Min Jung. **Shin**

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Education

Kwangwoon University — *Mar. 2016 - Exp. Feb. 2021*

Major in Electronics & Communications Engineering — *Seoul, S.Korea*

- Major GPA of 4.14/4.5
- Total GPA of 4.00/4.5

Work Experience

Real Time Signal Processing Lab — *Undergraduate Research Students*

Kwangwoon University — *Jul. 2019 - Jul.2020*

- Design deep learning model using image signals and biometric signals

Electronics and Telecommunications Research Institute(ETRI) — *Intern*

Artificial Intelligence Research Laboratory

Intelligent Robotics Ulsan Research Section of Intelligent Robotics Research Division — *Jan. 2019 - Feb.2019*

- Implemente DORE-MTCNN (Tensorflow version1)
- Review Face detection model paper
- Preprocessing image data

Real Time Architecture Lab — *Undergraduate Research Students*

Kwangwoon University — *Dec. 2017 - Dec.2018*

- Video processing tasks using embedded boards
- Implement digital logit circuits with Verilog

Publication

Detectable Object-Sizes Range Estimation Based Multi-Task Cascaded Convolutional Neural Networks in the Vehicle Environment — *3rd Author*

2019 IEEE 90th Vehicular Technology Conference (VTC 2019-Fall)

- Propose the Detectable Object-sizes Range Estimation algorithm (DORE) to estimate the range of detectable face sizes through specific information in the vehicle environment.
- Achieve half of the processing time (MTCNN: about 32ms / DORE-MTCNNN: about 16 ms) with the same accuracy (95.98% on the basis of the NTHU-DDD dataset).

Awards & Honors

Award

2018	**Finalist,** 10th Engineering Design Camp - Control of Drone	*S.Korea*
2017	**Incentive Award,** Portfolio Competition	*Kwangwoon Univ*

Honors

2019	**Academic Scholarship,** awarded to students with high achievements throughout the semester	*Kwangwoon Univ*
2018	**Academic Scholarship,** awarded to students with high achievements throughout the semester	*Kwangwoon Univ*
2017	**Academic Scholarship,** awarded to students with high achievements throughout the semester	*Kwangwoon Univ*

