# TAEOH **KIM**

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Ph. D. Candidate in Yonsei University

Image and Video Pattern Recognition Lab. (mvp.yonsei.ac.kr)
School of Electrical and Electronic Engineering
Yonsei University, Seoul, South Korea

*Thesis Advisor: Professor Sangyoun Lee*

## RESEARCH TOPICS

- **Computer Vision**: Image/Video Restoration/Generation, Video Action Recognition, Face Recognition, Object Tracking/Segmentation
- **Machine Learning**: Generalization/Robustness, Lightweight Models

## SKILLS

- **Language**: Korean, English
- **Programming**: Python/C++
- **DL Framework**: PyTorch, Tensorflow

## EXPERIENCE

**12/2020 – Present**
**Research Intern**
Clova AI, Naver Corp.
Seongnam, Gyeonggi, South Korea

## EDUCATION

**03/2015 – Present (- 08/2021)**
**Ph. D.**
School of Electrical and Electronic Engineering, GPA 4.23 / 4.3
Yonsei University, Seoul, South Korea

**03/2009 – 02/2015**
**B. S.**
School of Electrical and Electronic Engineering, GPA 3.75 / 4.3
Yonsei University, Seoul, South Korea

# PUBLICATIONS

## ArXiv Preprints / Submitted Papers

### Geometry-Aware Deep Video Deblurring via Recurrent Feature Refinement
**Taeoh Kim**, Sangyoun Lee
Under Review: IEEE Transactions on Image Processing (IEEE TIP)

### Unsupervised Video Anomaly Detection via Flow-based Generative Modeling on Appearance and Motion Latent Features
MyeongAh Cho, **Taeoh Kim**, Sangyoun Lee
Arxiv Preprint: 2010.07524
Equal Contribution

### Enhanced Standard Compatible Image Compression Framework based on Auxiliary Codec Networks
Hanbin Son, **Taeoh Kim**, Hyeongmin Lee, Sangyoun Lee
Arxiv Preprint: 2009.14754
Under Review: IEEE Transactions on Image Processing (IEEE TIP)

### Smoother Network Tuning and Interpolation for Continuous-level Image Processing
Hyeongmin Lee, **Taeoh Kim**, Hanbin Son, Sangwook Baek, Minsu Cheon, Sangyoun Lee
Arxiv Preprint: 2010.02270
Equal Contribution

## Journals

### Relational Deep Feature Learning for Heterogeneous Face Recognition
MyeongAh Cho, **Taeoh Kim**, Ig-Jae Kim, Kyungjae Lee, Sangyoun Lee
IEEE Transactions on Information Forensics and Security (IEEE TIFS)
07/2020 Published

### Sampling Operator to Learn the Scalable Correlation Filter for Visual Tracking
Minkyu Lee, **Taeoh Kim**, Sungyeol Song, Yuseok Ban, Sangyoun Lee
IEEE Access
01/2020 Published

# Conferences

## AIM 2020 Challenge on Image Extreme Inpainting
E. Ntavelis, ..., Chajin Shin, **Taeoh Kim**, Hanbin Son, Sangyoun Lee, ... (47 Authors)
European Conference on Computer Vision Workshop (ECCVW) 2020
Advances in Image Manipulation Workshop and Challenges: Challenge Report

## Learning Temporally Invariant and Localizable Features
## via Data Augmentation for Video Recognition
<u>Taeoh Kim</u>, <u>Hyeongmin Lee</u>, <u>MyeongAh Cho</u>, Hoseong Lee, DongHeon Cho, Sangyoun Lee
European Conference on Computer Vision Workshop (ECCVW) 2020
1st Visual Inductive Priors for Data Efficient Deep Learning Workshop
Oral Presentation, <u>Equal Contribution</u>

## Extrapolative-Interpolative Cycle-Consistency Learning
## for Video Frame Extrapolation
Sangjin Lee, Hyeongmin Lee, **Taeoh Kim**, Sangyoun Lee
IEEE International Conference on Image Processing (ICIP) 2020

## AdaCoF: Adaptive Collaboration of Flows for Video Frame Interpolation
Hyeongmin Lee, **Taeoh Kim**, Tae-young Chung, Daehyun Pak, Yuseok Ban, Sangyoun Lee
International Conference on Computer Vision and Pattern Recognition (CVPR) 2020

