Kwangsoo Shin

Software Developer

 ksshin@kakao.com

 kwangsooshin

 kwangsooshin

Introduce

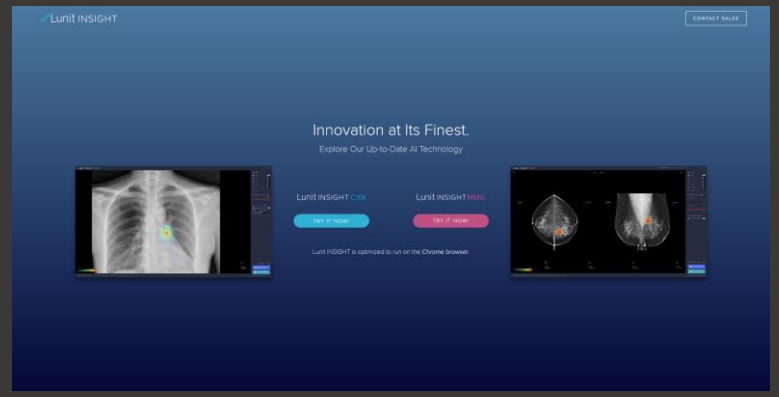
Careers

Lunit Inc.

Software Developer, Aug. 2019 - Present

- Developer of Lunit INSIGHT Backend server
- Maintain RESTful API for finding lesions in chest, breast and mammography X-ray
- Designed new feature for visualization of deep learning models analysis result

Lunit



Introduce

Education & Skills

Master's Degree

Sogang University
Computer Science and Engineering.
Multimedia System Lab. Advisor Professor Jongho Nang
Thesis: A CNN-based Place Classifier with Attention Method for scene-level Place Recognition in Broadcasting Video

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

Career

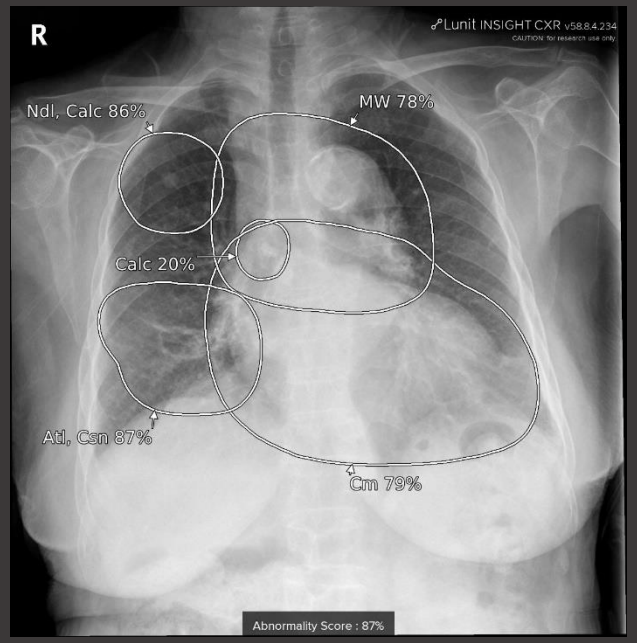
@ Lunit Inc.

Q1 2020

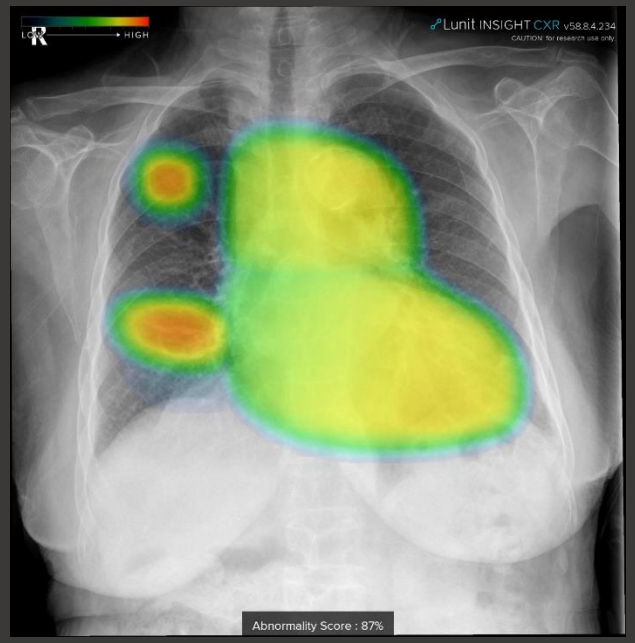
2020.01.01 – 2020.03.31

- Add unit test code and integrate with CI/CD Tool (Travis → Drone CI)
- Add new API to visualize the abnormality score with outline of each lesion in color

