

# Kwangsoo Shin

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Software Engineer

# Introduce

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## Education

### Master's Degree

Thesis: A CNN-based Place Classifier with Attention Method for Scene-level Place Recognition in Broadcasting Video

Sogang University

Computer Science and Engineering

Multimedia System Lab. (Advisor Professor Jongho Nang)

### Bachelor's Degree

Sogang University

Computer Science and Engineering & Mass Communication & Media Engineering

## Skills

Programming Languages C/C++, Python

Platforms & Frameworks PyTorch, Django

And also Docker/Docker Compose



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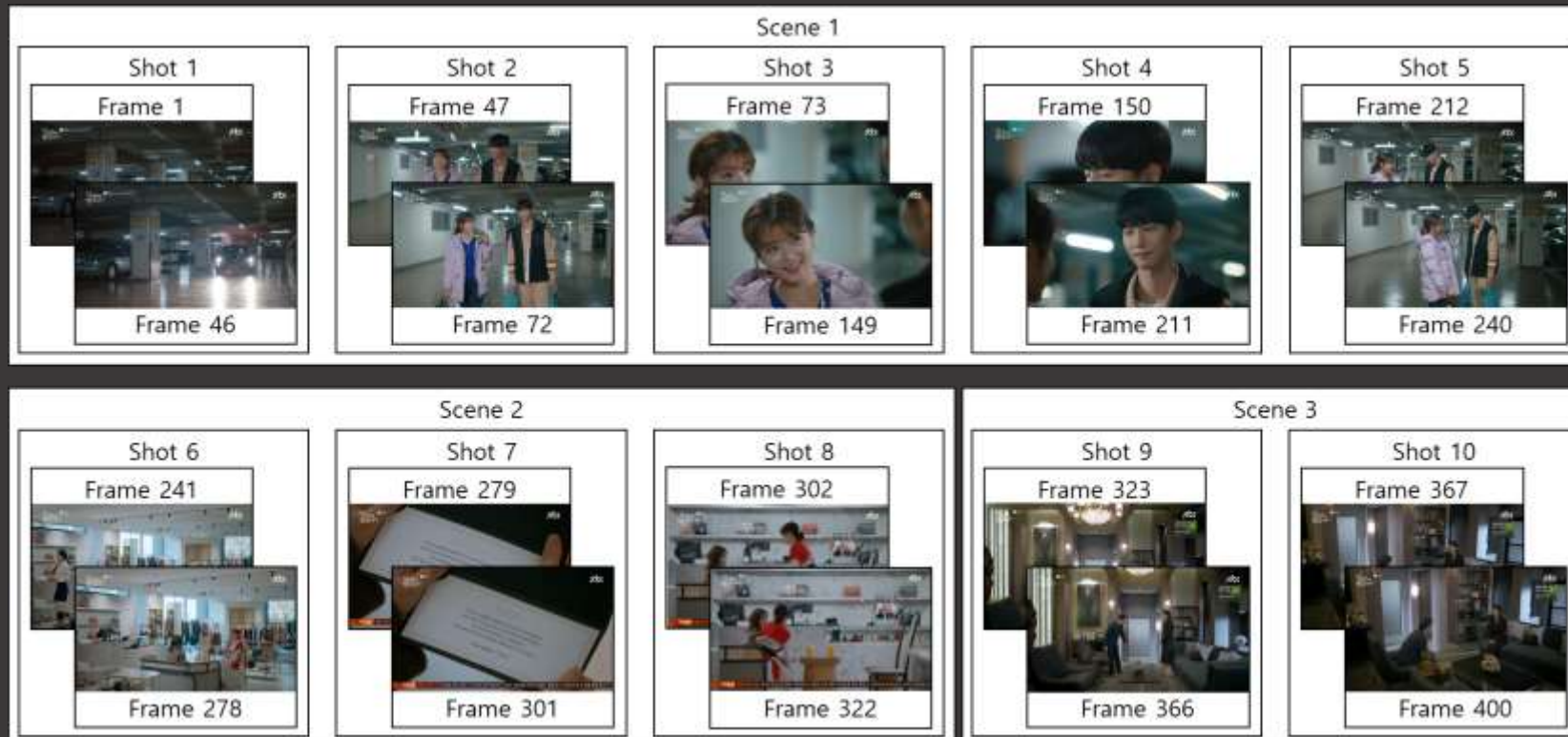
# Thesis

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## A CNN-based Place Classifier with Attention Method for Scene-level Place Recognition in Broadcasting Video

### Background

- The video contains many scenes, which in turn consist of many shots
- Each shot may or may not have information about the place

