

Budmonde Duinkharjav

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Education

New York University, Brooklyn, NY *Spring 2021 - present*
PhD Candidate in Computer Science
Advisor: Qi Sun
Thesis: Psychophysical Methods for Enhancing Immersive Graphics Systems

Massachusetts Institute of Technology, Cambridge, MA *Fall 2014 - Spring 2019*
MEng in Computer Science and Engineering (Computer Graphics concentration)
Advisor: Frédo Durand
Thesis: Learning non-stationary SVBRDFs using GANs and Differentiable Rendering
BS in Computer Science and Engineering

Work Experience

NVIDIA, Santa Clara, CA - *Machine Learning Intern* *Summer 2024*
Developed a UX workflow for enhancing user performance on Video Quality Assessment visual tasks.

Adobe Research, San Jose, CA - *Research Intern* *Summer 2023*
Internship project submitted to SIGGRAPH Asia 2024.

NVIDIA Research, Santa Clara, CA - *Research Intern* *Summer 2022*
Developed a perceptually-based image quality assessment metric for video game applications.

Facebook, Seattle, WA - *Software Engineer* *Fall 2019 - Spring 2021*
Researched and maintained profile-guided optimizations for Facebook's mobile apps.
Contributed to Redex, a java byte-code optimizer for Android apps.

MIT, CSAIL, Cambridge, MA - *Research Assistant* *Fall 2017 - Spring 2019*
Developed a deep learning system for inferring surface textures using differentiable rendering.
Worked on a system for procedural generation of large-scale city landscape 3D models.

Facebook, Menlo Park, CA - *Software Engineering Intern* *Summer 2018*

Instagram, Menlo Park, CA - *Software Engineering Intern* *Summer 2017*

Omron R&D, Kyoto, Japan - *Research Intern* *Summer 2016*
Worked on super-resolution techniques applied on LIDAR scan images.

MIT, Civil&Environ. Eng. Dept., Cambridge, MA - *Research Assistant* *Fall 2014 - Spring 2015*
Analyzed the fluid behavior of water droplet collisions on flat surfaces.

Journal and Conference Publications

Evaluating Visual Perception of Object Motion in Dynamic Environments *SIGGRAPH Asia 2024*
B. Duinkharjav, J. Kang, G. S. P. Miller, C. Xiao, Q. Sun *(to appear)*

Exploiting Human Color Discrimination for Memory- and Energy-Efficient Image Encoding in Virtual Reality *ASPLOS 2024*
N. Ujjainkar, E. Shahan, K. Chen, B. Duinkharjav, Q. Sun, Y. Zhu

**The Shortest Route Is Not Always the Fastest:
Probability-Modeled Stereoscopic Eye Movement Completion Time in VR** SIGGRAPH Asia 2023
B. Duinkharjav, B. Liang, A. Patney, R. Brown, Q. Sun

Color-Perception-Guided Display Power Reduction for Virtual Reality SIGGRAPH Asia 2022
B. Duinkharjav, K. Chen*, A. Tyagi, J. He, Y. Zhu, Q. Sun (* co-authors)*

Reconstructing Room Scales With a Single Sound for Augmented Reality Displays JID 2022
B. Liang, A. Liang, I. Roman, T. Weiss, B. Duinkharjav, J. P. Bello, Q. Sun

FoV-NeRF: Foveated Neural Radiance Fields for Virtual Reality Best Journal Paper at ISMAR 2022
N. Deng, Z. He, J. Ye, B. Duinkharjav, P. Chakravarthula, X. Yang, Q. Sun

**Image Features Influence Reaction Time:
A Learned Probabilistic Perceptual Model for Saccade Latency** Best Paper at SIGGRAPH 2022
B. Duinkharjav, R. Brown, P. Chakravarthula, A. Patney, Q. Sun

**Instant Reality: Gaze-Contingent Perceptual Optimization
for 3D Virtual Reality Streaming** IEEE VR 2022
S. Chen, B. Duinkharjav, X. Sun, L. Wei, S. Petrangeli, J. Echevarria, C. Silva, Q. Sun

Other Publications

Imperceptible Color Modulation for Power Saving in VR/AR E-Tech at SIGGRAPH 2023
K. Chen, B. Duinkharjav, N. Ujjainkar, E. Shahan, A. Tyagi, J. He, Y. Zhu, Q. Sun

**Modeling And Optimizing Human-In-The-Loop Visual Perception
Using Immersive Displays: A Review** SID Display Week 2022
Q. Sun, B. Duinkharjav, A. Patney

Learning Non-stationary SVBRDFs using GANs and Differentiable Rendering MIT M.Eng Thesis 2019
B. Duinkharjav

Professional Services

Program Committee for ACM SAP
**Reviewer for ACM { SIGGRAPH | SIGGRAPH Asia }, IEEE { TVCG | ISMAR | VR }, Eurographics,
Journal of Real-time Image Processing, IET, Displays**

Awards

NYU Outstanding Performance on PhD QE, Deborah Rosenthal, MD Award Spring 2023

Snap Research Fellowship, 2022, Honorable Mention Fall 2022

ACM SIGGRAPH 2022, Best Paper Award Summer 2022

MIT Intro to Computer Graphics Final Project, Best Project Honorable Mention Fall 2017

MIT Web Programming Competition, 1st Place Winter 2015

45th International Physics Olympiad, Silver Medal Summer 2014

14th Asian Physics Olympiad, Bronze Medal Spring 2014

44th International Physics Olympiad, Bronze Medal Summer 2013

Teaching Experience

Virtual and Augmented Reality (CS-GY 9223), NYU, Brooklyn, NY - *Guest Lecturer* *Fall 2023*
I taught an introduction to using the *Unity Engine* for game development and led a workshop.

Digital and Computational Photography (6.815), MIT, Cambridge, MA - *Teaching Assistant* *Spring 2019*
Graduate course popular for students focusing in computer graphics, computer vision, and HCI.
Topics: Image denoising, demosaicing, stitching, and blending. HDR and panorama photography.
Introduces the *HALIDE* language for high-performance image processing.
I helped develop some homework assignments, held office hours, and graded assignments.

Computer Systems Security (6.858), MIT, Cambridge, MA - *Teaching Assistant* *Spring 2018*
Graduate course popular for students focusing in computer systems.
Topics: OS security, capabilities, language security, security in web applications and more.
I held office hours, and graded assignments and final projects.

WebLab: Intro to Web Programming (6.148), MIT, Cambridge, MA - *Co-Instructor* *Winter 2016, '17, '18*
Introduces undergraduate students on how to build a dynamic web application with a server backend.
Course culminates in a competition for the best final project. Course website: weblab.mit.edu
I organized the course content and provided technical and creative feedback for student projects.