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AR service for pet's supplies using Deeplearning based on Marker-less AR

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Outlines

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1. Introduction

The great growth of the **pet supplies market**

Online stores related to pet supplies **are increasing**

But

Online store have **some issues** about **realistic experiencing** the items

There are **so many kinds of pet supplies** that it's **hard to choose**.

HOW

Can **more realistic** experience?

And

Can **more Convenient** shopping?

1. Introduction

Using **AR Technique**

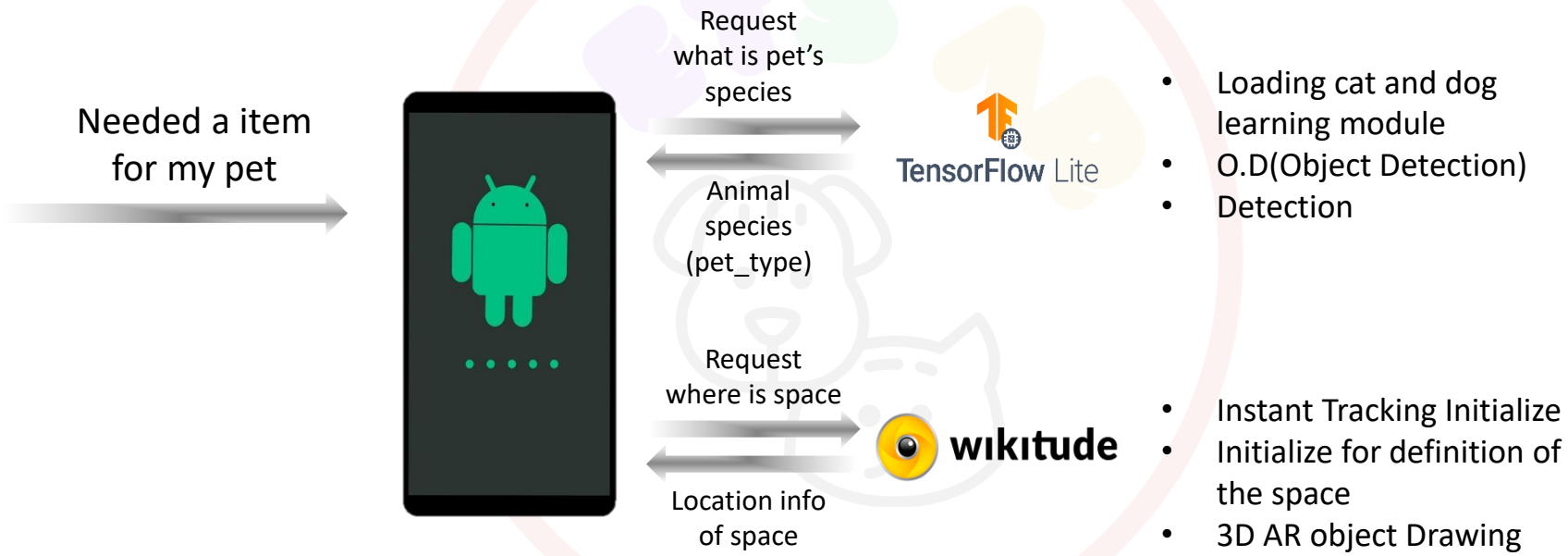
Feel **more Realistic** experiencing
for customers

Using **DeepLearning**

offer the **optimized items**
for customer's pet species

2. Methodology

- **The structure of Application (Pets AR)**



2. Methodology

- **DeepLearning**

❖ **Deeplearning Framework**

TensorFlow Lite

Suitable for **embedding on Android**

Figure 1 <Compare Object Detection Models>

❖ **Deeplearning Model**

Select **MobileNet SSD** Model

- **Faster** than Faster RCNN model
- **More accurate** than YOLO

- **DeepLearning**

❖ **Dataset**

The Oxford-IIIT Pet Dataset

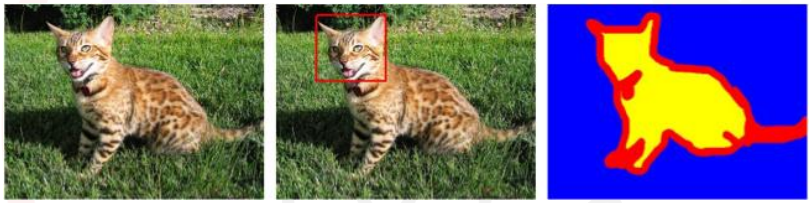


Figure 2 <The Oxford-IIIT Pet Dataset>

37 category pet dataset with roughly
200 images for each class

- ✓ Species and breed name
- ✓ A tight bounding box (ROI) around the head of the animal
- ✓ A pixel level foreground-background segmentation

