

Akshay Jindal

RESEARCH SCIENTIST · INTEL · PHD

Intel Corporation, RidgePointe 1, 2700 156th Ave NE Suite 125, Bellevue, WA 98007D

☎ (+1) 4255433276 | ✉ akshayjin@gmail.com | 🌐 akshayjindal.com | 📱 akshayjindal94 | 📄 Google Scholar

Summary

I'm a Research Scientist in Intel's Graphics Research Org., based in Bellevue, Washington. I received my Ph.D. in Computer Science from the University of Cambridge in 2022, under the supervision of Prof. Rafat Mantiuk. Previously, I was a research intern at NVIDIA Research (2022) and a Software Engineer at WalmartLabs R&D (2017-2018). I earned an integrated master's degree in Information Technology from IIIT-Bangalore in 2017.

My research interests lie at the intersection of real-time graphics and visual perception. My work encompasses visual quality metrics for video games, perceptually optimized low-bandwidth rendering, novel scene representations, rendering for 3D displays, and gloss appearance. I've also worked on computer graphics applications in retail at WalmartLabs and structural classification of LiDAR point clouds during my Master's.

Work Experience

Graphics Research Org., Intel Labs

Bellevue, WA, USA

RESEARCH SCIENTIST

Apr. 2022 - PRESENT

- Working on perceptual models for real-time graphics. [Tech Stack: Matlab, PyTorch]

NVIDIA Research

Cambridge, United Kingdom

RESEARCH INTERN

Feb. 2022 - Sep. 2022

- Worked on metrics for video game quality assessment. [Tech Stack: Matlab, PyTorch]

The Computer Laboratory, University of Cambridge

Cambridge, United Kingdom

EARLY STAGE RESEARCHER

Jan. 2019 - Feb. 2023

- Worked on motion quality metrics and perceptual optimization of neural rendering methods.
- Developed a visual model and a rendering algorithm for optimizing variable-rate shading. [Tech Stack: Unity, C#, Matlab, Python]
- Built a perceptually realistic rendering pipeline for a high dynamic range multi-focal stereoscopic display. [Tech Stack: C++, OpenGL, Matlab]
- Ran a psychophysical study to analyze spatiotemporal resolution adaptive rendering methods in complex motion scenarios. [Tech Stack: Unity, C#, Matlab]
- Supervised students and developed assignments for Introduction to Graphics and Advanced Graphics and Imaging [Tech Stack: Java, GLSL, Python, OpenCL, C++]

Max-Planck-Institut für Informatik

Saarbrücken, Germany

VISITING SCHOLAR

Feb. 2020 - May 2020

- Worked on motion quality metrics to efficiently drive variable rate shading pipeline. [Tech Stack: C++, OpenGL, GLSL, Matlab]

WalmartLabs

Bangalore, India

SOFTWARE ENGINEER II

Aug. 2017 - December. 2018

- Integrated an Augmented Reality feature for product visualization with the Sam's Club iOS application. Implemented features include 3D model optimizations, UX animations, UI, Lighting & shadows, and collision detection. [Tech stack: Swift, SceneKit, ARKit]
- Built and deployed overall service infrastructure to serve millions of 3D models, focusing on high-availability, fault tolerance, and auto-scaling. [Tech Stack: Java Spring, Cassandra]
- Developed a VR shopping experience deployable on all major VR headsets and traveled to US head office to showcase it to Walmart's leadership. [Tech Stack: Unity3D, C#]
- Worked on a diminished reality solution to replace real-life objects with virtual models. [Tech Stack: Tensorflow, Python]

Hilti Asia IT Services Sdn. Bhd.

Kuala Lumpur, Malaysia

INTERN(MOBILE APPS)

May. 2016 - Jul. 2016

- Developed a chatbot for handling Hilti's products and services-related text/image queries. [Tech Stack: Python, OpenCV, Messenger and Google Cloud API]

Siemens Tech. IN

Bangalore, India

INTERN (PARALLEL SYSTEMS TEAM)

May. 2015 - July. 2015

- Profiled and improved the performance of an internal binary instrumentation tool by 23%. [Tech Stack: C++, Intel Pin]