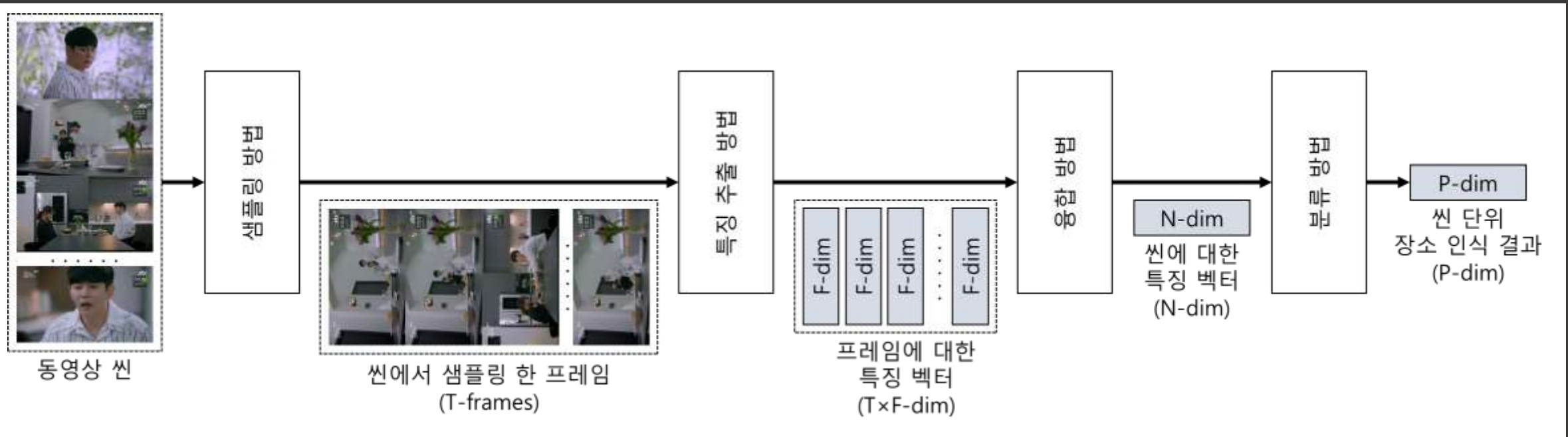


# Thesis

## A CNN-based Place Classifier with Attention Method for Scene-level Place Recognition in Broadcasting Video

### Methods

- First, sample frames which helped or easy to recognize the place
- Second, Extracts the feature vectors for the selected frame and fuses them to make scene-level feature
- Finally, For scene recognition use classifier the fused features

