Ji Hwan Park

Assistant Professor
School of Computer Science, University of Oklahoma
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RESEARCH INTERESTS

Visual Analytics, Data Visualization, Machine Learning, Computer Graphics, Human-Computer Interaction, and AR/VR

EDUCATION

PhD. in Computer Science from Stony Brook University, 2017
- Advisor: Distinguished Professor Arie E. Kaufman
- Thesis: User-centered visualization

M.S. in School of Engineering from Korea Advanced Institute of Science and Technology, 2006
- Advisor: Professor Jinah Park
- Thesis: Anatomically based rigging using layered free form deformation

B.S. in Computer Engineering from Hongik University, 2004
- Advisor: Professor Jun Park
- Thesis project: 3D character dancing game

EMPLOYMENT

Assistant Professor 08/2021 – present

School of Computer Science, University of Oklahoma, USA

-Performs research in the area of visualization, visual analytics, and machine learning, including analyzing and visualizing scientific and biomedical data, human-centered computing, accessible visualization, and augmented/virtual reality.

Assistant Computational Scientist 06/2020 – 08/2021

Research Associate 01/2018 – 06/2020

Computational Science Initiative, Brookhaven National Laboratory, USA

-Performed research in the area of machine learning and visualization for various applications, including analyzing medical datasets such as electronic health records and medical images, removing compression artifacts on various scientific data (e.g., climate data, nuclear fusion data), predicting memory performance prediction and large scale spatiotemporal data, and developing a user interface for surveillance video analysis.

Research Assistant 06/2011 – 12/2017

Visualization Lab, Stony Brook University, USA

-Performed research in the area of visual analytics and visualization, including visual analytics for crowdsourced clinical data, information visualization and user interfaces for smart grid, multivariate spatiotemporal data visualization, and 3D visualization for m-Health

Research Staff 07/2009 – 04/2010

Computer Graphics and Visualization Lab, Korea Advanced Institute of Science and Technology, Korea

-Research and implementation of algorithms for cutting objects in dental simulation and deforming objects in an intravenous injection simulation

Senior Research Engineer 02/2006 – 06/2009

Digital Media team and User Interface team, Daewoo Electronics, Korea

- Developed software for portable multimedia players and DVD recorders and participated in the research, design, and implementation of user interfaces for mobile devices and home appliances

Research Assistant 02/2004 – 02/2006

Digital Media Lab, Korea Advanced Institute of Science and Technology, Korea

-Performed research in the area of robotics and computer graphics, including etiquette-based robot and human simulation, displaying home information in virtual space, virtual engraving, visualizing medical data, and rigging a human body model

PUBLICATIONS

Work-in-Progress and Under Review

-**Ji Hwan Park**, "Interactive Active Learning for Object Detection", in preparation.

-Braden Roper, Debra Hogue, **Ji Hwan Park**, "Interactive Hierarchical Visualization for Classifying Single-Cell RNA Sequencing Data", in preparation.

Journal/Conference papers

- Xin Dai, **Ji Hwan Park**, Shinjae Yoo, Nicholas D'Imperio, Benjamin H. McMahon, Christopher T. Rentsch, Janet P. Tate, and Amy C. Justice, "Survival Analysis of Localized Prostate Cancer with Deep Learning", *Scientific Reports,*12, 17821, 2022

-Xihaier Luo, Balu Nadiga, **Ji Hwan Park**, Yihui Ren, Wei Xu, and Shinjae Yoo, "A Bayesian Deep Learning Approach to Near-Term Climate Prediction", *Journal of Advances in Modeling Earth Systems*, 14, e2022MS003058, 2022.