Education

University of Cambridge

DOCTOR OF PHILOSOPHY

IN COMPUTER SCIENCE

- Dissertation title: Motion quality models for real-time adaptive rendering

Cambridge, UK

Jan. 2019 - Oct. 2022

International Institute of Information Technology, Bangalore

BACHELOR OF TECHNOLOGY ; MASTER OF TECHNOLOGY

IN INFORMATION TECHNOLOGY UNDER INTEGRATED MASTER OF TECHNOLOGY PROGRAMME

- CGPA: 3.5/4
- Specialization in Theoretical Computer Science

Bangalore, IN

Jul. 2012 - Jul. 2017

Aklank Public School

SENIOR SECONDARY

- Board: Central Board of Secondary Education, New Delhi
- Percentage: 87%

Kota, IN

Jul. 2010 - Jul. 2012

St. Paul's Sr. Sec. School

SECONDARY

- Board: Central Board of Secondary Education, New Delhi
- CGPA: 9.4/10

Udaipur, IN

Jul. 2009 - Jul. 2010

Publications

Image-GS: Content-Adaptive Image Representation via 2D Gaussians

ZHANG, Y., KUZNETSOV, A., JINDAL, A., CHEN, K., SOCHENOV, A., KAPLANYAN, A., AND SUN, Q. *arXiv:2407.01866*

2023

The effect of display capabilities on the gloss consistency between real and virtual objects

AKSHAY JINDAL, CHEN, BIN*, MICHAL PIOVARČI, CHAO WANG, HANS-PETER SEIDEL, PIOTR DIDYK, KAROL MYSZKOWSKI, ANA SERRANO, AND RAFAŁ K. MANTIUK. ACM TRANS. GRAPHICS (PROC. OF SIGGRAPH ASIA'23)

2023

The effect of display capabilities on the gloss consistency between real and virtual objects

LIU, JINGYU, AKSHAY JINDAL, CLAIRE MANTEL, SØREN FORCHHAMMER, AND RAFAL K. MANTIUK. IEEE INTERNATIONAL SYMPOSIUM ON MIXED AND AUGMENTED REALITY (ISMAR'22)

2022

Perceptual Model for Adaptive Local Shading and Refresh Rate

AKSHAY JINDAL, KRZYSZTOF WOLSKI, KAROL MYSZKOWSKI, RAFAŁ K. MANTIUK. ACM TRANS. GRAPHICS (PROC. OF SIGGRAPH ASIA'21)

2021

Reproducing Reality with a High-Dynamic-Range Multi-Focal Stereo Display

FANGCHENG ZHONG, AKSHAY JINDAL, ALI ÖZGÜR YÖNTEM, PARAM HANJI, SIMON WATT, RAFAŁ K. MANTIUK. ACM TRANS. GRAPHICS (PROC. OF SIGGRAPH ASIA'21)

2021

A Perceptual Model of Motion Quality for Rendering with Adaptive Refresh-Rate and Resolution

GYORGY DENES, AKSHAY JINDAL, ALIAKSEI MIKHAILIUK, RAFAŁ K. MANTIUK., ACM TRANS. GRAPHICS (PROC. OF SIGGRAPH'20)

2020

Contour Extraction in Buildings in Airborne LiDAR Point Clouds Using Multi-scale Local Geometric Descriptors and Visual Analytics

J. SREEVALSAN-NAIR, A. JINDAL, AND B. KUMARI. IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING (2018)

2018

Using Gradients and Tensor Voting in 3D Local Geometric Descriptors for Feature Detection in Airborne LiDAR Point Clouds in Urban Regions

J.SREEVALSAN-NAIR, AND A. JINDAL. IN THE PROCEEDINGS OF THE 2017 IEEE INTERNATIONAL GEOSCIENCE AND REMOTE SENSING SYMPOSIUM, JULY 2017

2017

Patents

Texture opacity optimizations for optical see-through AR displays

US20240177400A1

INVENTORS: A JINDAL

2024

System and method for assessing quality of produce

US11113808

INVENTORS: MNK WADHONKAR, P AGGARWAL, A SETIA, A JINDAL, R KUMAR, A JHUNJHUNWALA, AA GROCHALA

2018

Methods and systems for generating a planogram at a retail facility

US11126961

INVENTORS: MNK WADHONKAR, A JINDAL, N AGARWAL

2018

Honors & Awards

INTERNATIONAL

2023	2nd Place , High Performance Graphics, Real-time Path Tracing Challenge	Global
2019	1st Place , Best Pitch, Entrepreneurship in Technical Science Summer School	Helsingor, Denmark
2019	PhD Grant , Marie Skłodowska-Curie Actions Innovative Training Network	Cambridge, UK
2018	2nd Place , Walmart Hackday	Bangalore, IN
2016	1st Place , Hilti Mobile App Competition World Final	Selengor, Malaysia

