

Seonghyeon Moon

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- EDUCATION**
- Rutgers University** Aug. 2018 - Present
New Jersey, United States
- Ph.D. in Computer Science
Adviser: Professor Mubbasir Kapadia
Field of Study: Human Crowd Behavior Modeling
- Gwangju Institute of Science and Technology** Mar. 2015 - Feb. 2017
Gwangju, South Korea
- M.S. in Mechanical Engineering
Adviser: Professor Kwanghee Ko
Thesis: Parameterization of Cylindrical Unorganized Point Clouds for Surface Fitting
Field of Study: Geometric Modeling and Projection Mapping
- Northumbria University** Mar. 2009 - Feb. 2015
Newcastle, U.K.
- B.S. in Manufacturing and Systems Design Engineering
Graduated with First Class Honours
- Seoul National University of Science and Technology** Mar. 2009 - Feb. 2015
Seoul, South Korea
- B.S. in Industrial and Information Systems Engineering
Graduated with the highest honor, Rank 1/45

PUBLICATIONS **JOURNAL ARTICLES**

*Equal contribution

- [3] *Davide Schaumann, *Seonghyeon Moon, Muhammad Usman, Rhys Goldstein, Simon Breslav, Azam Khan, Petros Faloutsos, Mubbasir Kapadia, "JOIN: an integrated platform for joint simulation of occupant-building interactions", *Architectural Science Review*, 2019. [Link]
- [2] Jihoon Park, Seonghyeon Moon and Kwanghee Ko, "Dynamic Correction of Image Distortions for a Kinect-Projector System", *Journal of WSCG*, 2018. [Link]
- [1] Seonghyeon Moon and Kwanghee Ko, "A point projection approach for improving the accuracy of the multilevel B-spline approximation", *Journal of Computational Design and Engineering*, 2018. [Link]

CONFERENCE PAPERS

- [2] *Davide Schaumann, *Seonghyeon Moon, Muhammad Usman, Rhys Goldstein, Simon Breslav, Azam Khan, Petros Faloutsos, Mubbasir Kapadia, "Toward a Multi-Level and Multi-Paradigm Platform for Building Occupant Simulation", *Symposium on Simulation for Architecture and Urban Design*, Atlanta, United States, Apr. 2019.

- [1] Seonghyeon Moon, Jin-Eon Park and Kwanghee Ko, “Parameterization of unorganized cylindrical point clouds for least squares B-spline surface fitting”, in *25th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision 2017 (WSCG2017)*, Plzen, Czech Republic, May. 2017. [Link]

POSTERS & WORKSHOP

- [4] Glen Berseth, Brandon Haworth, Seonghyeon Moon, Mubbasir Kapadia, Petros Faloutsos , “Multi-Agent Hierarchical Reinforcement Learning for Humanoid Navigation”, in *Deep Reinforcement Learning Workshop (NeurIPS 2019)*, Vancouver, Canada, Dec. 2019.
- [3] Samuel S Sohn, Seonghyeon Moon, Honglu Zhou, Sejong Yoon, Vladimir Pavlovic, Mubbasir Kapadia, “Deep Crowd-Flow Prediction in Built Environments”, in *Artificial Intelligence for Humanitarian Assistance and Disaster Response Workshop (NeurIPS 2019)*, Vancouver, Canada, Dec. 2019.
- [2] Jihoon Park, Seonghyeon Moon and Kwanghee Ko, “Automatic Geometry Correction for a Kinect-Projector system in Dynamic Environment”, in *Workshop on Virtual Reality Interaction and Physical Simulation (VRIPHYS 2018)*, Delft, Nedtherlands, Apr. 2018.
- [1] S.H. Moon, J.H. Park and K.H. Ko, “Adaptive Method for 2.5D Scattered Point Approximation”, in *23rd ACM Symposium on Virtual Reality Software and Technology (VRST2017)*, Gothenburg, Sweden, Nov. 2017. [Link]

HONORS & AWARDS

- Korean Government Scholarship (Tuition waive and Stipend), Gwangju Institute of Science and Technology, 2015, 2016
- Graduated with the highest honor in the department of IISE, Seoul National Univerisity of Science and Technology, 2015
- High G.P.A., Seoul National Univerisity of Science and Technology, 2010

**WORK
EXPERIENCE**

Intelligent Visual Interfaces Laboratory

Rutgers University

Aug. 2018 - Present
New Jersey, United States

Graduate Assistant (Adviser : Professor Mubbasir Kapadia)

- Participating in a Crowd density prediction project
 - Training a model and generating a crowd density heat-map.
 - Submitted a workshop paper to NeurIPS 2019 and accepted.
- Participating in a Crowd simulation using Reinforcement Learning project
 - Training a human model to follow motion capture data.
 - Visualizing human agents and verifying results.
 - Submitted a workshop paper to NeurIPS 2019 and accepted

DeepMotion Research Group

DeepMotion

Jun. 2020 - Aug. 2020
California, United States

Research Intern (Adviser :Kevin He)

- Participated in a project on controlling a humanoid model.
 - Hierarchical reinforcement learning is utilized.
 - Train high-level policy to control an agent to move a specific location.

Autodesk Research (Complex System Group)

Autodesk in Toronto

Jun. 2019 - Aug. 2019
Toronto, Canada

Software Engineer Intern (Adviser : Rhys Goldstein)

- Participated in a project on human behavior simulation in a building
 - Combined the two frameworks (SyDEVs and SteerSuite).
 - Made an open-source C++ framework(SyDEVs-Building), generating human behaviors in an office building. (Waiting the company process is done)

Modeling and Simulation Laboratory

Gwangju Institute of Science and Technology

Jan. 2018 - May. 2018
Gwangju, South Korea

Research Intern (Adviser : Professor Kwanghee Ko)

- Led a project on an IMU human tracking using a smartphone
 - Identified and checked project progress and set the overall direction
 - Implemented the Extended Kalman Filter algorithm for an IMU sensor
 - Implemented a new guideline concept for improving the accuracy of the tracking

Modeling and Simulation Laboratory

Gwangju Institute of Science and Technology

Mar. 2015 - Feb. 2017
Gwangju, South Korea

Research Assistant (Adviser : Professor Kwanghee Ko)

- Led a project on projection mapping for a medium object without distortion
 - Implemented a projector and a Kinect calibration and suggested methods for distortion correction using calibration results
 - Implemented Kinect depth data acquisition and visualization with PCL (Point Cloud Library) and OpenGL
- Participated in a project on the development of 3D scanning application for plant engineering
 - Learned and implemented scattered data approximation using Multilevel B-Splines
- Participated in a project on projection mapping for free-form surfaces
 - Implemented a projector and a camera calibration to display an image at the desired position

TEACHING **Numerical Analysis and Visualization** Fall, 2016
Gwangju Institute of Science and Technology Gwangju, South Korea
Teaching Assistant
▪ Taught MATLAB, graded exams, and programming assignments
for around 40 undergraduates.

Physics Fall, 2012
Seoul National Univerisity of Science and Technology Seoul, South Korea
Course Tutor
▪ Assisted 3 to 4 weak undergraduate students to improve their understanding of physics

TECHNICAL SKILLS **Advanced** : C++, Python
Intermediate : C, MATLAB, Unity
Beginner : HTML, Java, OpenCV

LANGUAGES ▪ Korean: Native
▪ English: Fluent