## SF-CNN: A Fast Compression Artifacts Removal via Spatial-to-Frequency
## Convolutional Neural Networks
**Taeoh Kim**, Hyeongmin Lee, Hanbin Son, Sangyoun Lee
IEEE International Conference on Image Processing (ICIP) 2019

## NIR-to-VIS Face Recognition via Embedding Relations and Coordinates
## of the Pairwise Features
Myeong Ah Cho, Tae-young Chung, **Taeoh Kim**, Sangyoun Lee
IAPR International Conference on Biometrics (ICB) 2019
Oral Presentation

## Face Landmark Detection using Gaussian Guided Regression Network
Yongju Lee, **Taeoh Kim**, Taejae Jeon, Hanbyeol Bae, Sangyoun Lee
International Technical Conference on Circuits/Systems,
Computers and Communications (ITC-CSCC) 2019

## CollaboNet: Collaboration of Generative Models by Unsupervised Classification
Hyeongmin Lee, **Taeoh Kim**, Eungyeol Song, Sangyoun Lee
IEEE International Conference on Image Processing (ICIP) 2018

## A Video Coding System based on Coefficient Modeling Considering Visual Artifact
**Taeoh Kim**, Changhyun Park, Hanbin Son, Sangyoun Lee
International Conference on Electronics, Information and Communication (ICEIC) 2017

**Pedestrian Detection using HOG, LBP and Color LBP**
Taejae Jeon, **Taeoh Kim**, Hyunhye Shin, Sangyoun Lee
International Technical Conference on Circuits/Systems,
Computers and Communications (ITC-CSCC) 2015

## Domestic Publications in Korea

**Photorealistic Style Transfer with Adversarial Loss for
Photo-to-Sketch Facial Image Synthesis**
Rushuang Xu, MyeongAh Cho, **Taeoh Kim**, Sangyoun Lee
Summer Annual Conference of IEIE (대한전자공학회 하계종합학술대회), 2020

**Semantic Segmentation using Class Distribution Information**
Minjung Kim, Hyeongmin Lee, **Taeoh Kim**, Sangyoun Lee
Summer Annual Conference of IEIE (대한전자공학회 하계종합학술대회), 2020

**Lightweight Network for Face Recognition via Advanced Bottleneck Block**
Sungjun Jang, Yongju Lee, **Taeoh Kim**, Sangyoun Lee
Summer Annual Conference of IEIE (대한전자공학회 하계종합학술대회), 2019

**Video Flickering Artifact Suppression based on Spatiotemporal Guide Filter**
Hanbin Son, **Taeoh Kim**, Changhyun Park, Daehyun Pak, Sangyoun Lee
KICS Summer Conference (한국통신학회 하계종합학술대회), 2017

# PROJECTS

**05/2019 – 12/2019**
**Locally Controllable DNN Algorithm Development**
Samsung Research

**04/2018 – 12/2018**
**Development of Compact Deep Networks for Image Processing**
Samsung Research

**07/2015 – 08/2017**
**Development of Novel Coding Framework based on Video Processing Quality-Aware Modeling**
Samsung Research

**09/2014 – 12/2015**
**Development of Next Generation Digital TV Broadcasting System**
Information Technology Research Center (ITRC), Ministry of Science, Republic of Korea

# AWARDS

## 08/2020
### 2nd Place in Perceptual (1st Place in Fidelity)

**Image Extreme Inpainting Challenge Track 1: Classic Inpainting**
Advances in Image Manipulation (AIM) 2020 Workshop
European Conference on Computer Vision (ECCV) Workshop

## 08/2020
### 4th Place

**Visual Inductive Priors for Data-Efficient Action Recognition Challenge**
1st Visual Inductive Priors (VIPriors) for Data-Efficient Deep Learning Workshop
European Conference on Computer Vision (ECCV) Workshop

## 04/2019
### 7th Place

**Embedded Real-Time Inference Challenge**
3rd International Workshop on Computer Vision for UAVs
Conference on Computer Vision and Pattern Recognition (CVPR) Workshop

## 08/2020
### 1st Place, Project "Tell-a-Byte"

**Competition in Global Entrepreneurship Camp Korea 2015**
Operated by IITP Korea and Stanford University

# TALKS/PRESENTATIONS (IN KOREAN, SLIDES IN ENGLISH)

### SNU AI Study Season 8

**Offline AI Study at Seoul National University**
**09/2020**
- CNN Regularization for Image Recognition, Slides:
https://drive.google.com/file/d/1CPuv8vwIuLKQTIu0U7V6z8xsiHLo9gVy/view?usp=sharing

