Dr. Dahun Kim

Research Scientist, Google DeepMind

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Research Interest

- **Deep Learning, Computer Vision**
  Vision and language, Video learning, Visual perception

Research Experience

- **Google DeepMind**, MTV, CA — Apr.2023 - Present
  Research Scientist
- **Google Brain**, MTV, CA — Jul.2022 - Apr.2023
  Research Scientist
- **Google AI**, Virtual (with LA, CA) — May.2021 - Jan.2022
  Research Intern: on "video mask transformer"
- **Google Brain**, Virtual (with MTV, CA) — Jun.2020 - Nov.2020
  Research Intern: on "detect everything"
- **Adobe Research**, San Jose, CA, — Jun.2019 - Sep.2019
  Research Intern: on"video panoptic segmentation"

Education

- **Ph.D.** in Electrical Engineering, **KAIST,** — Mar.2018 - Feb.2022
  Advisor: Prof. In So Kweon
  Thesis: "Learning Dense Pixel Features for Video Processing and Understanding"
- **M.S.** in Electrical Engineering, **KAIST,** — Mar.2016 - Feb.2018
  Advisor: Prof. In So Kweon
  Thesis: "Reducing Human Supervision in Supervised Learning"
- **B.S.** in Electrical Engineering, **KAIST,** — Feb.2012 - Feb.2016
- Korea Science Academy of KAIST (high school) — Mar.2009 - Feb.2012

Academic Service

- **Area Chair** in CVPR 2024, NeurIPS 2023, CVPR 2023
- CVPR [20, 21, 22], NeurIPS [20, 21], ECCV [20], ICCV [19, 21], ICLR [21], AAAI [20, 21, 22]
- TPAMI, TNNLS, TIP, EuroGraphics

Publications

- **Peer-Reviewed Conferences and Journals - Selected:**

030. **Dahun Kim**, A. Angelova, W. Kuo
"Contrastive Feature Masking Vision Transformer for Open-vocabulary Detection",
in **ICCV 2023**, Paris, France

029. W. Kuo†, A. Piergiovanni†, **Dahun Kim***, X. Luo*, B. Caine, W. Li, A. Ogale, L. Zhou, A. Dai, Z. Chen, C. Cui, A. Angelova
"MaMMUT: A Simple Vision-Encoder Text-Decoder Architecture for Multimodal Tasks",
in **TMLR 2023**: Transactions on Machine Learning Research

028. R. Li, **Dahun Kim**, W. Kuo
"RECLIP: Resource-efficient CLIP by Training with Small Images",
under review

027. Shin, **Dahun Kim**, Q. Yu, J. Xie, H.S. Kim, B. Green, I.S. Kweon, K.J. Yoon, L.C. Chen
"Video-kMaX: A Simple Unified Approach for Online and Near-Online Video Panoptic Segmentation",
in **CVPRW 2023**: 'Transformers for Vision' Workshop

026. **Dahun Kim**, A. Angelova, W. Kuo
"Region-Aware Pretraining for Open-Vocabulary Object Detection with Vision Transformers",
in **CVPR 2023 (Highlight)**, Vancouver, Canada (Acceptance: 2.5%)

025. Y. Kwon, **Dahun Kim**, D. Ceylan, H. Fuchs
"Neural Image-based Avatars: Generalizable Radiance Fields for Human Avatar Modeling",
in **ICLR 2023**, Kigali, Rwanda

024. **Dahun Kim**, S. Woo, J.Y. Lee, I.S. Kweon
"Dense Pixel-level Interpretation of Dynamic Scenes with Video Panoptic Segmentation",
in **TIP 2022**: *IEEE Trans. on Image Processing*, IF=10.856

023. **Dahun Kim**, J. Xie, H. Wang, S. Qiao, H.S. Kim, H. Adam, I.S. Kweon, L.C. Chen
"TubeFormer-DeepLab: video mask transformer",
in **CVPR 2022**, New Orleans, USA