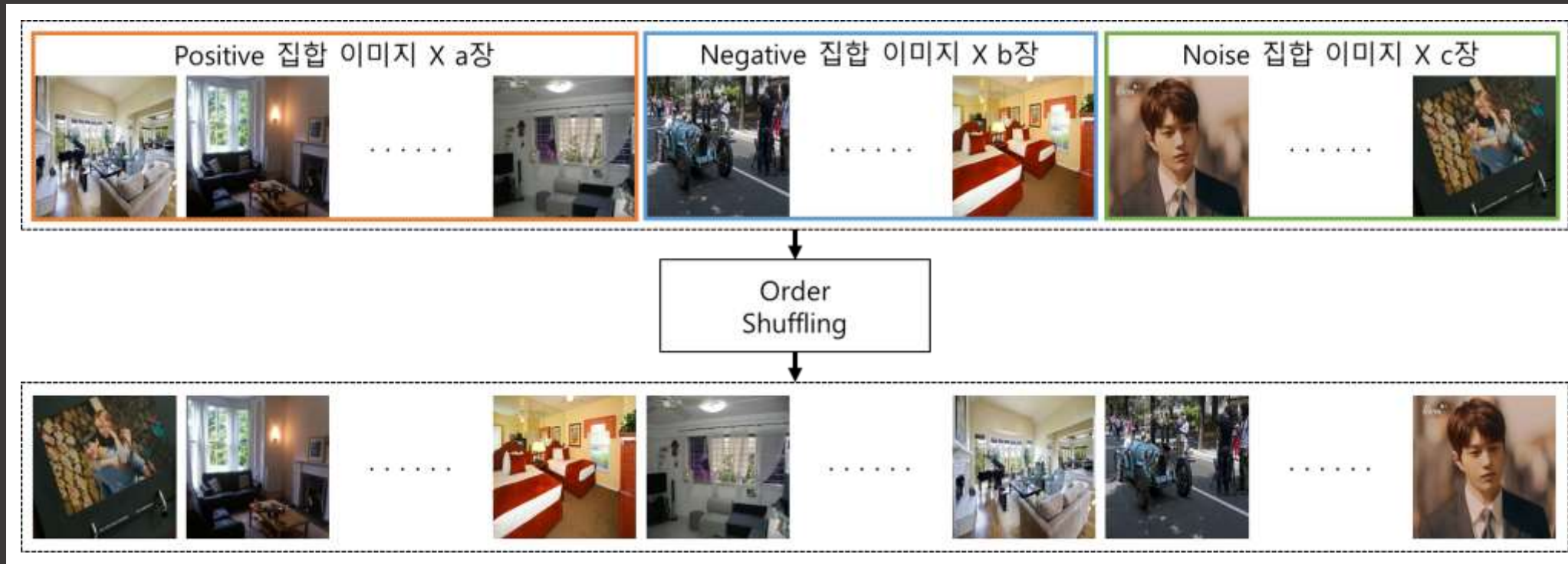


# Thesis

## A CNN-based Place Classifier with Attention Method for Scene-level Place Recognition in Broadcasting Video

### Methods

- There were not enough dataset for scene-level place recognition in video.
- To solve this problem, Use image-based dataset for training and validation the proposed methods.



# Thesis

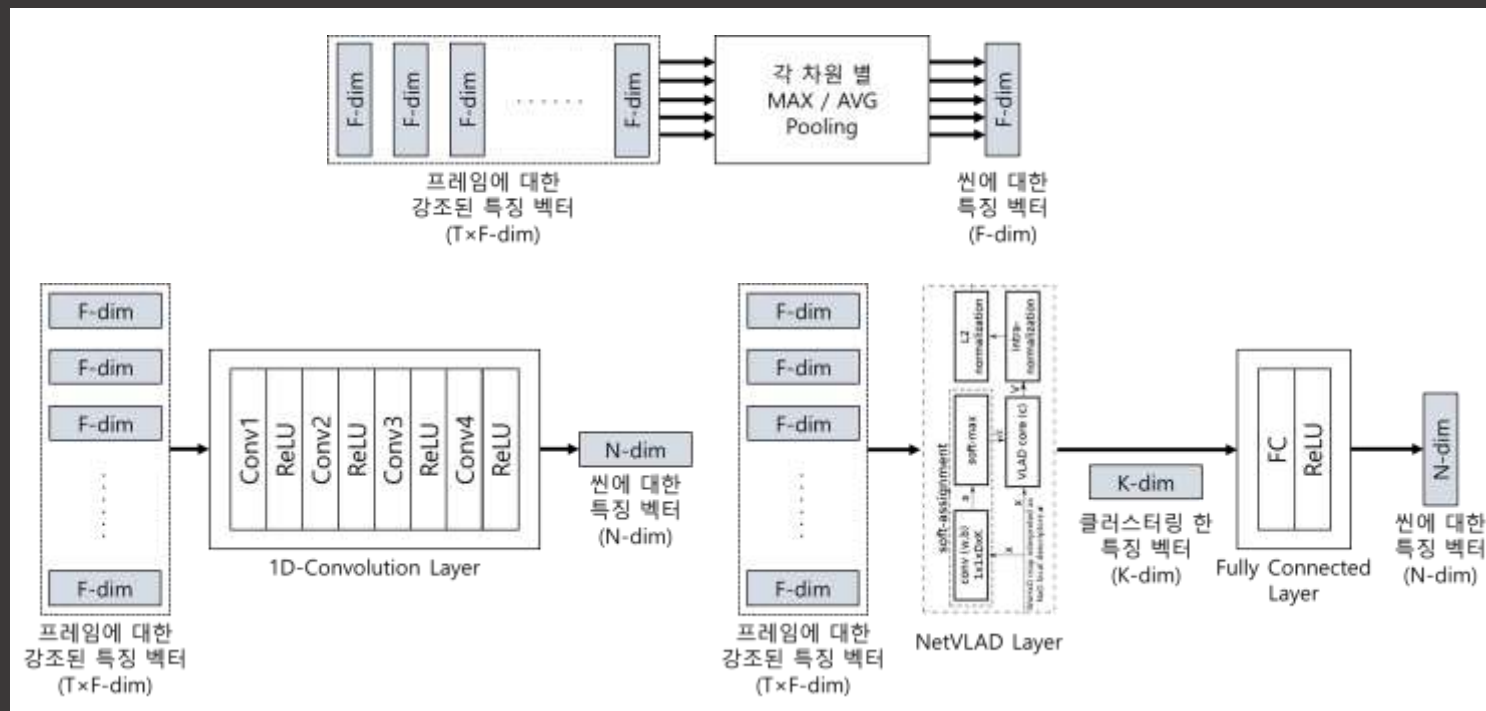
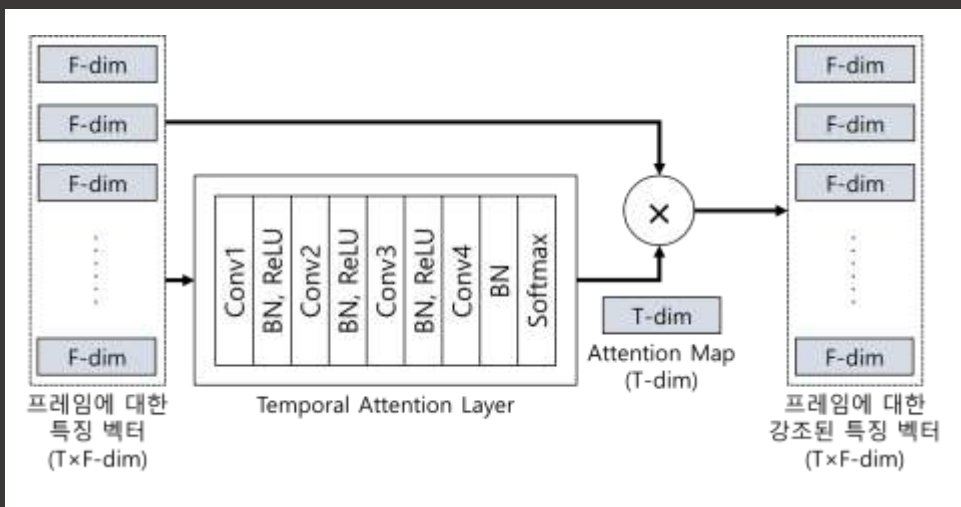
## A CNN-based Place Classifier with Attention Method for Scene-level Place Recognition in Broadcasting Video