### PR12 Season 3

**Youtube Deep Learning Study at Tensorflow-Korea Facebook Group**
**11/2019 ~ Present**
- Benchmarking Neural Network Robustness to Common Corruptions https://youtu.be/EE4BxrAbNM8
- Momentum Contrast for Unsupervised Visual Representation Learning, https://youtu.be/2Undxq7jlsA
- Semantic Pyramid for Image Generation, https://youtu.be/b1xoR4utQ3k
- Zero-shot Super-Resolution using Deep Internal Learning, https://youtu.be/WwuHjgTwCR0
- Learning Correspondence from the Cycle-Consistency of Time, https://youtu.be/5g8-8Hz5x08
- A Closer Look at Few Shot Classification, https://youtu.be/yyqZ1K5u2_8

### SNU AI Study Season 7

**Offline AI Study at Seoul National University**
**05/2020**
- Deep Feature Learning for Face Recognition, Slides:
https://drive.google.com/file/d/1cJjfrQFz06nRpYjw_5yx6NxzqNGNSneE/view?usp=sharing

## PR12 Season 2

**Youtube Deep Learning Study at Tensorflow-Korea Facebook Group**
**09/2018 ~ 09/2019**
- MoCoGAN: Decomposing Motion and Content for Video Generation, https://youtu.be/9uNFtnRa_JU
- Semi-Supervised Classification with Graph Convolutional Networks, https://youtu.be/uqBsvoOY8jM
- CNN Attention Networks, https://youtu.be/Dvi5_YC8Yts
- ImageNet-trained CNNs are Biased Towards Textures, https://youtu.be/oBapZTL8LsE
- Fully-Convolutional Siamese Networks for Object Tracking, https://youtu.be/dv5yUl6Lw1g
- FaceNet: A Unified Embedding for Face Recognition and Clustering, https://youtu.be/0k3X-9y_9S8
- The Perception Distortion Tradeoff, https://youtu.be/6Yid4dituqo
- Visualizing Data using t-SNE, https://youtu.be/zpJwm7f7EXs

## SNU AI Study Season 6

**Offline AI Study at Seoul National University**
**04/2019**
- Robustness of CNN, Slides:
https://drive.google.com/file/d/1wRjY2klAakuTJejLBBpNo3f82GJi4kk0/view?usp=sharing

## SNU AI Study Season 5

**Offline AI Study at Seoul National University**
**09/2018**
- The Perception Distortion Tradeoff, Slides: https://drive.google.com/file/d/1-0mWRBVBqUjIN6149oGCbrPOUXVB0xwE/view?usp=sharing

## PR12 Season 1

**Youtube Deep Learning Study at Tensorflow-Korea Facebook Group**
**11/2017 ~ 07/2018**
- Taskonomy: Disentangling Task Transfer Learning, https://youtu.be/WjUGrzBIDv0
- Non-local Neural Networks, https://youtu.be/ZM153wo3baA
- Deep Compression, https://youtu.be/9mFZmpIbMDs
- Mask R-CNN, https://youtu.be/RtSZALC9DlU
- Fully Convolutional Networks for Semantic Segmentation & DeepLabs, https://youtu.be/JiC78rUF4iI

# OTHER EXPERIENCES

### Journal/Conference Reviewer
- IEEE Transactions on Industrial Informatics (Journal)
- Digital Signal Processing (Journal)
- ICPR: International Conference on Pattern Recognition

### Organizer
- SNU (Seoul National University) AI Study (Season 7, 8)

### YouTube
- **685 Subscribers** (11/2020)
- Including Presentations at PR12: Deep Learning Paper Readers
- Link: https://www.youtube.com/channel/UCtfvbtV82UDr-vHnj5sPeGQ/

### Teaching Assistant @ Yonsei University
- Fall 2020: Jounier Seminar: Deep Learning for Visual Recognition
- Fall 2017: Electrical & Electronic Engineering Experiments: Applications
- Spring 2017: Electrical & Electronic Engineering Experiments: Applications
- Fall 2016: Electrical & Electronic Engineering Experiments: Applications
- Fall 2015: Signal and Systems
- Spring 2015: Digital Signal Processing

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