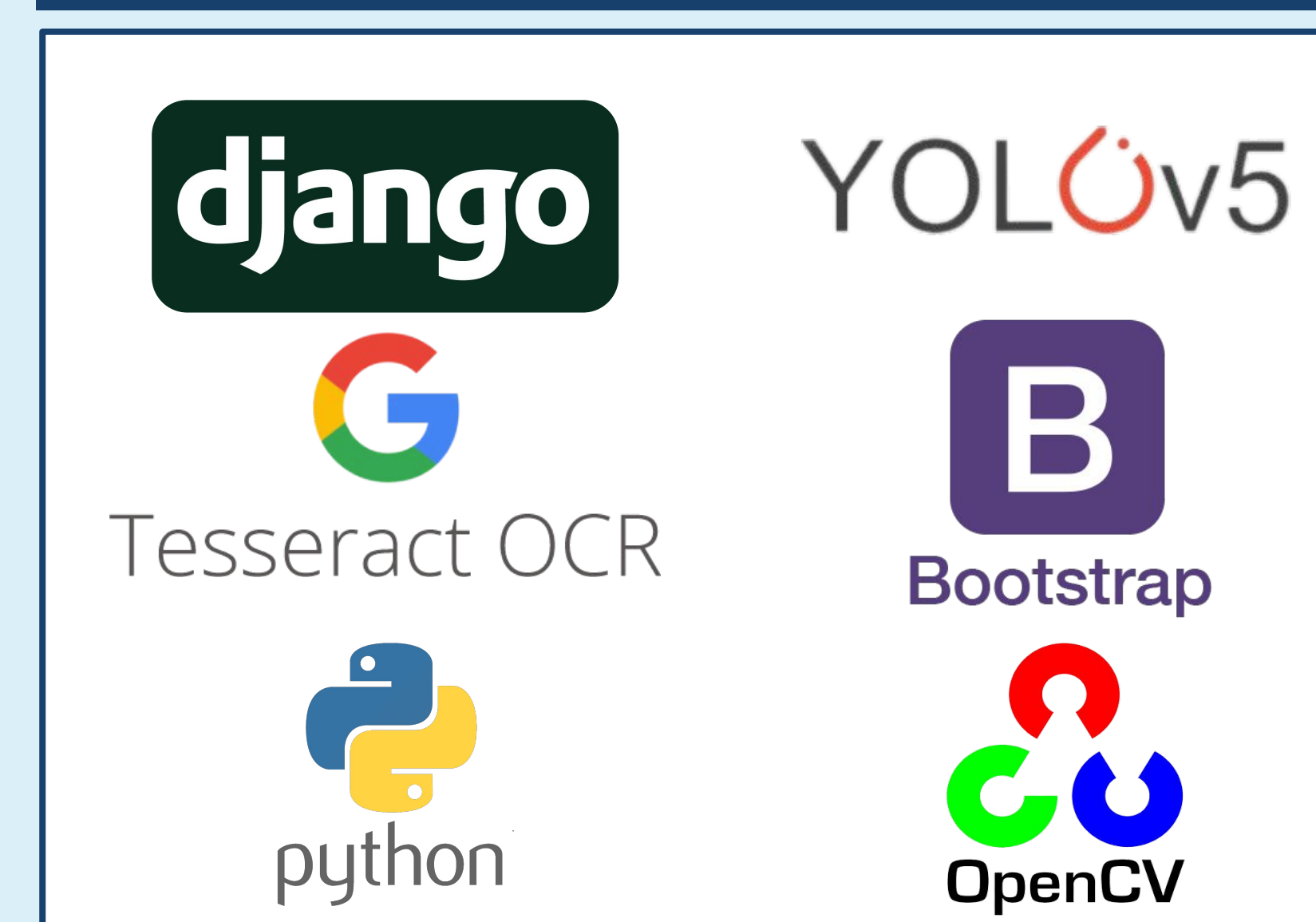- **External Learning Links** to incorporate all key elements of word learning (visual, textual, auditory)
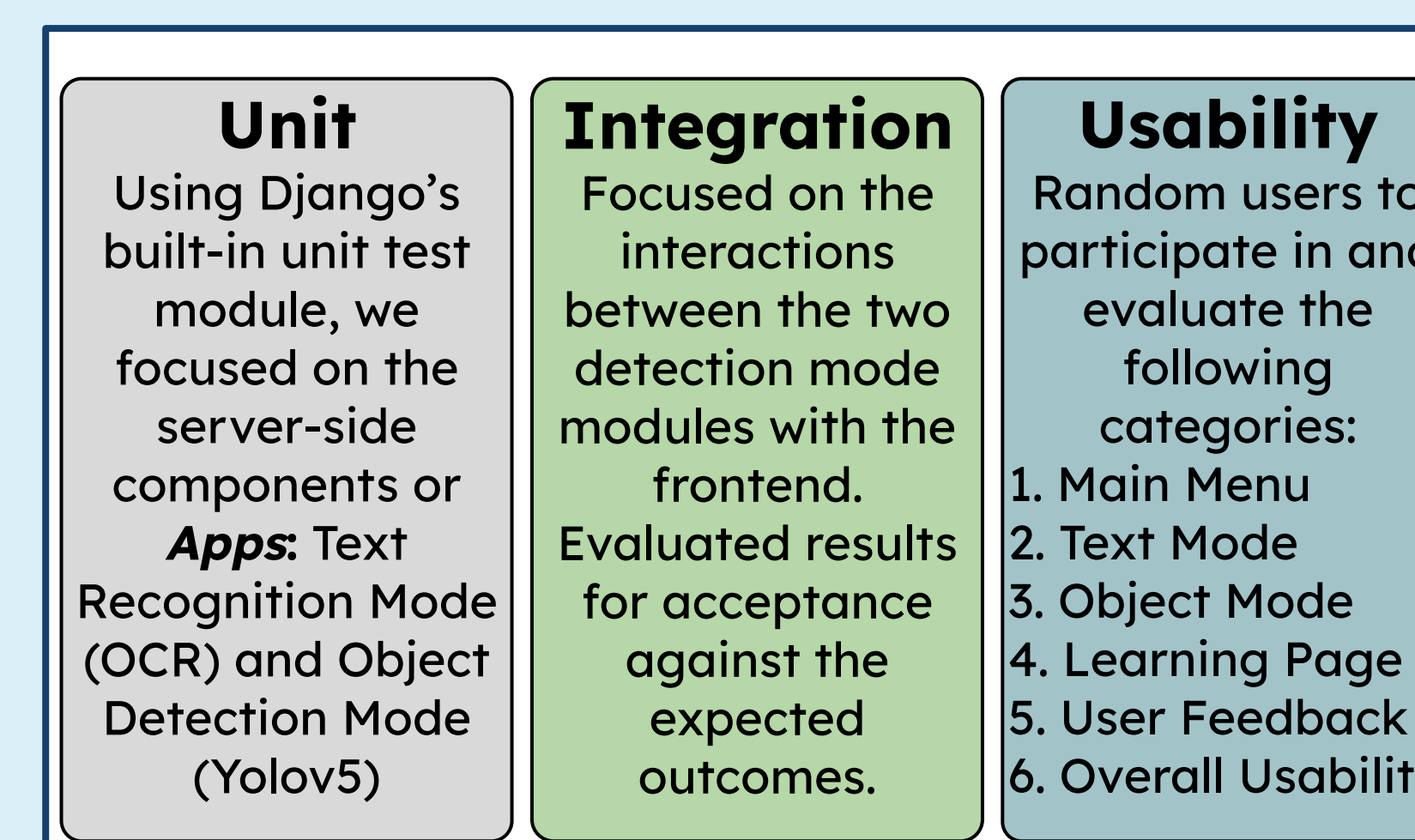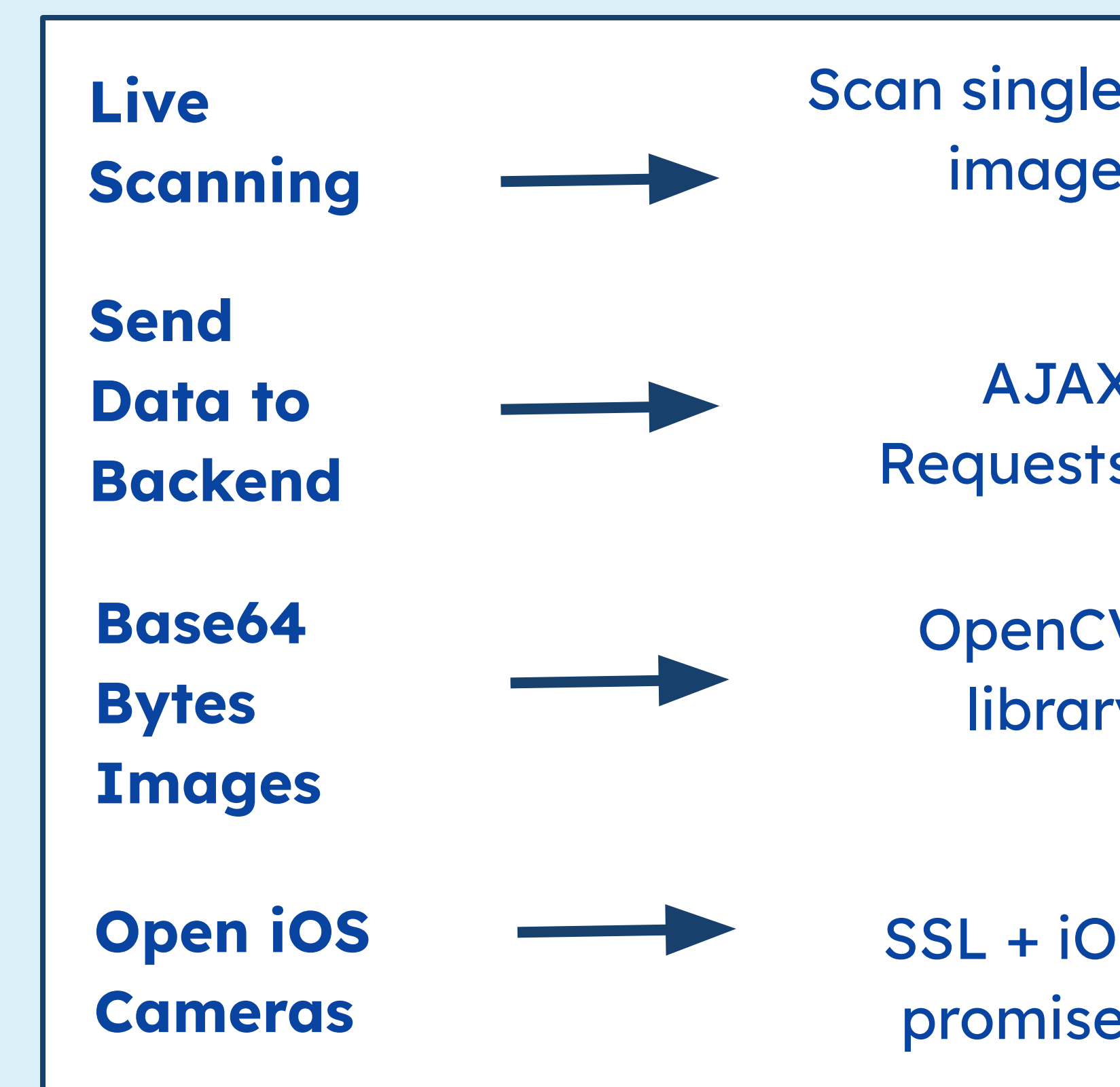
Architecture