### Methods

- The strength of each frame features are adjusted through attention method to improve performance
- And three methods are used to fuse feature: pooling, convolution, clustering

Method for  
feature fusion

### Attention Method





# Projects

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## Detection and Avoidance of Pet Excrement in Robotic Vacuum Cleaner

Software Engineer, Oct. 2016 - Nov. 2016

- Won 2nd prize from Consumer Electronics Hackathon held on Samsung Electronics SOSCON2016
- Developed object detection and avoidance algorithm in real time on Robot vacuum cleaner

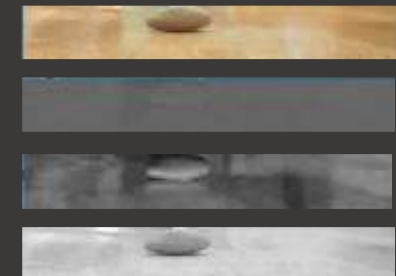
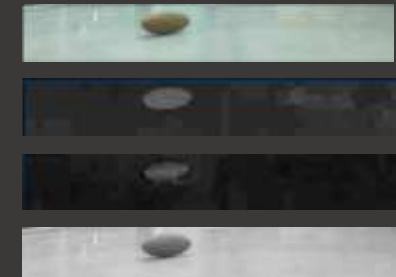
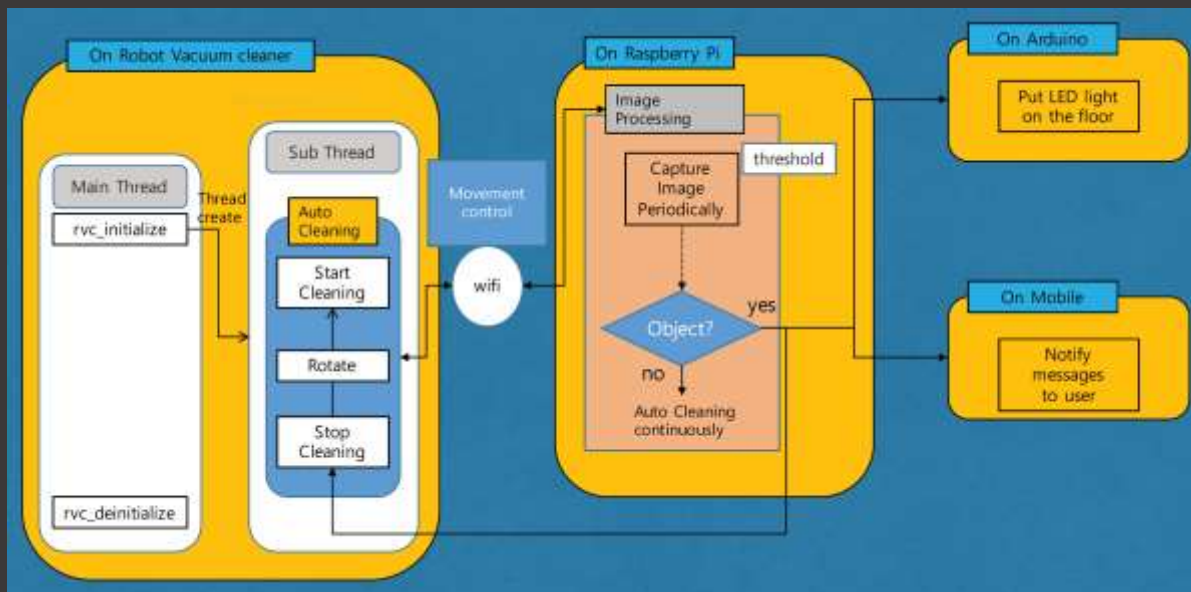