INDIA

2017	Travel Grant , Google India	India
2016	2nd Place , Steer Quest Animation/VFX/Gaming	Bangalore, IN
2016	Finalist , DreamWorks Animation Challenge	India
2016	3rd Place , HackforIndia: The Appfest	Bangalore, IN
2016	Finalist , IndiaHacks Travel and Transport	Bangalore, IN
2016	1st Place , DigitalOcean Cloud Hack	India
2016	2nd Place , MakeMyTrip Hackathon	Bangalore, IN
2016	Scholarship , Google-TATA-Udacity Android Nanodegree Scholarship	India
2015	1st Place , Code the future: by AceHacker and Wipro Digital	Bangalore, IN
2015	1st Place , HackIndia (Bluemix category)	Bangalore, IN
2015	3rd Place , Applift Datathon	Bangalore, IN
2014	1st Place , Informatica National Codeathon	India

Skills

Programming	Java, Python, C++, C, Swift, Matlab
Computer Graphics	Unity3D, OpenGL, OpenCL, WebGL, Qt, libgdx, AR, VR
API	PyTorch, Android, iOS, Spring
Web Technologies	PHP, HTML, CSS, Javascript, AngularJs
Database Systems	MySQL, JDBC, Cassandra
Languages	English, Hindi

Certifications

2019	Entrepreneurship in Technical Science , Denmark Technical University	Helsingor, Denmark
2019	Vision, Psychophysics, and Modelling , University of Oxford	Oxford, UK
2019	Team Building and Training School , Fraunhofer IIS	Erlangen, Germany
2018	Unity3D Shader Development , Udemy	
2018	Tensorflow , Udemy	
2018	Computer Vision , Udemy	
2013	Web Application Development , HCL-CDC	

Invited Talks

Facebook Reality Labs and Henry Morten Graphics Forum, NVIDIA

PERCEPTUAL MODEL FOR ADAPTIVE LOCAL SHADING AND REFRESH RATE

- Presented a perceptual model for motion quality and an adaptive rendering technique to optimise local shading and refresh rate.

US (Remote)

Nov 2021, Feb 2022

Huawei Computer Graphics and GPU Architecture Seminar

PERCEPTUALLY MOTIVATED VARIABLE RATE SHADING

- Presented a framework for perceptually optimising adaptive graphics hardware such VRS and G-Sync.

Cambridge, UK

Jul. 2021

Rainbow Lab Machine Learning Reading Club

A SURVEY OF FOVEATED RENDERING TECHNIQUES

- Presented a review of all foveated rendering techniques proposed in the last three decades and the future direction of the field.

Cambridge, UK

Jun. 2021

International Institute of Information Technology, Bangalore

COMPUTER GRAPHICS IN RETAIL

- Covered how 3D computer graphics is being used in retail and the challenges that still remain open.

Bangalore, India

Apr. 2018

National Institute of Design, Bangalore

QUICK REALIZATION OF AR/VR DESIGN IN UNITY3D

- Conducted a workshop on building applications for AR/VR using Unity3D.

Bangalore, India

Mar. 2018

Fields of View, Bangalore

INVESTIGATING EPIDEMICS USING AGENT-BASED MODELS

- Talked about the potential of ABMs in tracing epidemics and low level policy design.

Bangalore, India

Apr. 2017

Extracurricular Activity

European ITN RealVision closing event

ORGANISER

- Helped in organising the closing ceremony of the RealVision consortium. It is a 3-day event with visitors from 11 institutes across Europe.

Lake District, UK

June 2022

OSA Incubator on Visual Perception in AR/VR

STUDENT VOLUNTEER

- Helped in organising an online OSA Incubator meeting where the top industry and academic researchers explored the state-of-the-art and future direction of AR/VR.

Online

Sep. 2020

Univerity of Cambridge

STUDENT VOLUNTEER

- I volunteered to represent the Rainbow Group on Cambridge Open Day, 2019, and engaged with the public to raise the aspirations for computer science careers in upcoming students

Cambridge, UK

Aug. 2019

AAMAS

STUDENT VOLUNTEER

- Helped in organizing International Conference on Autonomous Agents and Multiagent Systems.

Sao Paulo, Brazil

May. 2017

IT & Society Club

MEMBER

- Was responsible for organizing debates and discussions on consequences of digitization on society.

Bangalore, IN

2016 - 2017

Competitive Gaming Club

MEMBER

- Won multiple gaming events as a part of IIIT-B's Counter Strike team.

Bangalore, IN

2014-2017

Siemens Technology India

VOLUNTEER

- Helped in conducting a workshop raising awareness on parallel computing.

Bangalore, IN

Jul 2015

IIIT-B

VOLUNTEER

- Mentored first year CSE students and helped them with on-boarding

Bangalore, IN

Aug 2013

National Cadet Cops

CADET

- Took part and contributed in multiple social service events as a member of NCC.

Udaipur, IN

Jul. 2008 - Jul. 2010