2. Methodology

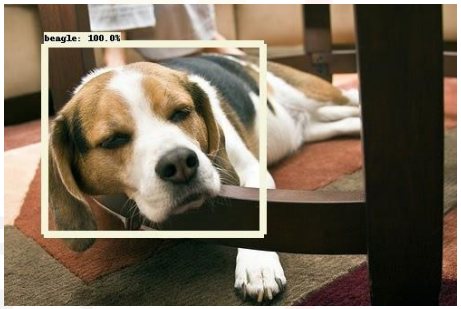
- **DeepLearning**

INPUT OUTPUT form

INPUT

Image
(Camera buffer)

OUTPUT



- **Species** of cat or dog
- **Location** of pet(ROI)
- **Accuracy** of classification

- **AR(Augmented reality)**

Marker based on AR VS Marker-less AR

2. Methodology

- **AR(Augmented reality)**

SDK Feature Comparison Table

	Wikitude	ARKit	ARcore	Vuforia	MaxST	DeepAR	EasyAR	ARToolKit
Maximum distance capture (m)	2.4 / 5	1.5 / 5	1.0 / 3	1.2 / 3.7	0.5 / 0.9	0.7 / 5	0.9 / 2.7	3 / 3
Recognition stability of immovable marker	6	9	9	10	7	8	7	8
Recognition stability of movable marker	6	7	6	6	2	7	3	6
Minimum angle recognition	10	30	50	30	50	35	35	10
Minimum visibility for recognition overlapped marker	100%	50%	75%	20%	50%	10%	10%	100%
2D Recognition	✓	✓	✓	✓	✓	✓	✓	✓
3D Recognition	✓	✓	✓	✓	✓	–	–	–
Geo-Location	✓	✓	✓	–	–	–	–	–
Cloud Recognition	✓	✓	✓	✓	–	–	–	–
SLAM	✓	✓	✓	✓	✓	–	–	–
Total (rating)	**8.0**	**7.5**	**7.7**	**7.7**	**5.2**	**4.7**	**4.4**	**2.8**

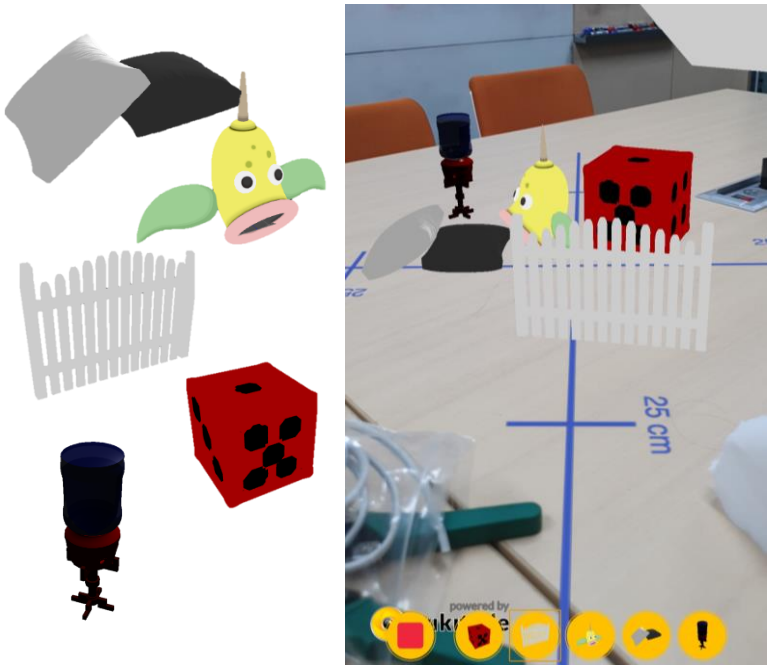
https://thinkmobiles.com/blog/best-ar-sdk-review/

2. Methodology

- **AR(Augmented reality)**
  We got 3D models and applied it to the Marker-less AR.