contour



heatmap



combined

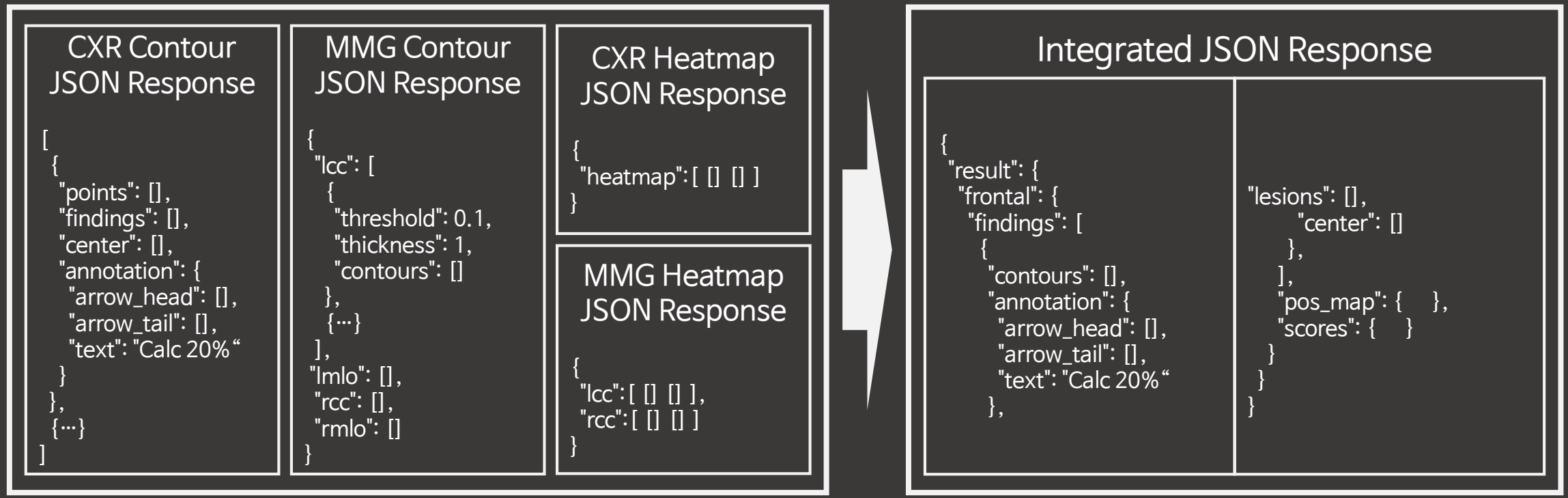
Career

@ Lunit Inc.

Q2 2020

2020.04.01 - 2020.07.31

- Change API JSON response to improve flexibility and standardization
- Add UDI(Unique Device Identification) system integration



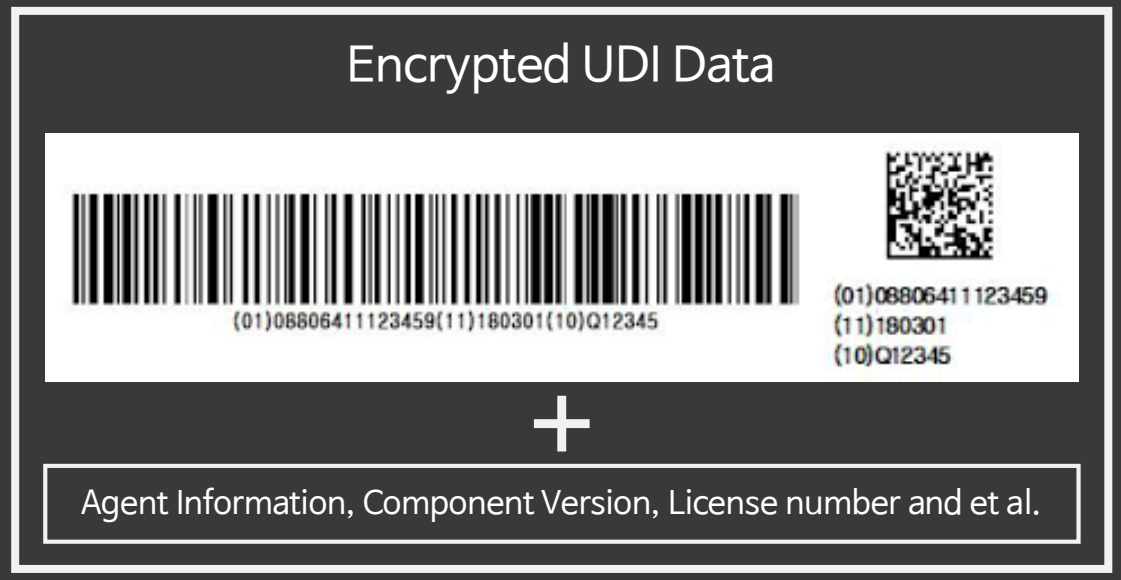
Career

@ Lunit Inc.

Q2 2020

2020.04.01 - 2020.07.31

- Change API JSON response to improve flexibility and standardization
- Add UDI(Unique Device Identification) system integration



decryption

- Validate each component is matched with UDI before prediction.
- Limit users who do not have permission.
- Return UDI for user after prediction.

UDI sample

INSIGHT-UDI	(01)8800076000063 (10)0MMGDCM020100013000 (20)00 (21)4GYCQ3PVS3

Career

@ Lunit Inc.