- **Ji Hwan Park**, Saad Nadeem, Saeed Boorboor, Joseph Marino, and Arie Kaufman, "CMed: Crowd Analytics for Medical Imaging Data", *IEEE Transactions on Visualization and Computer Graphics*, 27(6), pp 2869-2880, 2021

- Sandeep Madireddy, **Ji Hwan Park**, Sunwoo Lee, Prasanna Balaprakash, Shinjae Yoo, Wei-keng Liao, Cory D. Hauck, M. Paul Laiu, Richard Archibald, "In Situ Compression Artifact Removal in Scientific Data Using Deep Transfer Learning and Experience Replay", *Machine Learning: Science and Technology*, 2 (2), 025010, 2020

- **Ji Hwan Park**, Han Eol Cho, Jong Hun Kim, Melanie Wall, Yaakov Stern, Hynsun Lim, Shinjae Yoo, Hyoung-Seop Kim, Jiook Cha, “Machine learning prediction of incidence of Alzheimer’s disease using large-scale administrative health data”, *npj Digital Medicine*, 3, 46, 2020

- Siwu Liu, **Ji Hwan Park**, and Shinjae Yoo, “Efficient and Effective Graph Convolution Networks”, *SIAM International Conference on Data Mining (SDM),* pp 388-396, 2020

- **Ji Hwan Park**, Ievgeniia Gutenko, and Arie Kaufman, “Transfer Function-Guided Saliency-Aware Compression for Transmitting Volumetric Data”, *IEEE Transactions on Multimedia*, 22(9), pp 2262–2277, 2020

-Yun Wang, Chenxiao Xu, **Ji-Hwan Park**, Seonjoo Lee, Yaakov Stern, Shinjae Yoo, Jong Hun Kim, Hyoung Seop Kim, Jiook Cha, The Alzheimer's Disease Neuro imaging Initiative, “Diagnosis and prognosis of Alzheimer's disease using brain morphometry and white matter connectomes”, *NeuroImage: Clinical* Vol.23, 101859, 2019

-**Ji Hwan Park**, Saad Nadeem, and Arie Kaufman, “GeoBrick: Exploration of Spatio-Temporal Data”, *The Visual Computer*, 35(2), pp 191–204, 2018

-**Ji Hwan Park**, Saad Nadeem, Joseph Marino, Kevin Baker, Matthew Barish, and Arie Kaufman, “Crowd-Assisted Polyp Annotation of Virtual Colonoscopy Videos”, *SPIE Medical Imaging*, 105790M, 2018 (oral presentation)

-Saeed Boorboor, Saad Nadeem, **Ji Hwan Park**, Kevin Baker, Arie Kaufman, “Crowdsourcing Lung Nodules Detection and Annotation”, *SPIE Medical Imaging*, 105791D, 2018

-**Ji Hwan Park**, Arie Kaufman, and Klaus Mueller, “Graphoto: Aesthetically Pleasing Charts for Casual Information Visualization”, *IEEE Computer Graphics and Application*, 38(6), pp 67-82, 2018

-**Ji Hwan Park**, Seyedkoosha Mirhosseini, Saad Nadeem, Joseph Marino, Arie Kaufman, Kevin Baker, and Matthew Barish, “Crowdsourcing for Identification of Polyp-Free Segments in Virtual Colonoscopy Videos”, *SPIE Medical Imaging*, 101380V, 2017 (oral presentation)

-**Ji Hwan Park**, Saad Nadeem, Seyedkoosha Mirhosseini, and Arie Kaufman, “C^2A: Crowd Consensus Analytics for Virtual Colonoscopy”, *IEEE Conference on Visual Analytics Science and Technology* (VAST), pp. 21-30, 2016

-Ievgeniia Gutenko, Kaloian Petkov, Charilaos Papadopoulos, Xin Zhao, **Ji Hwan Park**, Arie Kaufman, Ronald Cha, “Remote volume rendering pipeline for mHealth applications”, *SPIE Medical Imaging*, 903904, 2014 (oral presentation)

-Kangseok Choi, Hancho Park, **Jihwan Park**, Soojin Ko, Junsoo Park, and Byoungil An, “Crystal Cube UI: User Interface for Mobile Device using Circular Interaction of Virtual Cubes”, *HCI Korea*, pp. 949-