# Projects

## Detection and Avoidance of Pet Excrement in Robotic Vacuum Cleaner

Software Engineer, Oct. 2016 – Nov. 2016

- Limitations and Considerations
  - Embedded system with Tizen OS
  - Environment with many changes such as lighting, floor material, obstacles
  - Speed: detection and avoidance within 1.2 seconds



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# Projects

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## Detection and Avoidance of Pet Excrement in Robotic Vacuum Cleaner

Software Engineer, Oct. 2016 - Nov. 2016

- Results



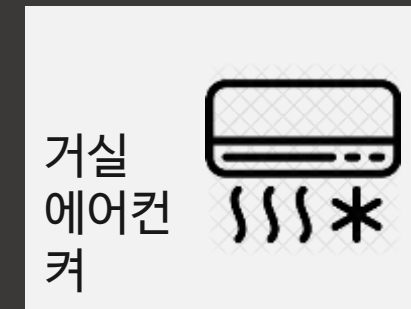
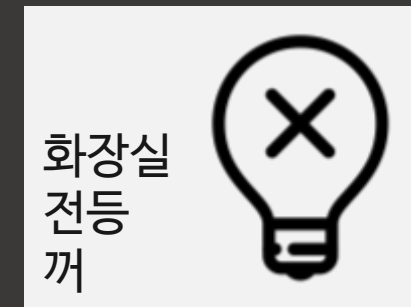
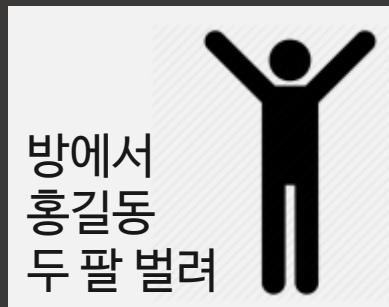
# Projects

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## User-specific Home IoT Device Control through Face and Motion Recognition

Leader & Software Engineer, Jul. 2017 - Aug. 2017

- Participated the 3rd T-Hackathon held on SK Telecom with NVIDIA
- Developed deep learning models for recognizing face and motion using NVIDIA Jetson TX2 board
- Designed to control home IoT device system

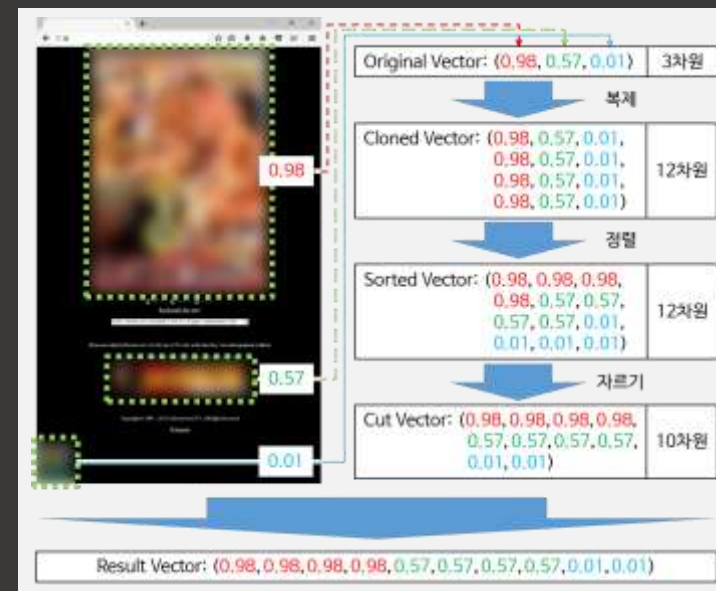


# Projects

## Adult Web Site Detection

Leader & Software Engineer, Aug. 2017 - Dec. 2017

- Developed system which detects whether the site includes adult content or not
- Detected region of interest on web site using computer vision techniques
- Binary classification to merge each probability of adult content result using SVM