Q3 2020

2020.08.01 - 2020.10.30

- Add localization support
- Improve cyber security

English

CASE REPORT

Abnormality Score 87%

Atl	Atelectasis	87%	right lower
Calc	Calcification	35%	right upper
Cm	Cardiomegaly	79%	present
Csn	Consolidation	27%	right lower
Fib	Fibrosis	Low	-
MW	Mediastinal Widening	78%	present
Ndl	Nodule	86%	right upper
PEf	Pleural effusion	Low	-
Ppm	Pneumoperitoneum	Low	-
Ptx	Pneumothorax	Low	-

French

ÉTUDE DE CAS

Abnormality Score 87%

Atl	Atélectasie	87%	inférieure droite
Calc	Calcification	35%	supérieure droite
Cm	Cardiomégalie	79%	présence
Csn	Consolidation	27%	inférieure droite
Fib	Fibrose	Faible	-
MW	Élargissement Médiastinal	78%	présence
Ndl	Nodul	86%	supérieure droite
PEf	épanchement Pleural	Faible	-
Ppm	Pneumopéritoine	Faible	-
Ptx	Pneumothorax	Faible	-

Russian

ОТЧЕТ ПО КЛИНИЧЕСКОМУ СЛУЧАЮ

Abnormality Score 87%

Atl	ателектаз	87%	правая нижняя
Calc	кальцификация	35%	правая верхняя
Cm	кардиомегалия	79%	Присутствует
Csn	консолидация	27%	правая нижняя
Fib	фиброз	Низкая	-
MW	расширение тени средостения	78%	Присутствует
Ndl	узелок	86%	правая верхняя
PEf	плевральный выпот	Низкая	-
Ppm	пневмоперитонеум	Низкая	-
Ptx	пневмоторакс	Низкая	-

Spanish

INFORME DE CASO

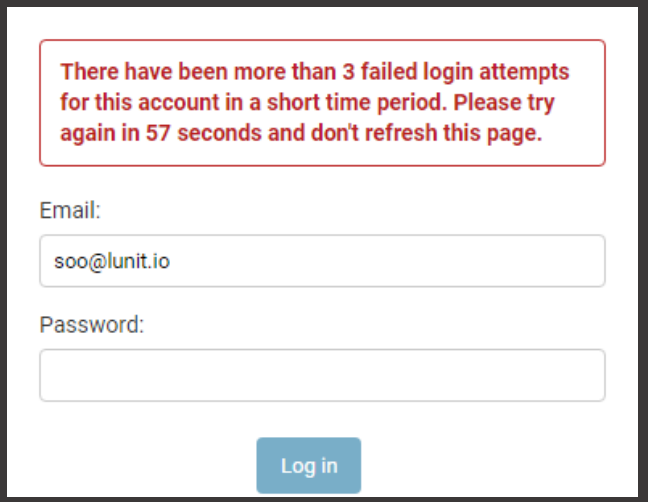
Abnormality Score 87%

Atl	Atelectasia	87%	inferior derecha
Calc	Calcificación	35%	superior derecha
Cm	Cardiomegalia	79%	presencia
Csn	Hepatización	27%	inferior derecha
Fib	Fibrosis	Baja	-
MW	Ensanchamiento Mediastínico	78%	presencia
Ndl	Nódulo	86%	superior derecha
PEf	derrame Pleural	Baja	-
Ppm	Neumoperitoneo	Baja	-
Ptx	Neumotórax	Baja	-

Support
9 languages:

- English
- German
- Spanish
- French
- Italian
- Norwegian
- Portuguese
- Russian
- Swedish

Prevent Login brute-force attacks



Thesis

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

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
  - 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

Training & Validations

- 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.