953, 2009

-Sekil Park, **Jihwan Park**, Dongwook Lee, and Jinah Park, "3D Virtual Engraving with Haptic Feedback", *HCI Korea*, pp. 219-224, 2006

-Jinsul Kim, **Jihwan Park**, Yong K. Hwang, and Manjai Lee, "Advanced Grasp Planning for Handover Operation between Human and Robot: Three Handover Methods in Esteem Etiquettes using Dual Arms and Hands of Home-Service Robot", *IEEE International Conference on Autonomous Robots and Agents (ICARA)*, pp.34-39, 2004

Workshops and Posters

-**Ji Hwan Park**, Arie Kaufman, and Klaus Mueller, "Ambienizer: Turning Digital Photos into Ambient Visualizations", *IEEE VIS Poster*, 2022

- Wei Xu, Xihaier Luo, Yihui Ren, **Ji Hwan Park**, Shinjae Yoo, and Balasubramanya T. Nadiga, "Feature Importance in a Deep Learning Climate Emulator", *AI: Modeling Oceans and Climate Change Workshop (AIMOCC) at International Conference on Learning Representations (ICLR)*, 2021

-Xin Dai, **Ji Hwan Park**, Nicholas D'imperio, Shinjae Yoo, "Longitudinal deep learning study on MIMIC-III dataset", *ISC Workshop on HPC Applications in Precision Medicine*, 2021

- **Ji Hwan Park**, Shinjae Yoo, and Balu Nadiga, "Machine learning climate variability", *Machine Learning and the Physical Sciences Workshop at NeurIPS 2019*

-Qi Sun, Seyedkoosha Mirhosseini, Ievgeniia Gutenko, **Ji Hwan Park**, Charilaos Papadopoulos, Bireswar Laha, and Arie E. Kaufman, "Buyers Satisfaction in A Virtual Fitting Room Scenario Based on Realism of Avatar", *IEEE Symposium on 3D User Interfaces (3DUI) Poster*, 2015

-**Ji Hwan Park** and Arie E. Kaufman, "Next Generation SCADA", *CEWIT International Conference Poster*, 2014

-**Ji Hwan Park** and A. Kaufman, "Circle Bills: Visualization for the Smart Grid", *IEEE Pacific Visualization Symposium (PacificVis) Poster*, 2012

-**Ji Hwan Park**, Nafees Ahmed, Klaus Mueller, and Arie Kaufman, "Interactive Visualization for Smart Grid", *CEWIT International Conference Poster*, 2011

-Seokyeol Kim, **Jihwan Park**, and Jinah Park, "Progressive mesh cutting for real-time haptic incision simulator", *SIGGRAPH Asia Poster*, 2010

-Seok Kim, **Jihwan Park**, and Jinah Park, "Haptic Rendering Based on Penetration Depth for Intravenous Injection Simulation", *Korea Haptic Workshop*, 2010

-Hyunsang Ahn, Manjai Lee, Il-kwon Jeong, **Jihwan Park**, "A Smart Agent for Taking Pictures", *SIGGRAPH Asia Poster*, 2009

-Jinsul Kim, Hyunsang Ahn, **Jihwan Park**, Yong K. Hwang, and Manjai Lee, "Intelligent HRI Planning in Virtual Reality : A Humanoid Home-Service Robot for Human-Robot Coexisting Robot gets closer to humans", *IEEE International Conference on Human Computer Interaction Poster*, 2005

- **Ji Hwan Park**, Yong Koo Hwang, and Manjai Lee, "Manner Sensitive Interaction Control between 3D Models", *HCI Korea Poster*, 2005

-Jinsul Kim, **Jihwan Park**, Yong K. Hwang, and Manjai Lee, "Grasp Planning for Anthropomorphic Home-Service Robot", *International Conference on Artificial Reality and Telexistence Poster*, 2004

PATENTS

- 10-2006-0120282, "Method for operating sleep mode in a PMP device" (Korea)
- 10-2006-0103386, "Apparatus and method for compensating movement of a PMP" (Korea)