❖ **For dog**

❖ **For cat**



2. Methodology

- **App UI/UX**

Theme	Primary Color	Primary Variant
Type of Pet (DeepLearning)	#F6EAFF	#AE33FF
AR	#FFDF7F	#FFC000
List	#BDEFE3	#37D366

⇩

Triadic Colors

3. Result

Figure 1. Main Activity

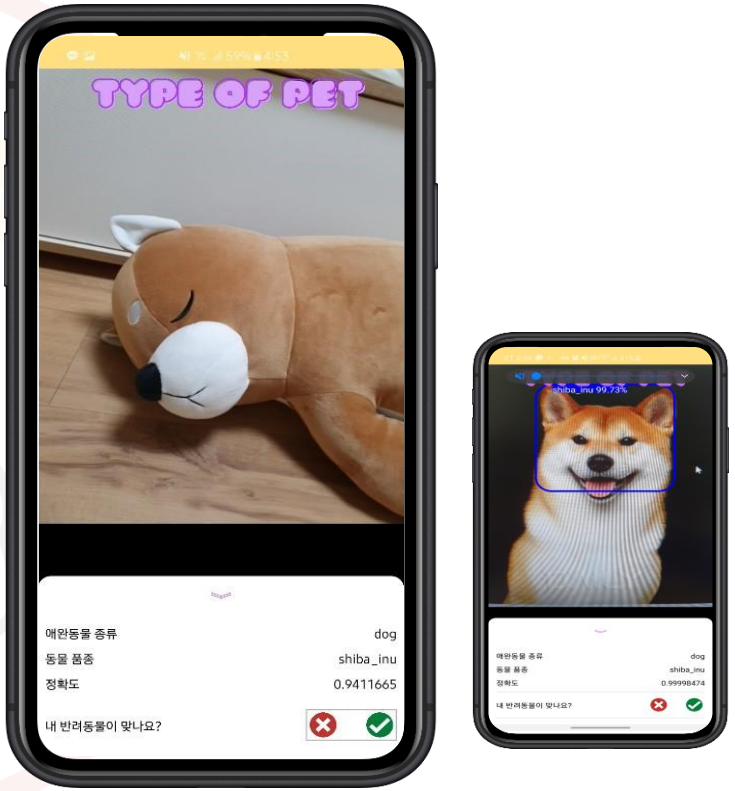


Figure 2. Check my pet Activity

3. Result

Figure 3. AR Activity

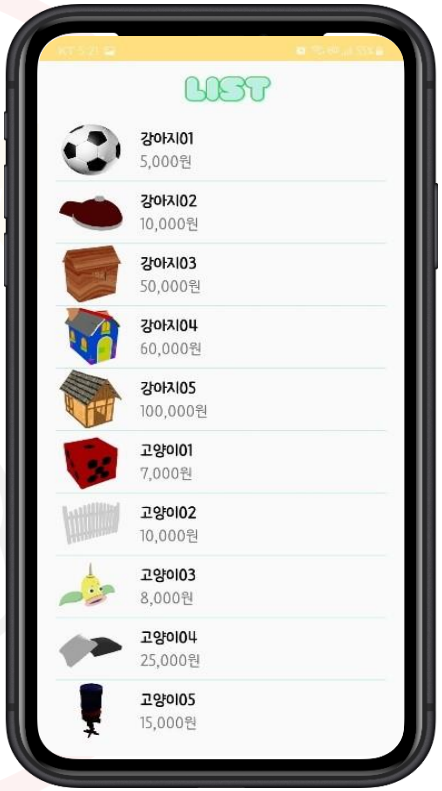
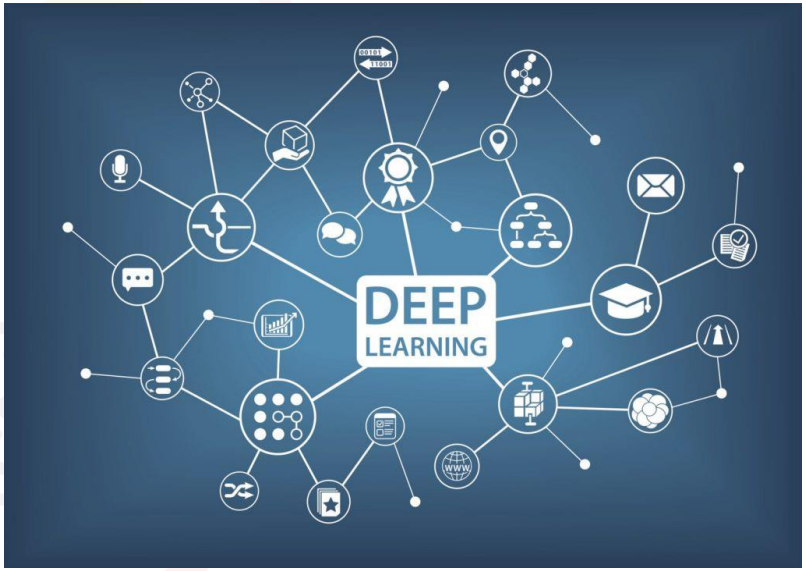


