Yumin Suh

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I am a researcher at NEC Laboratories America. My current research focuses on efficient models (multi-task models and dynamic networks) and learning visual representation that interacts with language.

Education

Seoul National University **Apr. 2019 – Nov. 2019**
Postdoc *Advisors: Bohyung Han, Kyoung Mu Lee*

Seoul National University **Mar. 2014 – Feb 2019**
Ph.D., Electrical and Computer Engineering *Advisor: Kyoung Mu Lee*

Seoul National University **Mar. 2011 – Feb. 2013**
M.S., Electrical Engineering and Computer Science *Advisor: Kyoung Mu Lee*

Seoul National University **Mar. 2007 – Feb. 2011**
B.S., Electrical Engineering

Experience

NEC Laboratories America | *Media Analytics department* **December 2019 – Present**
Researcher *San Jose, CA*

- Developed a unified model that performs multiple tasks for rich human analysis. Trained models using data collected/annotated/pseudo-labeled from various sources for tasks including person re-identification, attribute recognition, pose estimation, and part segmentation. Efficient model deployment using TensorRT. Deployed on the NEC Insights platform and NEC Future Creation Hub.
- Developed a domain-specific multi-modal LLM for human analysis

Microsoft Research Asia **September 2016 – June 2017**
Research Intern *Mentors: Jingdong Wang, Tao Mei*

- Developed a visual representation for person re-identification (Publication cited 500+ times)

Inria | *WILLOW team* **December 2014 – May 2015**
Research Intern *Mentors: Minsu Cho, Jean Ponce*

Workshop Organization

1st OmniLabel workshop at CVPR 2023 [**Workshop**][**Benchmark**][**Challenge**]
Organizers: Samuel Schulter, Vijay Kumar B G, Yumin Suh, Golnaz Ghiasi, Long Zhao, Qi Yu, Dimitris N. Metaxas **CVPR 2023**

- Workshop to promote research on **language-based vision perception** system beyond simple category names
- New **dataset** and **benchmark** for language-based detection

Projects

Generating Enhanced Negatives for Training Language-Based Object Detectors
Shiyu Zhao, Long Zhao, Zhixing Zhang, Vijay Kumar BG, Yumin Suh, Dimitris N Metaxas, Manmohan Chandraker, Samuel Schulter **arXiv 2023**

Improving Pseudo Labels for Open-Vocabulary Object Detection
Shiyu Zhao, Samuel Schulter, Long Zhao, Zhixing Zhang, Vijay Kumar BG, Yumin Suh, Manmohan Chandraker, Dimitris N Metaxas **arXiv 2023**

Papers

Efficient Controllable Multi-Task Architectures
Abhishek Aich, Samuel Schulter, Amit K. Roy-Chowdhury, Manmohan Chandraker, Yumin Suh **ICCV 2023**

- *Dynamic multi-task model* that users can precisely control the compute budget and task importance for *efficiency*

OmniLabel: A Challenging Benchmark for Language-Based Object Detection
Samuel Schulter, Vijay Kumar B G, Yumin Suh, Konstantinos M. Dafnis*, Zhixing Zhang*, Shiyu Zhao*, Dimitris Metaxas (* equal technical contribution, alphabetic order) **ICCV 2023 (Oral)**

- New *dataset and benchmark* for *language-based detection*. Hosted the Omnilabel workshop in CVPR 2023

Confidence and Dispersity Speak: Characterizing Prediction Matrix for Unsupervised Accuracy Estimation
Weijian Deng, Yumin Suh, Stephen Gould, Liang Zheng **ICML 2023**

Split to Learn: Gradient Split for Multi-Task Human Image Analysis
Weijian Deng, Yumin Suh, Xiang Yu, Masoud Faraki, Liang Zheng, Manmohan Chandraker **WACV 2023**

Learning Semantic Segmentation from Multiple Datasets with Label Shifts
Dongwan Kim, Yi-Hsuan Tsai, Yumin Suh, Masoud Faraki, Sparsh Garg, Manmohan Chandraker, Bohyung Han **ECCV 2022**
- A training scheme to leverage *multiple datasets* with different label spaces for *domain generalization*

Controllable Dynamic Multi-Task Architectures
Dripta S. Raychaudhuri, Yumin Suh, Samuel Schulter, Xiang Yu, Masoud Faraki, Amit K. Roy-Chowdhury, Manmohan Chandraker **CVPR 2022 (Oral)**
- *Dynamic multi-task model* that users can control the compute budget and task importance for *efficiency*