TEACHING

-Instructor: CS3203 Software Engineering - undergraduate (spring 2022, fall 2022), University of Oklahoma
-Instructor: CS4273 Capstone - undergraduate (fall 2022), University of Oklahoma
-Teaching Assistant: CSE547 Discrete Mathematics - graduate (spring 2016), CSE528 Computer Graphics - graduate (fall 2015), Stony Brook University
-Recitation Class Instructor: CSE215 Foundations of Computer Science - undergraduate (spring 2011), Stony Brook University
-Programming Lab Instructor: CSE110 Introduction to Computer Science - undergraduate (fall 2010), Stony Brook University
-Teaching Assistant: ICC355 Modeling and Rendering - undergraduate (fall 2005), Korea Advanced Institute of Science and Technology

GRANTS

University of Oklahoma

-Subcontract, Brookhaven national laboratory, "User Interface Development for Surveillance Video Analysis", 1/2022–7/2023, $81,457
- Co-PI, Department of Defense, "Identifying Protein Motifs in Cas9 Essential for Bacterial Virulence", 12/2022–11/2024, $310,000 (my share: $19,996)
- PI, OU DISC Seed Funding, "Interactive Visual Analytics Framework for Identifying Unique Motifs in Cas9 Protein Sequences", 10/2022–10/2023, $7,000

Brookhaven National Laboratory

- Co-PI, DOE-National Nuclear Security Administration (NNSA), "Machine Learning for Video

Surveillance in Safeguards of Pebble-Bed Reactors", 5/2020–9/2021
- Co-Investigator, DOE-National Nuclear Security Administration (NNSA), "Develop Deep Learning Algorithm for Video Surveillance in Nuclear Safeguards", 10/2019–10/2020
- Co-Investigator, DOE-National Nuclear Security Administration (NNSA), "Using Deep Learning Algorithms to Enhance Image-review Software for Surveillance Cameras", 10/2020–9/2021
- Co-Investigator, Department of Veterans Affairs, "VA-DOE Exemplar Project on Cancer", 9/2019–9/2021

MENTORING

Ph.D. Students

Vikash K. Prasad (PhD): 08/2022 – present
Debra Hogue (PhD): 08/2021 – present
Branden Roper (PhD): 08/2021 – present
Siwu Liu (PhD): 09/2018/ – 12/2020

Master Students

Tien Tran (MS): 08/2022 – present
Siddhardha Maguluri (MS): 05/2022 – 07/2022
Deepika Mettu (MS): 12/2021 – 05/2022
Ritwik Das (MS): 09/2013 – 12/2013
Xiang Yu (MS): 09/2013 – 12/2013

Undergraduate Students

Rebekah Lee: 09/2022 – present
Yunjia Zheng: 04/2022 – present
Joshua Papello: 06/2019 – 08/2019
Jiseok Song: 07/2005 – 08/2005

High School Students

Zoey Park: 06/2020 – 08/2019
Judi Cui: 06/2019 – 08/2019
Ruth Lee: 06/2019 – 08/2019

SERVICES

External Professional Service

-Program Committee: IEEE VIS Short paper 2022
-Reviewer: IEEE VIS 2016-22, IEEE PacificVis 2017, 2018, 2021-22, EuroVis 2017,2019-20, 2022, IEEE CG&A 2019, IEEE VR 2022-23, ACM CHI 2022-23, ACM CSCW 2022-23, MDPI Imaging 2020-22, Scientific Reports 2021, Journal of Supercomputing 2015, Future Generation Computer Systems 2015-16

-Student Volunteer: IEEE Visualization 2005, IEEE VIS 2016

Department Service
-Student Engagement Committee, 08/2021 – present
-Undergraduate Committee, 08/2022 – present
-Faculty Search Committee, 2022

University Service
-Mentor, First-Year Student Mentoring Program, 08/2022 – present

REFERENCES

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