Projects

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

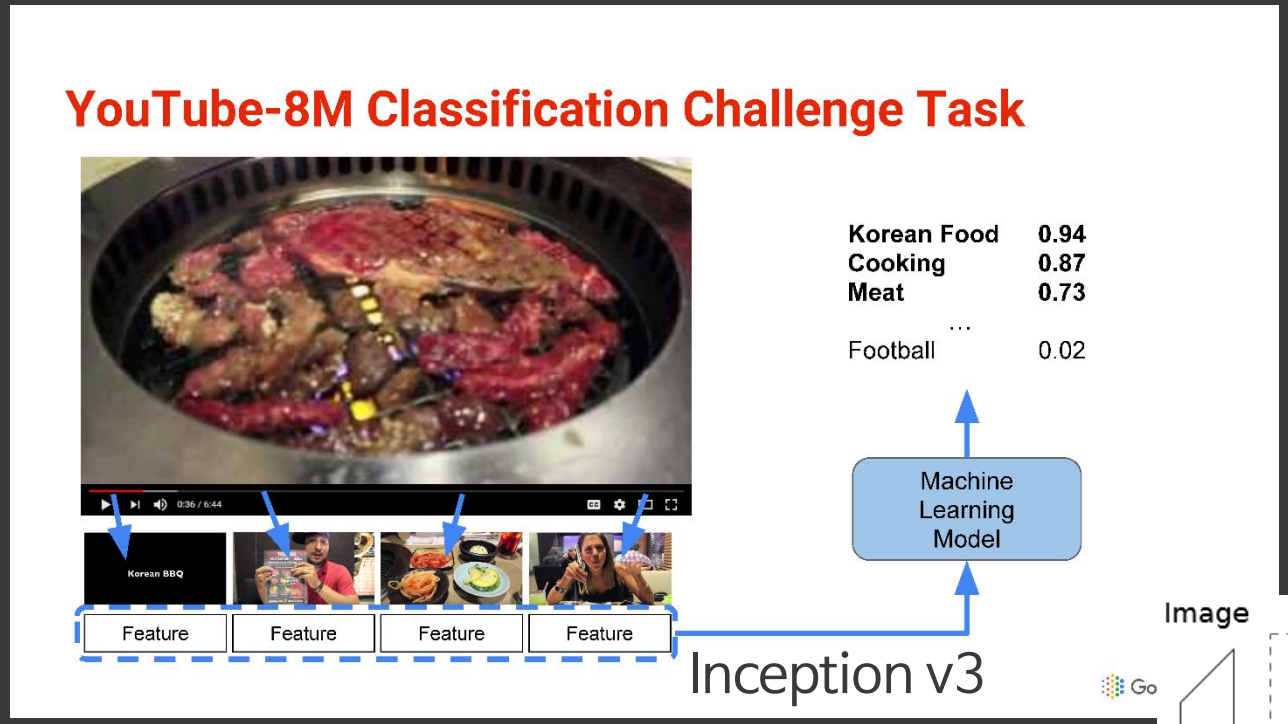
The 2nd YouTube-8M Video Understanding Challenge

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

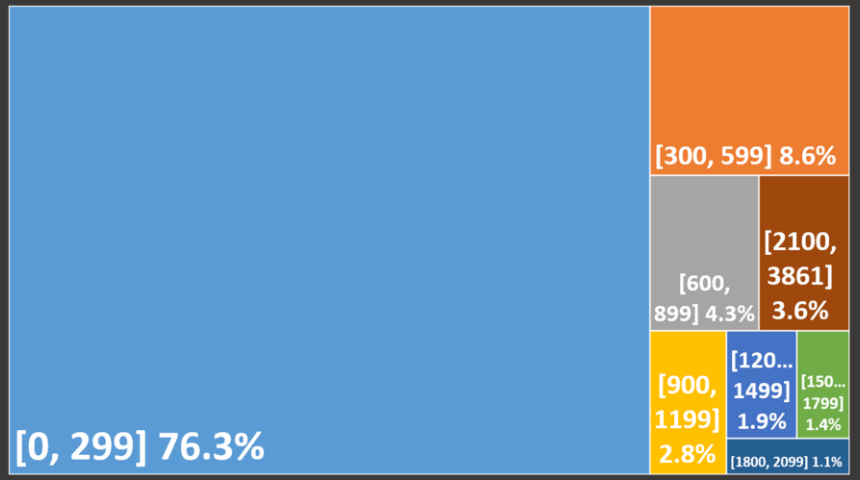
- Rank 44th from The 2nd YouTube-8M Video Understanding Challenge, Workshop on ECCV 2018 (Team name: sogang-mm)
- Approached video classification using various deep representations
- Trying to various tasks to keep the challenge competition rules

Projects

Video Classification & Video Understanding

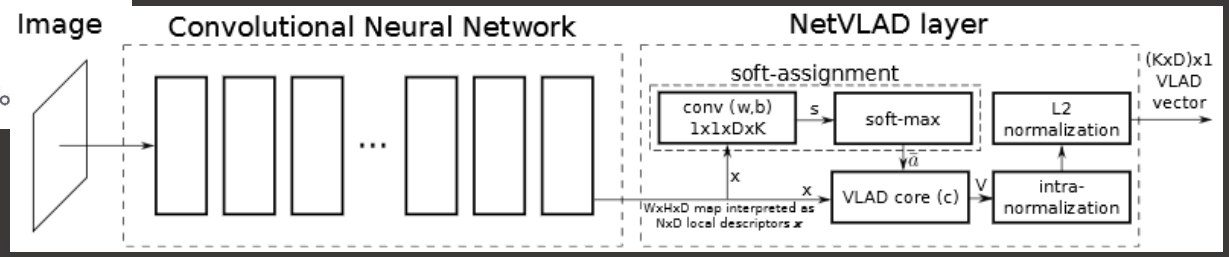


Summary of Challenge



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)