On Generalizing Beyond Domains in Cross-Domain Continual Learning
Christian Simon, Masoud Faraki, Yi-Hsuan Tsai,Xiang Yu, Samuel Schulter, Yumin Suh, Mehrtash Harandi, Manmohan Chandraker **CVPR 2022**

Cross-Domain Similarity Learning for Face Recognition in Unseen Domain
Masoud Faraki, Xiang Yu, Yi-Hsuan Tsai, Yumin Suh, Manmohan Chandraker **CVPR 2021**

Learning to Optimize Domain Specific Normalization for Domain Generalization
Seonguk Seo, Yumin Suh, Dongwan Kim, Geeho Kim, Jongwoo Han, Bohyung Han **ECCV 2020**

Stochastic Class-based Hard Example Mining for Deep Metric Learning
Yumin Suh, Bohyung Han, Wonsik Kim, Kyoung Mu Lee **CVPR 2019**
- *Hard example mining* for deep *metric learning*, applied to *image retrieval*

Part-Aligned Bilinear Representations for Person Re-identificiation
Yumin Suh, Jingdong Wang, Siyu Tang,Tao Mei, Kyoung Mu Lee **ECCV 2018**
- *Representation learning* for *person re-identification* and *image retrieval*

Appearance Dependent Inter-Part Relationship for Human Pose Eestimation
Yumin Suh and Kyoung Mu Lee **APSIPA 2016**

Discrete Tabu Search for Graph Matching
Kamil Adamczewski, Yumin Suh, Kyoung Mu Lee **ICCV 2015**

Subgraph Matching Using Compactness Prior For Robust Feature Correspondence
Yumin Suh, Kamil Adamczewski, Kyoung Mu Lee **CVPR 2015**

Graph Matching via Sequential Monte Carlo'
Yumin Suh, Minsu Cho, Kyoung Mu Lee **ECCV 2012**

Honors and Awards

Business Contribution Award, NEC Laboratories America **2023**
- Aiming to realize human digital twins: Image analysis technology that efficiently senses the real world (Press release, August 2023)
- NEC develops high-speed, high-precision technology to search for specific persons based on ambiguous appearance attribute information by analyzing camera images (Press release, May 2023)

Outstanding Reviewer, CVPR 2023 **2023**

Outstanding Reviewer, ICML 2020 **2023**

3rd Place Award, VisDA-2019 **2019**
- *Visual Domain Adaptation Challenge, TASK-CV Workshop in ICCV 2019*
  with Dongwan Kim, Geeho Kim, Seonguk Seo, Bohyung Han, Taeho Lee, Jongwoo Han, Hyejeong Jeon

Doctoral Colloquium, KCCV 2019 **2019**

Doctoral Colloquium, CVPR 2019 **2019**

3rd Place Award, SFMI Machine Learning Challenge 2017 **2017**
- *Challenge on the road sign letter recognition from road view images*, Samsung Fire & Marine Insurance, Korea
  with Jihong Kang and Sungyong Baik

Graduated with honors (Summa cum laude) **2011**

Invited Talks

Elastic AI for multiple tasks

- Company-wide talk — May 2022
- Lomin Inc. — Feburary 2022
- Guest lecture in "Moonshot project", Korea University — June 2022

Multi-task learning and domain generalization

- Australian National University — October 2021

Learning local matching for person re-dentification

- Young Research Highlight, Summer Annual Conference of IEIE — June 20219

Academic Services

Area Chair

- CVPR (2024)
- ACCV (2022)

Senior Program Committee

- AAAI (2022)
- IJCAI (2021)

Program Committee

- CVPR, ICCV, ICLR, ICML (2023)
- CVPR, ECCV, ICLR, ICML, IJCAI, NeurIPS (2022)
- AAAI, CVPR, ICCV, ICLR, ICML, NeurIPS, WACV (2021)
- AAAI, ACCV, CVPR, ECCV, ICPR, ICML (2020)
- CVPR, ICCV (2019)
- MM (2017)

Journal Reviewer

- TPAMI, TIP, TMM, TCSVT, CVIU, MMSJ, AOAS

Student volunteer

- ACCV 2012, MM 2018

Mentoring

Youngmin Oh (Yonsei University)	2023
Dongwan Kim (Seoul National University)	2023
Abhishek Aich (University of California, Riverside)	2022
Dripta Raychaudhuri (University of California, Riverside)	2021
Weijian Deng (Australian National University)	2020