022. Q. Yu, H. Wang, **Dahun Kim**, S. Qiao, M. Collins, Y. Zhu, H. Adam, A. Yuille, L.C. Chen
"CMT-DeepLab: dynamic clustering mask transformers for panoptic segmentation",
in **CVPR 2022 (Oral)**, New Orleans, USA

021. **Dahun Kim**, T.Y. Lin, A. Angelova, I. S. Kweon, W. Kuo
"Learning open-world object proposals without learning to classify",
in **RA-L** and **ICRA 2022 (Oral)**; *IEEE Robotics and Automation Letters* , Philadelphia, USA

020. Y. Kwon, S. Petrangeli, **Dahun Kim**, H. Wang, V. Swaminathan, H. Fuchs
"Tailor Me: An Editing Network for Fashion Attribute Shape Manipulation".
in **WACV 2022 (Oral)**

019. Y. Kwon, **Dahun Kim**, D. Ceylan, H. Fuchs
"Neural Human Performer: learning generalizable radiance fields for human performance rendering",
in **NeurIPS 2021 (Spotlight)**, Virtual (Acceptance: $< 3.0\%$)

018. S. Woo, **Dahun Kim**, J.Y. Lee, I. S. Kweon,
"Learning to associate every segment for video panoptic segmentation".
in **CVPR 2021**, Virtual

017. S. Woo, **Dahun Kim**, J.Y. Lee, I.S. Kweon
"Global Context and Geometric Priors for Effective Non-Local Self-Attention".
in **BMVC 2021**

016. M. Kim, S. Woo, **Dahun Kim**, I. S. Kweon,
"The Devil is in the Boundary: Exploiting Boundary Representation for Basis-based Instance Segmentation". in **WACV 2021 (Oral)**

015. Y. Kwon, S. Petrangeli, **Dahun Kim**, H. Wang, V. Swaminathan, H. Fuchs,
"Rotationally-Temporally Consistent Novel View Synthesis for Human Performance Video",
in **ECCV 2020 (Spotlight)**, Virtual (Acceptance: $265/5025 \approx 5.3\%$)

014. **Dahun Kim**, S. Woo, J.Y. Lee, I.S. Kweon,
"Video panoptic segmentation",
in **CVPR 2020 (Oral)**, Virtual (Acceptance: $335/6656 \approx 5.0\%$)

013. **Dahun Kim***, S. Woo*, J.Y. Lee, I.S. Kweon,
"Recurrent temporal aggregation framework for deep video inpainting",
in **TPAMI 2020**: *IEEE Trans. on Pattern Analysis and Machine Intelligence*, IF=17.730

012. Y. Jung, **Dahun Kim**, S. Woo, K. Kim, S. Kim, I.S. Kweon,
"Hide-and-Tell: Learning to bridge photo streams for visual storytelling",
in **AAAI 2020**, New York, USA (Acceptance: 1591/7737 ≈ 20.6%)

011. Y. Kwon, S. Petrangeli, **Dahun Kim**, H. Wang, H. Fuchs, V. Swaminathan,
"Rotationally-Consistent Novel View Synthesis for Humans",
in ACM **MM 2020**, Virtual (Acceptance: 472/1698 ≈ 27.8%)

010. S. Woo, **Dahun Kim**, K. Park, J.Y. Lee, I.S. Kweon,
"Align-and-Attend Network for Globally and Locally Coherent Video Inpainting",
in **BMVC 2020** (Acceptance: 195/670 ≈ 29.1%)

009. **Dahun Kim***, S. Woo*, J.Y. Lee, I.S. Kweon,
"Deep video inpainting",
in **CVPR 2019**, Long Beach, USA (Acceptance: 1294/5160 ≈ 25.2%)

008. **Dahun Kim***, S. Woo*, J.Y. Lee, I.S. Kweon,
"Deep blind video decaptioning by temporal aggregation and recurrence",
in **CVPR 2019**, Long Beach, USA (Acceptance: 1294/5160 ≈ 25.2%)

007. **Dahun Kim**, D. Cho, I.S. Kweon,
"Self-supervised video representation learning with space-time cubic puzzles",
in **AAAI 2019 (Oral)**, Honolulu, USA (Acceptance:459/7095 ≈ 6.5%)