Project Experience

Emotional Voice Conversion using GAN

Apr. 2020 - Jul. 2020

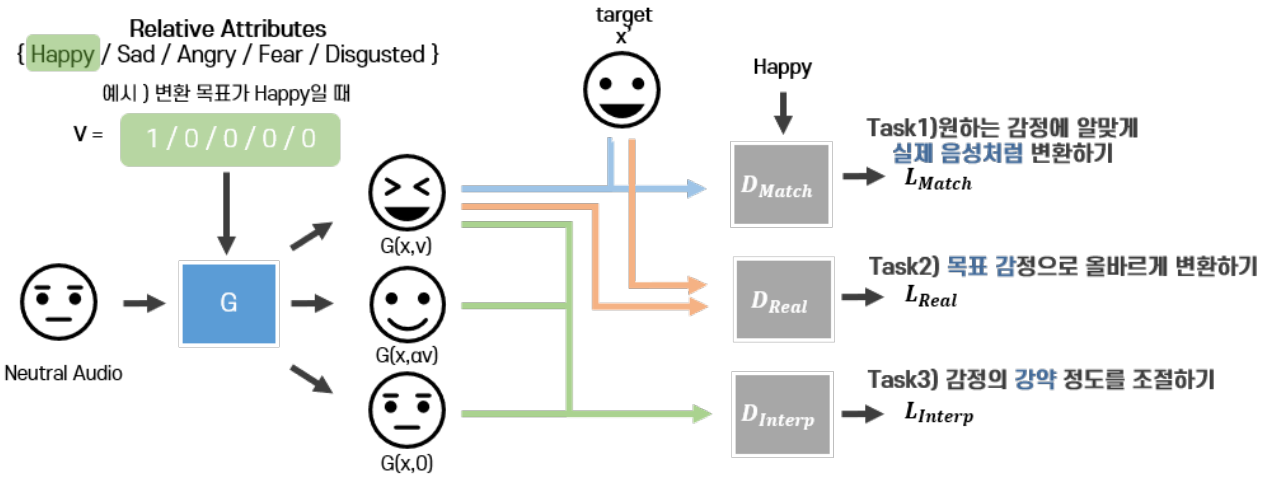

Figure 1: Model structure

Overview

- Generate a new voice by selecting the target emotion and degree for the target emotion
- By extracting the fundamental frequency and spectral envelop of voice data, train multi domain and interpolation with RelGAN
- Implement web page and application

Roles & Responsibilities

- Preprocessing speech data
- Review Generative model paper
- Implement a model that applies WORLD Vocoder and CycleGAN VC2 to AttGAN and RelGAN (Tensorflow version 1)

Link

- 10th Tobigs' Conference presentation link
- Project Notion link

Driver Drowsiness Detection using Video and PPG-sensor

Aug. 2019 - Jun. 2020

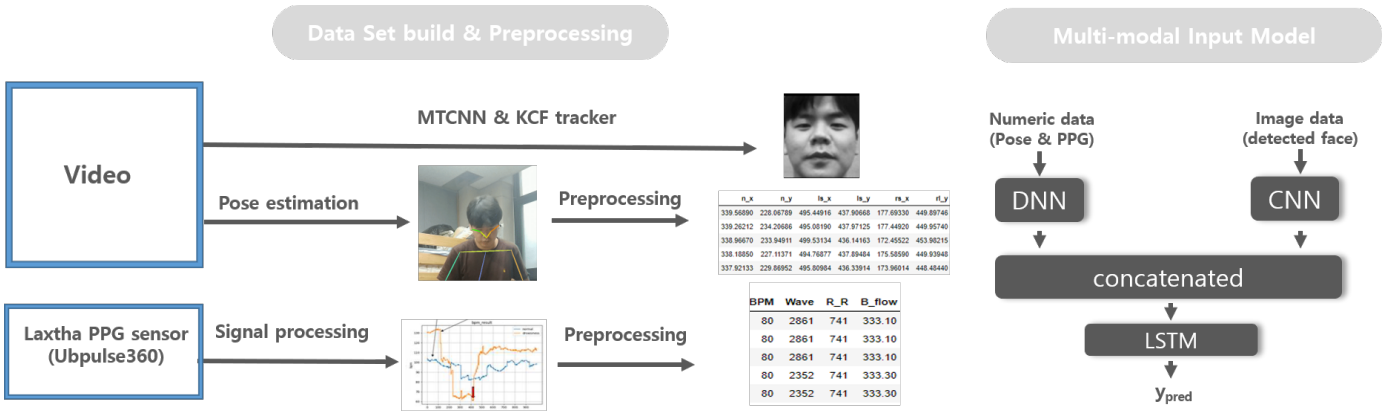

Figure 2: Model Architecture

Overview

- Detecte driver drowsiness condition by video and biometric signals in real time
- Detecte driver face using MTCNN&KCF-trakcer and estimate pose using Alpha-pose in real time
- Extract PPG data through serial communications with Ubpulse360
- Design Multi-modal input model for use with image and biometric signals
- Optimize for Jetson TX2 and Jetson Xavier

Roles & Responsibilities

- Team Leader & Main Coder
- Detect the driver's face with the MTCNN and use the KCF tracker for missing parts
- Design and implement a model architecture (Tensorflow version 2)