Solution Overview / Key Features

Web-based Mobile App

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Toggle Between Utilities

Object Detection

Text Recognition

LangLens Mobile Version
Native Language Toggle
Select Language

LangLens

A web-based mobile app for language learning implementing AR technology.

Choose a Detection Mode to Start

Object Mode | Text Mode

What is LangLens?

LangLens is a small team of 5 members where we are set to create a language learning tool that will be free for everyone around the globe to use. We understand that language is an important skill that everyone has the potential to learn and is something everyone should learn at some point in their life. There are not...

Detect | **Detect**

Clickable Learning Links

Technologies

django · YOLOv5 · Tesseract OCR · Bootstrap · python · OpenCV

Testing

Unit	Integration	Usability
Using Django's built-in unit test module, we focused on the server-side components or **Apps**: Text Recognition Mode (OCR) and Object Detection Mode (Yolov5)	Focused on the interactions between the two detection mode modules with the frontend. Evaluated results for acceptance against the expected outcomes.	Random users to participate in and evaluate the following categories: 1. Main Menu 2. Text Mode 3. Object Mode 4. Learning Page 5. User Feedback 6. Overall Usability

Challenges

Live Scanning	→ Scan single image
Send Data to Backend	→ AJAX Requests
Base64 Bytes Images	→ OpenCV library
Open iOS Cameras	→ SSL + iOS promises

Scan the **QR Code** to try out LangLens for yourself!

Scan ME