

# Cholmin Kang

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## RESEARCH INTERESTS

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**Keywords:** Human Computer Interaction (HCI), Accessibility, AR, Computer Vision, Animation, Deep Learning

**Objective:** Discover and solve research questions in **Human Computer Interaction (HCI)** and **Accessibility** using the diverse domains of computer science including Computer Vision (CV), Augmented Reality (AR), and Deep Learning.

## EDUCATION

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**Korea Advanced Institute of Science and Technology (KAIST)**

*Master of Science in Culture Technology*

**Daejeon, Korea**

*Sept. 2019 – Aug. 2021*

**Sungkyunkwan University (SKKU)**

*Bachelor of Engineering in Computer Science and Engineering*

**Suwon, Korea**

*Mar. 2015 – Aug. 2019*

- Graduated as a Valedictorian; Dean's List (Spring 2017)
- *Vice President*, College of Software Student Council (11/2017-11/2018)

## PUBLICATIONS

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**Kang, C.M.**, Jung, H.W., and Lee, Y.K. "Towards Machine Learning with Zero Real-world Data." *ACM Wearable Systems and Application, International Conference on Mobile Systems, Applications, and Services (Wearsys)* in collaboration with MobiSys 2019 \***Best Paper Award**.

**Kang, C.M.\***, Yeom, I.H.\* , Ashtari, A., Noh, J.Y., and Woo, W.T. "ARBility: Re-Inviting Older Wheelchair Users to In-store Shopping via Wearable Augmented Reality." *ACM SIGACCESS 2022 Conference on Computers and Accessibility (ASSETS)* [Under Review].

**Kang, C.M.**, Lee, C.G, Song, H., Ma, M.U., and Pereira, S. "Quality Matters: A Large-Scale Assessment of Crowdsourced Pathologists for Effective Data Collection." *ACM 2022 Computer Supported Cooperative Work* [Under Review].

Park., J.H., Lee, K.S., Choi, E., Cho, S.I., Jung, W.K., Kim, S.J., Park, G.H., Song, S.H., **Kang, C.M.**, et al. "Performance Validation of an Artificial Intelligence-powered Programmed Death-ligand 1 (PD-L1)-combined Positive Score Analyzer in Urothelial Cancer," *2022 Annals of Oncology 33* [Under Review].

Park., G.H., Song, S.H., Kim, S.J., Ahn, S.H., Kim, H.J., Lee, J.E., Ro, J.Y., Park, W.M., Chung, T.W., **Kang, C.M.**, Lee., C.G., Kim, H.J., Shin, J.S., Lee, S.J., Baek., E.J., Seo., M.S.H., Choi, H.J., Yoo, D.G., Ock., C.Y. "Artificial Intelligence-powered Pathology Image Analysis merged with Spatial Transcriptomics reveals Distinct TIGIT Expression in the Immune-excluded Tumor-infiltrating Lymphocytes." *Journal of Clinical Oncology 40, 2022 (suppl 16; abstr 2570)*.

Seo. C.W., Ashtari, A., **Kang, C.M.**, Cha, S.H., and Noh, J.Y. "Reference Based Sketch Extraction via Attention Mechanism." *2022 ACM Transactions on Graphics (TOG)* [Under Review].

**Kang, C.M.** and Noh, J.Y. "Generating 3D Korean Sign Language Animation Model based on 2D RGB Video: Understanding Necessity, Accuracy, and Preference of People who are Deaf or Hard of Hearing." *Journal of Korean HCI Society*.

\* *Equal contributions*

## RESEARCH EXPERIENCE

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### Seoul National University

*Visiting Researcher, Innovative Radiology AI (iRAIL) Lab*

Seoul, Korea

Mar. 2022 – Present

- Research VR colonoscopy and develop 3D printed colon exploring endoscopy equipment and its communication with a VR environment.

### Lunit Inc.

*Research Engineer, Data-Centric AI Team*

Seoul, Korea

Mar. 2022 – Present

- Devise and implement a DeepLab-based tumor cell detection model on whole slide image data from multiple hospitals including Seoul National University Hospital; develop React-based annotation and data platform web frontend.
- Analyze and visualize the behaviors of medical annotator users using Matplotlib, PyPlot, Seaborn; successfully saved \$45,000/week by reporting malicious users.

### Korea Advanced Institute of Science and Technology (KAIST)

*Research Assistant, Visual Media Lab (Advisor: Prof. Junyoung Noh)*

Daejeon, Korea

Sept. 2019 – Jul. 2021

- Analyzed the physical and sociocultural implications of wearable-AR based shopping system for wheelchair users.
- Developed and applied a Unity-based AR environment on HoloLens; devised a Yolov3-based object detection model and web server.
- Researched the creation of 3D sign language animation from a 2D RGB video; designed sign language specific key-pose extraction techniques from video sequence, and implemented computer vision-based 3D pose estimation models.
- Examined interaction, value, and challenges of consuming online lecture videos for students with hearing impairment.
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### Seoul National University (SNU)

*Research Assistant, Human-centered Computer System Lab (Advisor: Prof. Junyoung Noh)*

Seoul, Korea

Jan. 2019 – Aug. 2019

- Researched machine learning data collection from a VR environment.
- Developed a Unity-based human activity recognition animation scenario, implemented a virtual Inertial Measurement Unit (IMU) sensor, and tested it on machine learning and deep learning models.

### Sungkyunkwan University (SKKU)

*Research Assistant, Ubiquitous Computing Lab (Advisor: Heeyoung Yoon)*

Suwon, Korea

May 2017 – May 2018

- Jointly researched emergency node detection and data ingestion in an IoT Environment with Samsung Electronics.
- Analyzed IoT wireless sensor network multi-connectivity using data regression techniques (funded by Korea Research Foundation).

### Quribo, Inc.

*Intern, Research and Development Department*

Anyang, Korea

Dec. 2016 – Feb. 2017

- Constructed an Android application for a home application robot; showcased in 2017 MWC.

### Purdue University

*Research Intern, M2M Lab (Advisor: Prof. Eric T. Matson)*

West Lafayette, IN

Sept. 2016 – Dec. 2016

- Researched and developed a remote firefighting robot using Flask python web server and NginX.

## AWARDS & HONORS

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- *Research Grant*, Korea Policy Center for Fourth Industrial Revolution May 2020
- *Research Grant*, KAIST Graduate Student Research Grant Apr. 2020
- *Second Place*, SK Group AI Creative challenge Dec. 2019
- *Best Paper Award*, ACM WearSys (in collaboration with MobiSys) Jun. 2019
- *First Place*, Kickstart Startup Contest Feb. 2017
- *CEO Award*, Campus Reboot IoT Contest, Oracle Korea CEO Dec. 2016

## ADDITIONAL INFORMATION

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**Volunteer:** *Lecturer, Taskent University of Information Technologies*, Nukus, Uzbekistan (06/2018-06/2018)

- Lectured on Arduino, C++, and IoT for underrepresented groups; served as the leader of Korea ICT Volunteer Team.

**Programming Skills:** Python, Java, Linux, Computer Vision, Deep Learning, Motion Graphics and Animation

**Languages:** Korean (native fluency), English (professional proficiency), Korean & American sign languages (beginner)