Link

- Code & presentation video & Report

Super Resolution

Jun. 2020

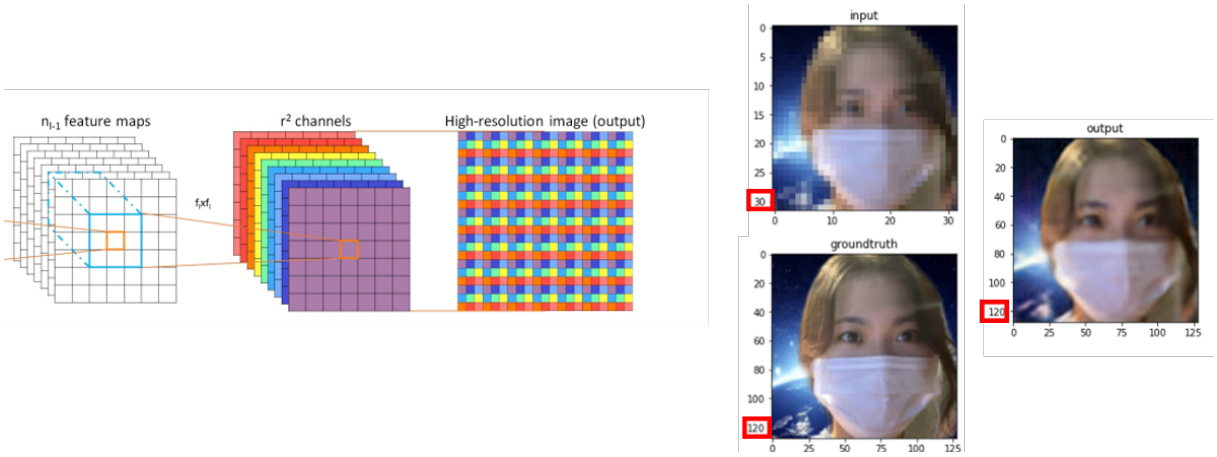

Figure 3: Sub-pixel Convolution Layer & Result

Overview

- Shallow CNN-based super resolution using Sub-pixel convolution layer without using GAN for fast training and fast inference time
- Total parameters: 1,378,912

Link

- Code & presentation video & Report

Smart Signal Lamp System using Object Detection

May. 2019 - Aug. 2019

Overview

- Control the Signal lamp system by distinguishing the disabled, the elderly and the young
- Recognize pedestrians by detecting auxiliary tools such as wheelchairs and walking sticks
- Notifications through cloud servers when critical situations are detected

Roles & Responsibilities

- Object detection using YOLO
- Optimized for ARTIK

Etc

Electronic Circuit Project

- Fire Notification System using MOSFET and Raspberry-PI
- Frequency Harmonic Generator with Digital Logic Circuit

Extracurricular Activity

Tobigs' *Jan. 2020 - PRESENT*

13th Member

- Big data and AI study club
- Machine learning & Deep learning session for 10 weeks
- In-depth study through seminars in areas of interest for 8 weeks
- Holding a conference
- Tobigs' Official Homepage Link
- 12&13th member Gitbook Link
- 12&13th member Audio Seminar Link
- 13&14th Google-site Link (2020.07-present)

A-Doong Ba-Doong *Mar. 2016 - PRESENT*

Member

- Social club of the department of electronics & communications engineering, kwangwoon University

Kwang Woon Broadcasting Center (KWBC) *Jul. 2016 - Apr.2017*

PD

- University campus broadcasting station

DITTO *Mar. 2016 - Feb. 2017*

Member

- Programming club of the department of electronics & communications engineering, kwangwoon University

Research Intetest

Image Generation

create a new image using Deep Generative Model

- A research on the image-to-image translation
- A research on the text-to-image translation

Image Restoration

Denoising, Super Resolution

- A research on the removing noise from image
- A research on the enhancement image resolution

Human Analysis

Face & Pose

- A research on the face detection,tracking,recognition
- A research on the pose estimation,tracking

Skills

Programming	C, Python, Verilog, Assembly
Deep Learning	Tensorflow, Keras, Pytorch
Data Analysis	Numpy, Pandas, Matplotlib, seaborn, scikit-learn
Platform	Jetson TX2, Jetson Xavier, ARTIK, Raspberry-Pi, DE1-SoC, Arduino