

# Akshay Jindal

EARLY STAGE RESEARCHER · PHD STUDENT

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## Summary

I'm currently working as a part of the Graphics and Interaction (Rainbow) Group at the University of Cambridge under the supervision of Dr Rafal Mantiuk. As a Marie-Curie Early Stage Researcher in the European ITN RealVision Project, my work involves research into the real-time rendering techniques for realistic reproduction of images and videos on future displays. I am also investigating efficient data representation of content intended for future display technologies.

I am broadly interested in the field of Computer Graphics and Artificial Intelligence.

## Work Experience

### The Computer Laboratory, University of Cambridge

Cambridge, United Kingdom

EARLY STAGE RESEARCHER

Jan. 2019 - PRESENT

- Currently working on modelling perceptually optimal spatial-temporal resolution trade-off on Adaptive sync displays [Tech Stack: Unity3D, C#, Matlab]
- Currently working on modelling the effects of glare on HDR colour encoding [Tech Stack: HDR Display, Matlab, C++#]
- Helped develop assignment for Introduction to Graphics and Advanced Graphics and Imaging [Tech Stack: Java, GLSL, Python, OpenCL, C++]

### 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, instrumentation 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 an intelligent chatbot for handling all company's products and services related text/image queries. [Tech Stack: Python, OpenCV]
- Responsibilities included Facebook and Google APIs integration, build system management and cloud deployment.

### Siemens Tech. IN

Bangalore, India

INTERN (PARALLEL SYSTEMS TEAM)

May. 2015 - July. 2015

- Worked on the scalability of one of their binary instrumentation tool. [Tech Stack: C++, Intel Pin]
- Responsibilities included performance evaluation, bottlenecks identification and program optimization.

## Education

### University of Cambridge

Cambridge, UK

DOCTOR OF PHILOSOPHY

Jan. 2019 - Jan. 2022

IN COMPUTER SCIENCE

- Ongoing

### International Institute of Information Technology, Bangalore

Bangalore, IN

BACHELOR OF TECHNOLOGY ; MASTER OF TECHNOLOGY

Jul. 2012 - Jul. 2017

IN INFORMATION TECHNOLOGY UNDER INTEGRATED MASTER OF TECHNOLOGY PROGRAMME

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

### Aklank Public School

Kota, IN

SENIOR SECONDARY

Jul. 2010 - Jul. 2012

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

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

## Skills

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

## Certifications

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

## Publications

### 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

### Agent-Based Modeling and Simulation of Mosquito-Borne Disease Transmissions

AKSHAY JINDAL AND SHRISHA RAO. IN PROCEEDINGS OF THE 16TH CONFERENCE ON AUTONOMOUS AGENTS AND MULTIAGENT SYSTEMS (AAMAS '17).

2017

## Patents

### Organic product assessment with non-invasive techniques

INVENTOR: A. JINDAL ET AL.

*(Under Process)*

2018

### Mixed Reality for store planning

INVENTOR: A. JINDAL ET AL.

*(Under Process)*

2018

### Emotion extraction through Computer Vision

INVENTOR: A. JINDAL ET AL.

*(Under Process)*

2018

## Honors & Awards

### INTERNATIONAL

2019	<b>1st Place</b> , Best Pitch, Entrepreneurship in Technical Science Summer School	<i>Helsingor, Denmark</i>
2018	<b>2nd Place</b> , Walmart Hackday	<i>Bangalore,IN</i>
2016	<b>1st Place</b> , Hilti Mobile App Competition World Final	<i>Selengor, Malaysia</i>

## DOMESTIC

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

## Invited Talks

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### International Institute of Information Technology, Bangalore

Bangalore, India

COMPUTER GRAPHICS IN RETAIL

Apr. 2018

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

### National Institute of Design, Bangalore

Bangalore, India

QUICK REALIZATION OF AR/VR DESIGN IN UNITY3D

Mar. 2018

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

### Fields of View, Bangalore

Bangalore, India

INVESTIGATING EPIDEMICS USING AGENT-BASED MODELS

Apr. 2017

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

## Minor Projects

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### Voxelizer

TECH. STACK: UNITY3D, C#

2018

- An Unity3D asset providing a voxelization engine which can rapidly convert any mesh or even entire scene into a voxel model using a unique approximation technique.

### Texture Mapping Progressive Meshes

TECH. STACK: OPENGL, C++

2016

- An application to construct a progressive mesh from an arbitrary mesh such that all meshes in the PM sequence share a common texture parameterization.

### Particle-based Simulation of Sand and Sparks

TECH. STACK: OPENGL, C++

2016

- A basic physics engine with support for particle system and efficient memory management to realistically simulate welding sparks and sand.

### Scientific/Information Visualization

TECH. STACK: C++, OPENGL, JAVA, PROCESSING

2016

- Implemented various data visualization techniques to visualize Indian ocean salinity and geostrophic current data using OpenGL.

### Computer Animation

TECH. STACK: C++, OPENGL

2016

- Implemented animated scenes by 3D rendering using quaternions, lightning models, texture mapping and Scene Graphs all using OpenGL, as a part of Computer Graphics Coursework. All projects honored MVC paradigm and OOPs concepts.

### Icicles

TECH. STACK: JAVA, LIBGDX

2016

- A 2D game built using libgdx library and deployed on desktop and mobile platform. Icicles rain down from the top of the screen, and the player must dodge them using the arrow keys or by tilting their phone.

### Ramayana

TECH. STACK: JAVA, LIBGDX

2016

- A 2D platforming game depicting the adventures of the epic Ramayana, built using libgdx library and deployed on desktop and mobile platform. Project involves sprite drawing, keeping track of complex game state, controlling interactions between game entities, and loading and managing level data.

## Popular Movies App

TECH. STACK: JAVA, ANDROID

2016

- Built an app to help users discover popular and highly rated movies on the web as a part of Udacity Android nanodegree program. This app utilizes core Android user interface components, is optimized for tablet view and fetches movie information using themoviedb.org web API.

## New User investment predictor

TECH. STACK: PYTHON, SCIKIT

2015

- A regression algorithm to determine the potential (capital investment) of a new user of a dating app trained using huge data of a popular dating platform recently leaked online.

## Remote File Monitoring System

TECH. STACK: C, UNIX

2014

- A software providing a real-time feed of the files on the server being monitored through Unix socket-server and C multithreading. Communication through an insecure remote controlled channel (also implemented in C).

## School Management System

TECH. STACK: PHP, MYSQL

2013

- A web based application providing an online platform for teacher-student interaction with a user friendly interface.

# Extracurricular Activity

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## Univerity of Cambridge

Cambridge, UK

STUDENT VOLUNTEER

Aug. 2019

- 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

## AAMAS

Sao Paulo, Brazil

STUDENT VOLUNTEER

May. 2017

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

## IT & Society Club

Bangalore, IN

MEMBER

2016 - 2017

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

## Competitive Gaming Club

Bangalore, IN

MEMBER

2014-2017

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

## Siemens Technology India

Bangalore, IN

VOLUNTEER

Jul 2015

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

## IIIT-B

Bangalore, IN

VOLUNTEER

Aug 2013

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

## National Cadet Cops

Udaipur, IN

CADET

Jul. 2008 - Jul. 2010

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