JUNAM SONG

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EDUCATION

Kyungpook National University, South Korea *March 2008 - August 2014*
B.S. in Electronics Engineering

KAIST, South Korea *September 2014 - August 2016*
M.S. in Electrical Engineering

CAREER OBJECTIVE

Building AI solutions to meet our needs. And I believe that the plausible methodology itself is meaningless if it is not possible to implement what was thought.

PROJECTS

Face detection in surveillance system
In video surveillance system, the exposure of a persons face is a serious threat to personal privacy. To protect the personal privacy in large amount of videos, an automatic face detection method is required to locate and mask the persons face.

Low light image enhancement technology on sensor ISP
Noise in low-light environments is a major cause of sensor image quality degradation. In order to improve the image quality deterioration, multi-frame image denoising was applied.

Dual camera solution on sensor ISP
Image synthesis technology using heterogeneous dual cameras was developed.

Deep learning based segmentation solution on mobile devices
Deep learning-based segmentation was developed and applied to get more bokeh effect in portrait mode.

Deep learning based image recovery solution to achieve yield improvements from a to z
As the pixels of the sensor become finer, the production yield decreases. Accordingly, a deep learning-based image restoration algorithm was developed to bring dead pixels to life.

TECHNICAL STRENGTHS

Languages	C, C++, Python, Matlab
Technologies	Latex
Tools	Tensorlow, Tensorflow Lite, Pytorch, Caffe
Accelators	GPU, XNNPACK, NNAPI
Version Control	Github

WORK EXPERIENCE

Samsung Electronics Intership Program, South Korea January 2015 - January 2015
Intern

· It was time to understand the overall flow of image processing methods that are essential for mobile image sensors.

Samsung Electronics, South Korea August 2016 - Present
Engineer

· Below, the description focuses on working experiences related to deep learning.

· Face detection and tracking algorithms were used to design systems that automatically detect human faces in surveillance environments. In particular, deep learning-based face detector was ported to the C level and integrated into the system.
· As part of the application of the dual photodiode sensor, a bokeh solution was developed by fusion of segmentation technology and the depth map using phase information. The architecture of segmentation was designed from the previously proposed Deeplab. And an attempt was made to apply the quantization aware training methodology to highly optimize the architecture.
· Image recovery solution to defect data has been developed, and released to industrial field. The following process was involved in commercializing AI solutions for the first time as a practical engineer: find points where deep learning technology can be applied, define problem statements, create scenarios for the entire system using SOTA technology in deep learning, and build optimized systems using tensorflow lite and accelerators in a mobile environment. This is the first case of mass production to apply self-developed deep learning technology.

ACHIEVEMENTS

National Science and Engineering Undergraduate Scholorship   *March 2008 - February 2014*

PUBLICATIONS

Junam Song, Seung Ho Lee, Hyung-Il Kim, and Yong Man Ro "Fast Face Detection Robust to Low Illumination for Privacy Protection in Large-scale Surveillance Video," Korea Multimedia society, vol. 18, no. 2, pp. 30-33, Nov. 2015.

Junam Song, Hyung-Il Kim, and Yong Man Ro "Robust and Fast Face Detection using CNN based Facial Component Heat Map and Face Bound Regression," Journal of Korea Multimedia society, vol. 19, no. 8, pp. 1310-1319, August. 2016.