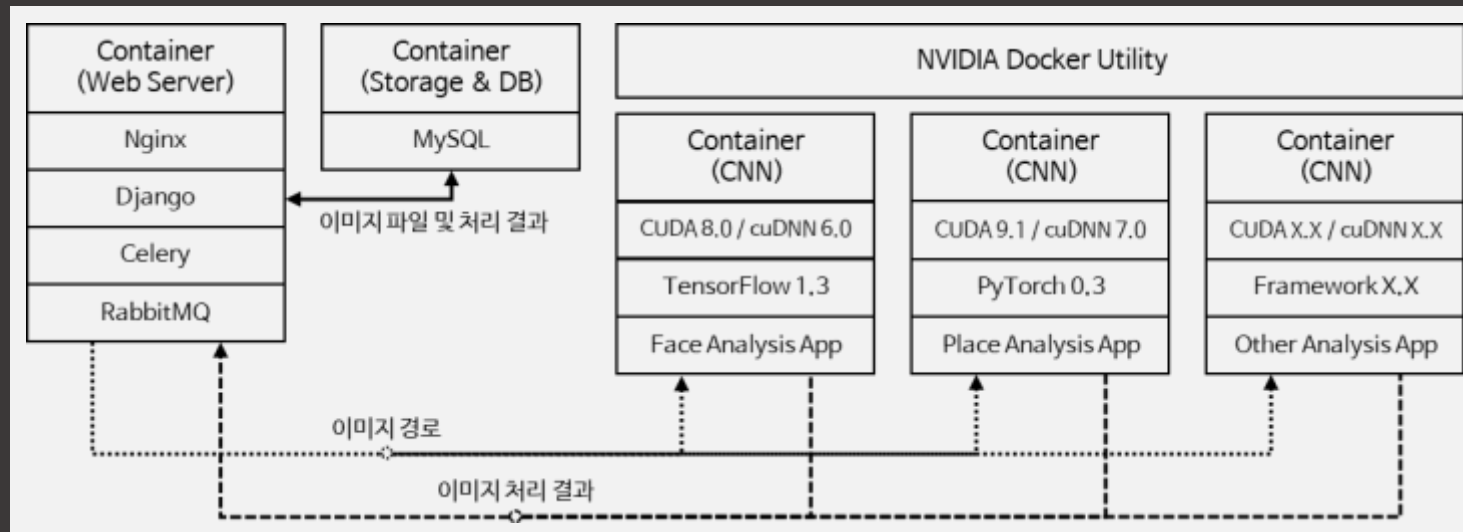


# Projects

## Semi-automatic Video Tagging Tool for Video Turing Test

Leader & Software Engineer, Jan. 2018 - Aug. 2019

- Participated researcher of Division 3 for Video Turing Test grant funded by Korea Government(MSIT)
  - Development of QA system for video story understanding to pass Video Turing Test & Data Collection and Automatic Tuning System Development for the Video Understanding
- Developed detection and recognition for semi-tagging
- Implemented RESTful API server to serving results which are consist of 3-DNN models for classifying actors, places and objects in video



# Projects

## Semi-automatic Video Tagging Tool for Video Turing Test

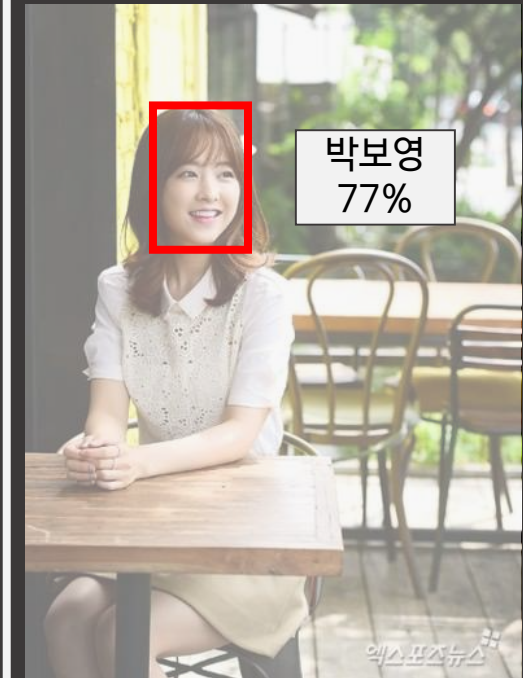
Leader & Software Engineer, Jan. 2018 - Aug. 2019



modules: face, place

### JSON Format

```
{
  "module": "face"
  "position": { "y": 104.0, "h": 80.0,
                "w": 60.0, "x": 105.0},
  "label": { "description": "박보영",
             "score": 0.77}
}
{
  "module": "place"
  "label": { "description": "restaurant_patio",
             "score": 0.52},
           { "description": "coffee_shop",
             "score": 0.19,}
}
```