Figure 4. List of the items

4. Conclusion

- **Main Subject**



⇨ **Future AR Tracking**

4. Conclusion

❖ Problem

Flexible connection with Deep learning and AR Activity

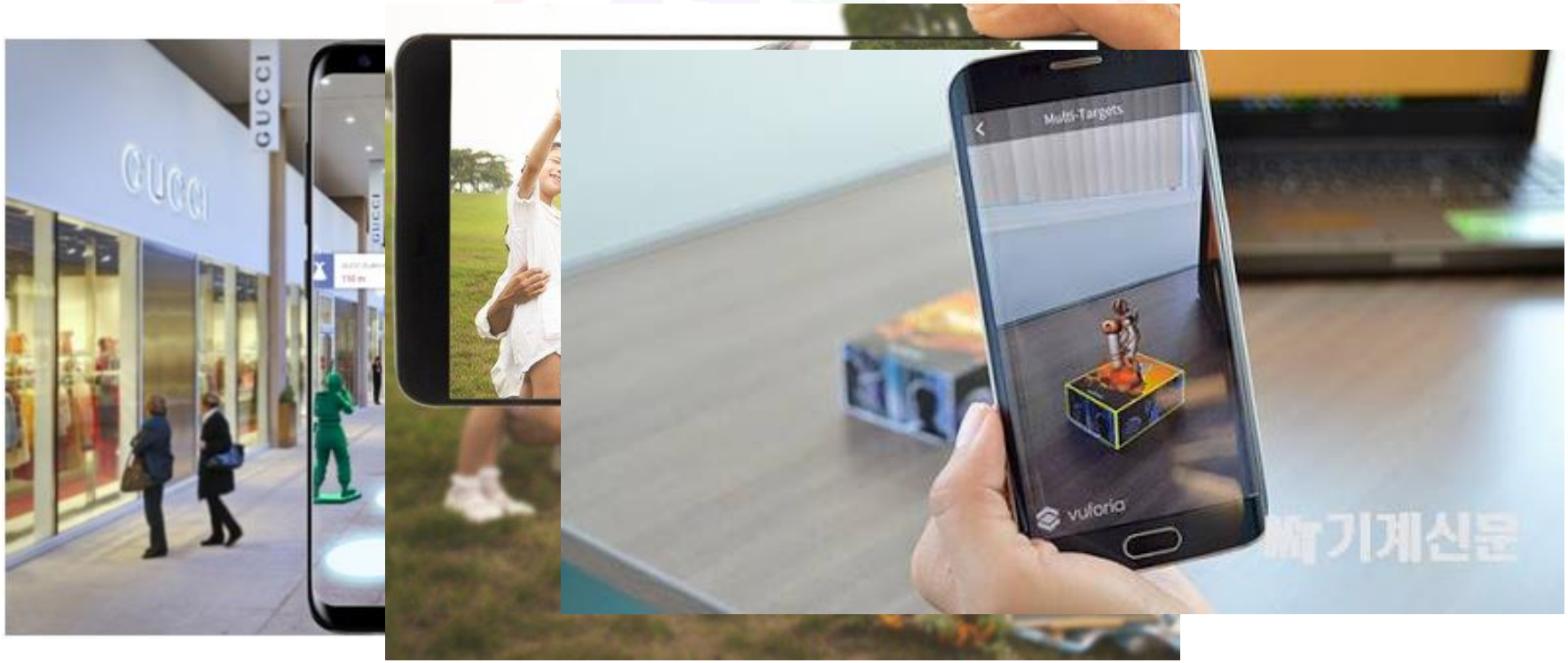
❖ Solution

Applying various references from **Android** and **Wikitude**

4. Conclusion

- **AR technology can be applied in various ways**

e.g. recognizing roads, animals, people, objects or tesseract



5. References

References

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Thank you !!!

Q&A

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