006. Y. Jung, D. Cho, **Dahun Kim**, S. Woo, I.S. Kweon,
"Discriminative feature learning for unsupervised video summarization",
in **AAAI 2019 (Oral)**, Honolulu, USA (Acceptance: 459/7095 ≈ 6.5%)

005. K. Park, S. Woo, **Dahun Kim**, D. Cho, I.S. Kweon,
"Preserving Semantic and Temporal Consistency for Unpaired Video-to-Video Translation",
in ACM **MM 2019**, Nice, France (Acceptance: 252/936 ≈ 26.9%)

004. Cho, Y. Jung, F. Rameau, **Dahun Kim**, S. Woo, I.S. Kweon,
"Video Retargeting: Trade-off between Content Preservation and Spatio-temporal Consistency",
in ACM **MM 2019**, Nice, France (Acceptance: 252/936 ≈ 26.9%)

003. S. Woo*, **Dahun Kim***, D. Cho, I.S. Kweon,
"LinkNet: relational embedding for scene graph",
in **NeurIPS 2018**, Montreal, Canada (Acceptance: 1011/4856 ≈ 20.8%)

002. **Dahun Kim**, D. Cho, D. Yoo, I.S. Kweon,
"Learning image representations by completing damaged jigsaw puzzles",
in **WACV 2018 (Oral)**, Lake Tahoe, USA

001. **Dahun Kim**, D. Cho, D. Yoo, I.S. Kweon,
"Two-phase learning for weakly supervised object localization",
in **ICCV 2017**, Venice, Italy (Acceptance: 621/2143 ≈ 28.9%)

• **Other publications:**

M. Weber, H. Wang, S. Qiao, J. Xie, M. D. Collins, Y. Zhu, L. Yuan, **Dahun Kim**, Q. Yu,
D. Cremers, L. Leal-Taixe, A.L. Yuille, F. Schroff, H. Adam, L.C. Chen
"DeepLab2: a TensorFlow library for deep labeling". Technical Report, **arXiv 2021**

Patents

P4. Electronic Device and Control Method of Same (US Patent App. 17/554,142)
P3. Video Panoptic Segmentation (US Patent App. 16/852,647)
P2. Panoptic Segmentation (US Patent 11,256,960)
P1. Method and Device for Hierarchical Learning of Neural Network Based on Weakly Supervised Learning (US Patent App. 16/758,089)

Awards and Honors

- Best Ph.D. Thesis Award, EE, KAIST — Apr.2022
- Bronze Award, 28th HumanTech Paper Award, Samsung Electronics Co., Ltd. ($5,000) — Feb.2022
- Qualcomm Innovation Award (Korea) 2021 — Nov.2021
- Outstanding Reviewers Award, CVPR 2021 — Aug.2021
- Outstanding Reviewers Award, ECCV 2020 — Aug.2020
- Microsoft Research Asia (MSRA) Ph.D Fellowship 2019 Winner ($10,000) — Oct.2019
- 1-st Place Award in ChaLearnLAP 2018 Inpainting Challenge Track 2: video decaptioning (ECCV2018 Challenge) — Sep.2018
- Global Ph.D Fellowship, National Research Foundation of Korea (National Minister fellowship – ≈ $60,000 + 3-year full scholarship) — Mar.2018 - Feb.2021
- KAIST-Samsung Industry-University Cooperation, Best Paper Award ($3,000) — Jul.2020
- Bronze Award, 27th HumanTech Paper Award, Samsung Electronics Co., Ltd. ($5,000) — Feb.2021
- Honorable Mention, 25th HumanTech Paper Award, Samsung Electronics Co., Ltd. ($2,000) — Feb.2019
- Lab Student Representative (over 30 members), — Sep.2019 - Jul.2020
- Bronze Prize, Best Paper Award, 31th IPIU — Feb.2019
- International Computer Vision Summer School (ICVSS), Sicily, Italy — Jul.2018