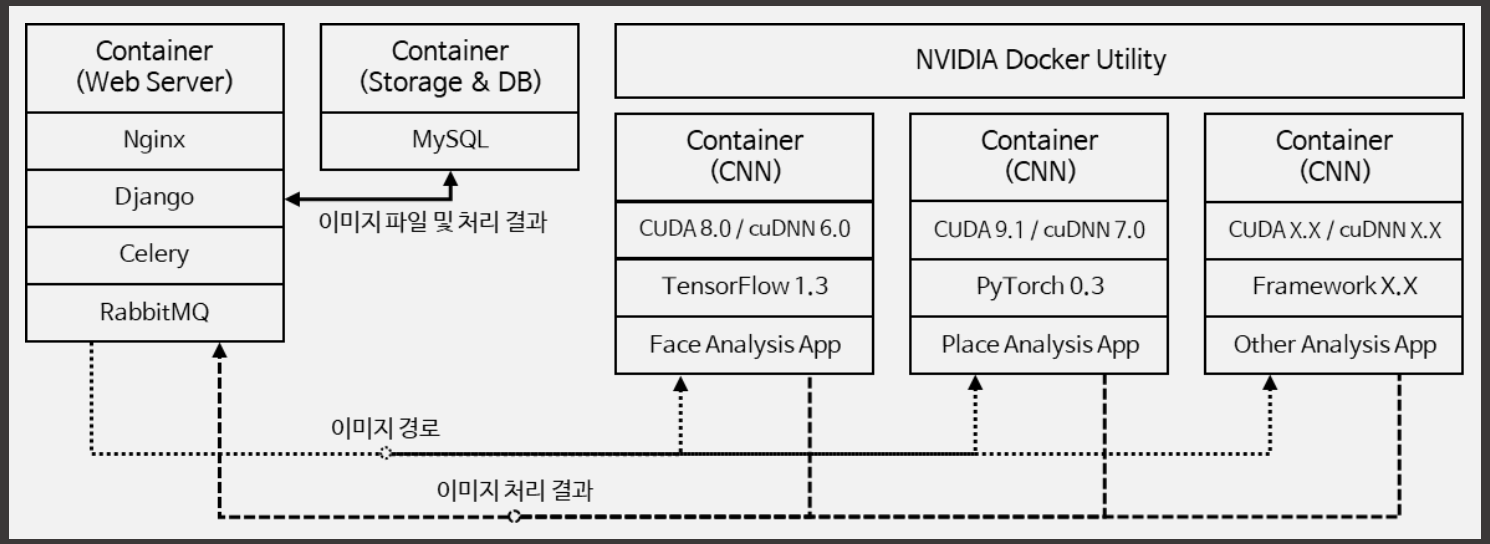
44	sogang-mm	0.86668

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

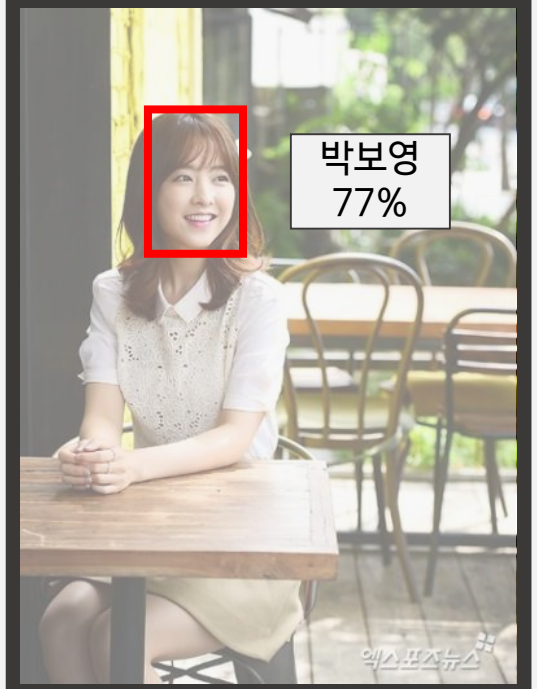
Semi-automatic Video Tagging Tool for Video Turing Test