식당 외부: 52%, 커피숍 19%

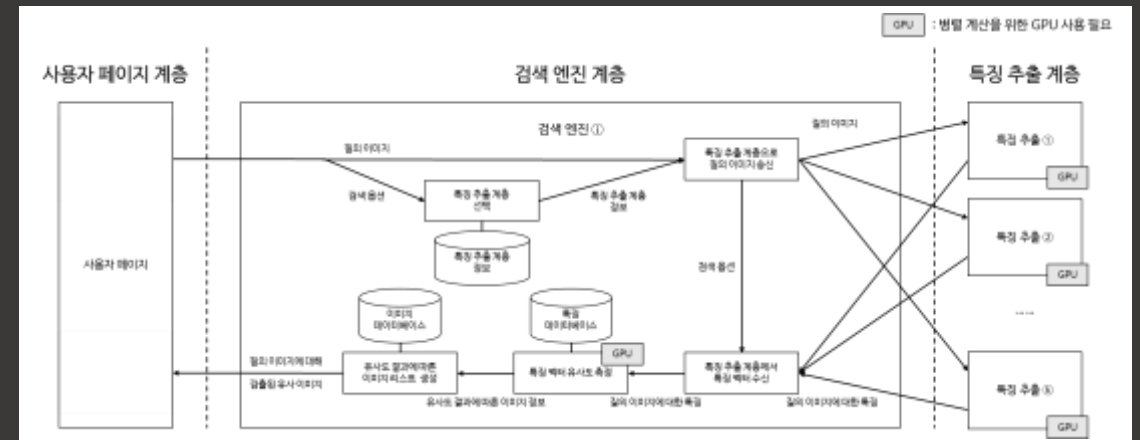
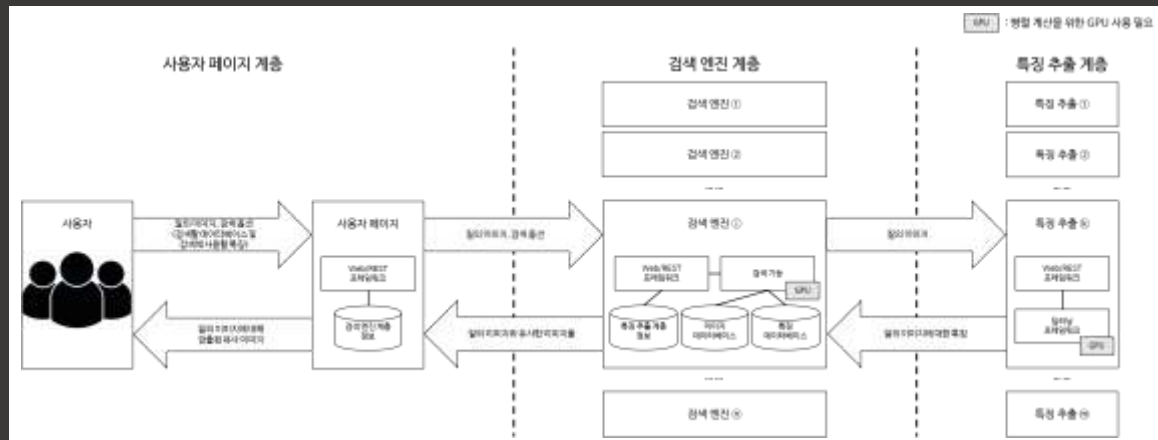


# Projects

## Online Image Retrieval using Deep Learning

Software Engineer, Sep. 2018 - Aug. 2019

- Developed Online contents based image retrieval system which is able to use in various domains such as fashion, clip-art and brand-logo
- Designed micro-service architecture for easily serving
- Implemented RESTful API server for application developers



# Projects

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## Large Scale Video Classification Challenge

Research Assistant, Aug. 2017 - Oct. 2017

- Rank 8th from Large Scale Video Classification Challenge 2017, Workshop on ACM Multimedia 2017
- Designed deep learning models, which consists of the frame segment encoder, the feature extractor and the feature fusion layer

## The 2nd YouTube-8M Video Understanding Challenge

Leader & Software Engineer, Jul. 2018 - Aug. 2018

- Rank 44th from The 2nd YouTube-8M Video Understanding Challenge, Workshop on ECCV 2018 (Team name: sogang-mm)
- Approached video classification using various deep representations
- Trying to various tasks to keep the challenge competition rules