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,}
}
```

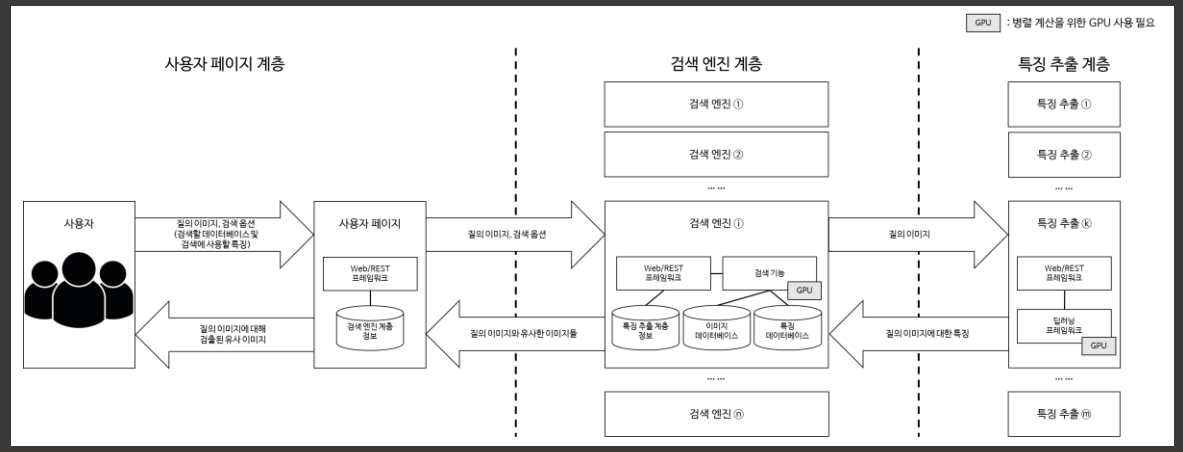
식당 외부: 52%, 커피숍 19%

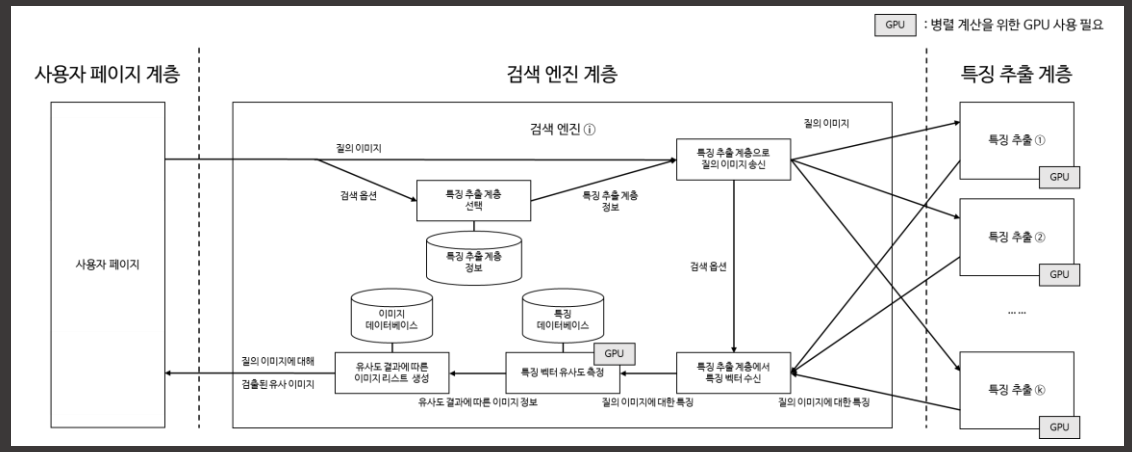
Projects

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



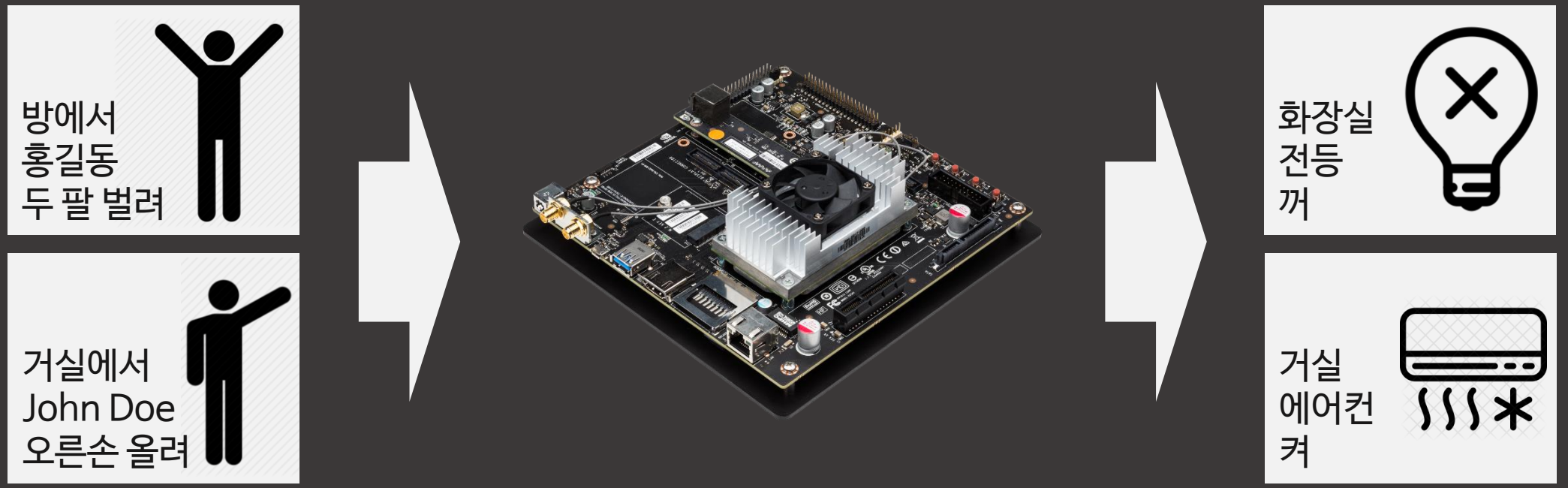


Projects

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

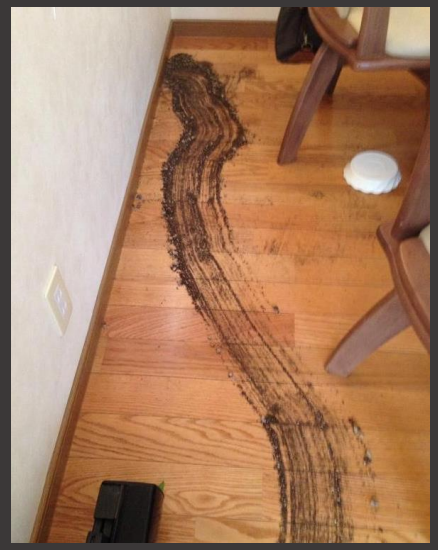


Projects

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

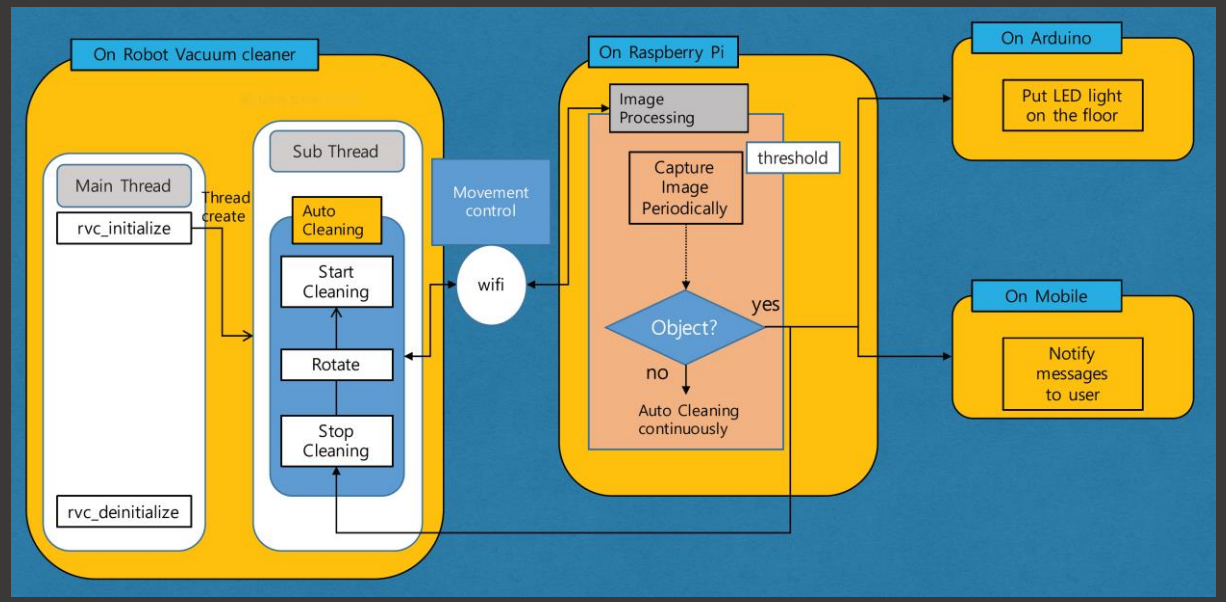


Projects

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

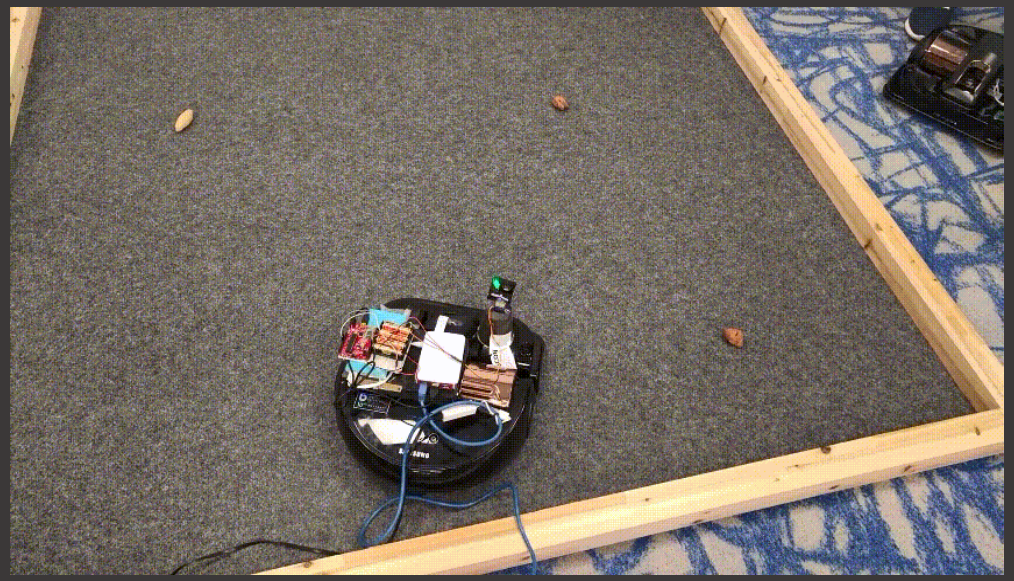


Projects

Detection and Avoidance of Pet Excrement in Robotic Vacuum Cleaner