# Projects

## Video Classification & Video Understanding

### YouTube-8M Classification Challenge Task

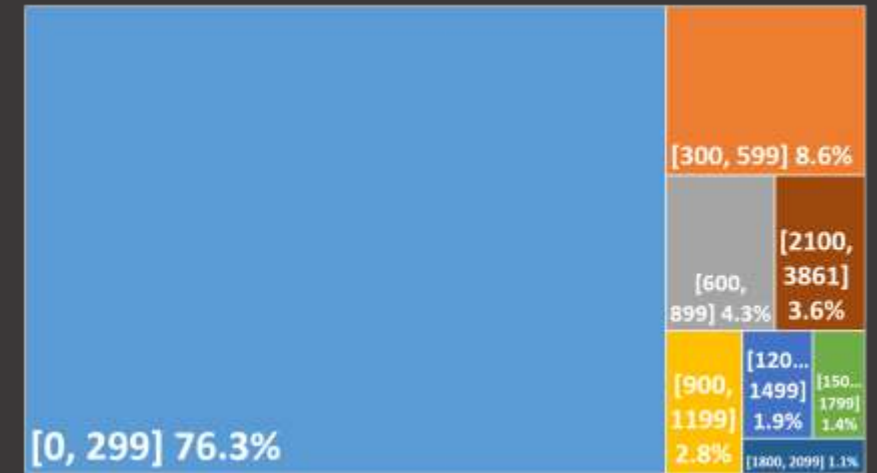


Korean Food	0.94
Cooking	0.87
Meat	0.73
Football	0.02

Machine Learning Model

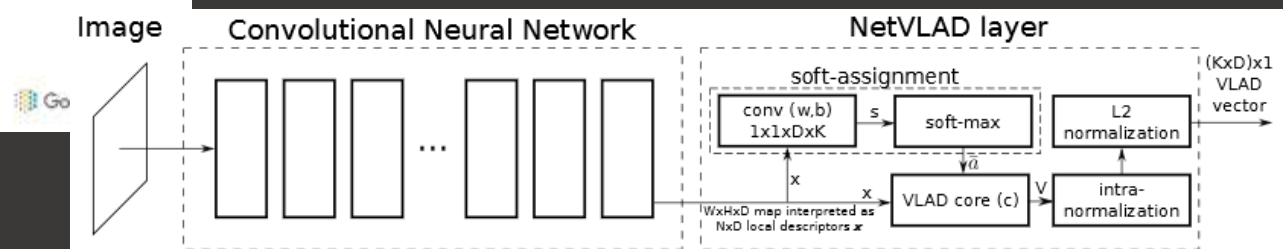
Inception v3

Summary of Challenge



Imbalance of training dataset

NetVLAD Architecture



# Projects

## Video Classification & Video Understanding

- **Approach for Video Classification with Multi-label on YouTube-8M Dataset** [\[pdf\]](#)  
*Kwangsoo Shin, Junhyeong Jeon, Seungbin Lee (Team sogang-mm, disqualified from rank 44)*

44	sogang-mm	0.86668
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# Publications

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## International Conferences

A New Frame Rate Up Conversion Quality Enhancement Method Using Deep Convolutional Neural Network and Temporal Difference Map

Sangchul Kim, Seungbin Lee, Kwangsoo Shin, Jongho Nang  
Proceeding of ICONI 2016

Approach for Video Classification with Multi-label on YouTube-8M Dataset

Kwangsoo Shin, Junhyeong Jeon, Seungbin Lee, Boyoung Lim, Minsoo Jeong, Jongho Nang  
Proceeding of The 2nd Workshop on YouTube-8M Large-Scale Video Understanding, ECCV 2018  
Available: [https://link.springer.com/chapter/10.1007/978-3-030-11018-5\\_29](https://link.springer.com/chapter/10.1007/978-3-030-11018-5_29)



# Publications

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## Domestic Conferences

### A Design of A Navigation Filter Integrated With A Magnetometer

Kwangsoo Shin, Byunggyu Ahn, Chongsuck Rim

Proceeding of KIISE 42<sup>nd</sup> Winter Conference

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE06602800>

### An Effective Subtitle Detection Method using Temporal Accumulation of Video Frames

Kwangsoo Shin, Jongho Nang

Proceeding of KIISE 43<sup>rd</sup> Winter Conference

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE07116205>

### Analyzing Graphic Area of Video Screen for an Effective Summarization of Baseball Video

Kwangsoo Shin, Jongho Nang

Proceeding of KCC 2017

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE07207854>

# Publications

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## Domestic Conferences

### An Adult Web Site Classification Method using Analysis of Multiple Images in Web Page

Kwangsoo Shin, Jinha Song, Jongho Nang

Proceeding of KSC 2017

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE07322326>

### A Design of Image Analysis System with Docker using Multiple Deep Learning Frameworks and Its Performance Comparison

Kwangsoo Shin, Minsoo Jeong, Hyekyoung Seok, Jongho Nang

Proceeding of KCC 2018

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE07503415>

### A Design of Scalable Contents-based Image Retrieval System for Various Applications using Deep Learning

Kwangsoo Shin, Minsoo Jeong, Rock Sakong, Jongho Nang

Proceeding of KSC 2018

Available: <http://www.dbpia.co.kr/Journal/ArticleDetail/NODE07613955>

# Awards

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**Excellence paper**, Undergraduate Paper Competition in KIISE 42nd Winter Conference

**2nd Prize**, Consumer Electronics Hackathon Robotic Vacuum Cleaner Part in  
Samsung Electronics SOSCON2016

**Best presentation paper**, KIISE 43rd Winter Conference

**Encouragement paper**, Undergraduate Paper Competition in KCC 2017

**Rank 8th**, Large Scale Video Classification, Workshop on ACM Multimedia 2017

**Best presentation paper**, KCC 2018

**Rank 44th**, The 2nd YouTube-8M Video Understanding Challenge, Workshop on ECCV 2018

# Thank You

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kwangsoo Shin