Software Engineer, Oct. 2016 - Nov. 2016

- Results

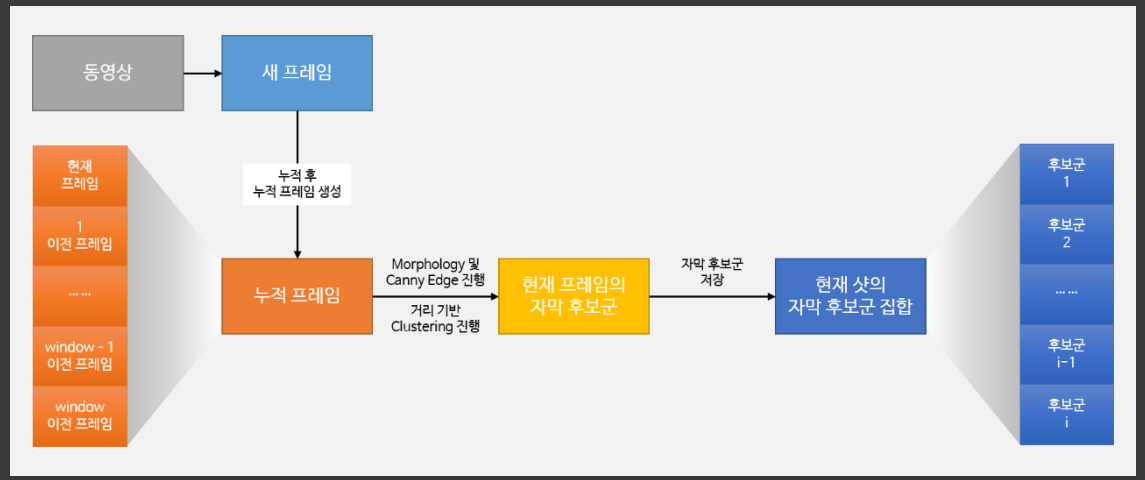


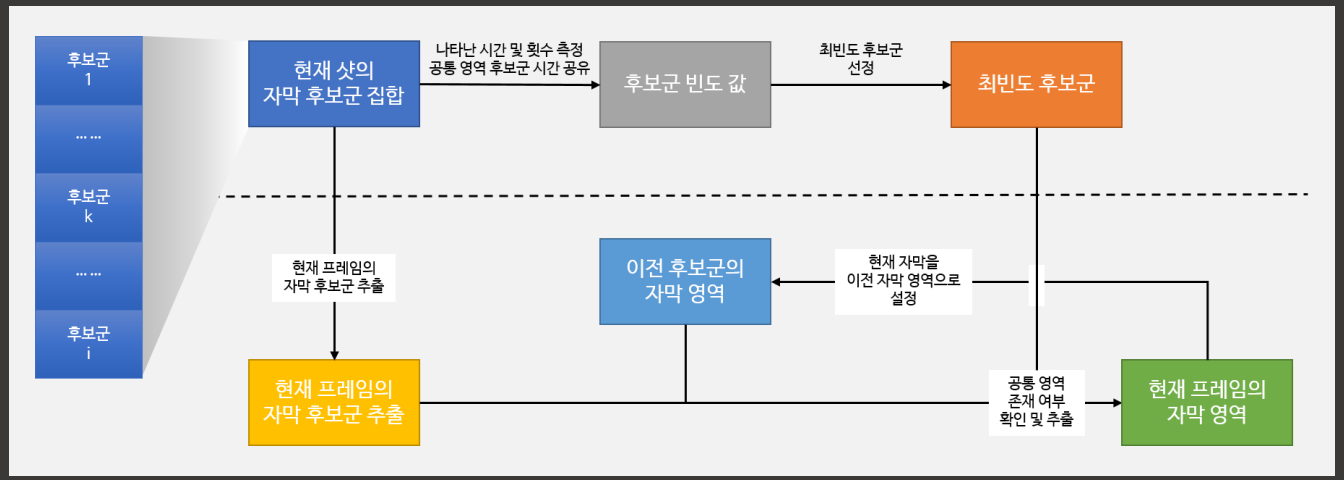
Projects

An Effective Subtitle Detection Method using Temporal Accumulation of Video Frames

Software Engineer, Oct. 2016 - Nov. 2016

- Developed subtitle detection method using frame superposition
- Sum the pixel values at the same weight for all frames in the windows for blurring the movement
- Extract subtitle candidate group from post-processing result
- Select the final subtitle position from candidate group by comparing previous positions





Projects

An Effective Subtitle Detection Method using Temporal Accumulation of Video Frames

Software Engineer, Oct. 2016 - Nov. 2016

Original video frames

Superposition frames in the windows

Projects

An Effective Subtitle Detection Method using Temporal Accumulation of Video Frames

Software Engineer, Oct. 2016 - Nov. 2016

- Results

Publications

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

Publications

Domestic Conferences

A Design of A Navigation Filter Integrated With A Magnetometer

Kwangsoo Shin, Byunggyu Ahn, Chongsuck Rim
Proceeding of KIISE 42nd 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 43rd 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

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

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

kwangsoo Shin