

# Rahul Arora

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

Interactive Computer Graphics  
Human-Computer Interaction  
Virtual and Augmented Realities

## EDUCATION

**PhD, University of Toronto** 2015-Present  
Major: Computer Science  
Thesis: Creative Expression in Immersive 3D Environments (Tentative title)  
Adviser: Prof. Karan Singh  
CGPA: 4.0/4.0

**MTech, Indian Institute of Technology, Kanpur** 2014-2015  
Major: Computer Science and Engineering  
Thesis: Exploring Design Space by Interpolating between Multiple Sketches  
Advisers: Prof. Vinay P. Namboodiri and Dr. Adrien Bousseau  
CGPA: 9.6/10.0

**BTech, Indian Institute of Technology, Kanpur** 2010-2015  
Major: Computer Science and Engineering  
CGPA: 8.5/10.0

## PEER-REVIEWED PUBLICATIONS

**MagicalHands: Mid-Air Hand Gestures for Animating in VR**  
**Rahul Arora**, Rubaiat Habib Kazi, Danny Kaufman, Wilmot Li, and Karan Singh  
*ACM Symposium on User Interface Software and Technology 2019 (UIST '19)*  
<https://www.dgp.toronto.edu/projects/magical-hands/>

**Volumetric Michell Trusses for Parametric Design & Fabrication**  
**Rahul Arora**, Alec Jacobson, Timothy R. Langlois, Yijiang Huang, Caitlin Mueller, Wojciech Matusik, Ariel Shamir, Karan Singh, and David I.W. Levin  
*ACM Symposium on Computational Fabrication 2019 (SCF '19)*  
<https://www.dgp.toronto.edu/projects/michell/>

**SymbiosisSketch: Combining 2D and 3D Sketching for Designing Detailed 3D Objects in Situ**  
**Rahul Arora**, Rubaiat Habib Kazi, Tovi Grossman, George Fitzmaurice, and Karan Singh  
*ACM SIGCHI Conference on Human Factors in Computing Systems 2018 (CHI '18)*  
<https://doi.org/10.1145/3328939.3328999>

**Experimental Evaluation of Sketching on Surfaces in VR**  
**Rahul Arora**, Rubaiat Habib Kazi, Fraser Anderson, Tovi Grossman, Karan Singh, and George Fitzmaurice  
*ACM SIGCHI Conference on Human Factors in Computing Systems 2017 (CHI '17)*  
<http://dx.doi.org/10.1145/3025453.3025474>

### SketchSoup: Exploratory Ideation using Design Sketching

**Rahul Arora**, Ishan Darolia, Vinay P. Namboodiri, Karan Singh, and Adrien Bousseau  
*Computer Graphics Forum (CGF) 2017, presented at Eurographics 2017*  
<http://dx.doi.org/10.1111/cgf.13081>

### Derandomizing Isolation Lemma for $K_{3,3}$ -free and $K_5$ -free Bipartite Graphs

**Rahul Arora**, Ashu Gupta, Rohit Gurjar, and Raghunath Tewari  
*Symposium on Theoretical Aspects of Computer Science (STACS) 2016*  
<http://dx.doi.org/10.4230/LIPIcs.STACS.2016.10>

## OTHER PUBLICATIONS

### Sketching in 3D Space (Invited Book Chapter)

Mayra Donaji Barrera Machuca, **Rahul Arora**, Philipp Wacker, Johann Habakuk Is-  
rael, and Daniel Keefe  
*In Interactive Sketch-Based Interfaces and Modelling for Product Design (ed. Alexan-  
dra Bartolo). River Publishers. In press.*

### Mid-Air Drawing of Curves on 3D Surfaces in AR/VR (Preprint)

**Rahul Arora** and Karan Singh  
*arXiv preprint*  
<https://arxiv.org/abs/2009.09029>

### Creative Expression with Immersive 3D Interactions (Juried)

**Rahul Arora**  
*Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Sys-  
tems (CHI '20 Doctoral Consortium)*  
<https://dl.acm.org/doi/10.1145/3334480.3375028>

### Designing Volumetric Truss Structures for Computational Fabrication (Ju- ried)

**Rahul Arora**, Alec Jacobson, Timothy R. Langlois, Karan Singh, and David I.W.  
Levin  
*Graphics Interface 2018 Posters (GI '18)*  
<https://bit.ly/31CTjtw>

## AWARDS AND RECOGNITION

Wolfond Scholarship in Wireless Information Technology: CA \$10,000	2019
UofT Libraries Grad Exhibit Competition (3 winners): CA \$1,000	2019
Adobe Research Fellowship 2019 (11 fellows): US \$10,000	2018
Adobe Research Fellowship 2018 Finalist	2017
Mitacs Accelerate Award for industrial partnership: CA \$15,000	2016
Merit-cum-Means Scholarship, IIT Kanpur: Full tuition amount	2010–2014
Academic Excellence Award, IIT Kanpur (top 5% students)	2013

## INTERNSHIPS

<b>Adobe Research, Seattle, USA</b> <i>with Timothy Langlois, Danny Kaufman, and Rubaiat Habib</i> Worked on techniques for creating stylized animations of 2D fluids.	Summer 2019
<b>Adobe Research, Seattle, USA</b> <i>with Rubaiat Habib, Danny Kaufman, and Wil Li</i> Studied gestural methods for authoring animations in VR.	Summer 2018

<b>Autodesk Research, Toronto, Canada</b> <i>with Tovi Grossman and Rubaiat Habib</i> Developed an augmented reality tool for 3D concept sketching.	Winter 2017
<b>Autodesk Research, Toronto, Canada</b> <i>with Tovi Grossman and Rubaiat Habib</i> Conducted lab experiments to understand 3D sketching ability.	Summer 2016
<b>Inria, Sophia-Antipolis, France</b> <i>with Adrien Bousseau</i> Developed a user-guided method for ideation sketch interpolation.	Summer 2014
<b>Adobe Research, Bangalore, India</b> <i>with Ramesh Srinivasaraghavan</i> Built a gamified crowdsourcing platform for object recognition tasks.	Summer 2013

## TEACHING EXPERIENCE

<b>Computer Graphics</b> , University of Toronto Teaching Assistant for Prof. Alec Jacobson	Fall 2019
<b>Computer Graphics</b> , University of Toronto Teaching Assistant for Prof. David Levin	Winter 2019
<b>Computer Graphics</b> , University of Toronto Teaching Assistant for Prof. Karan Singh and Prof. David Levin	Winter 2018
<b>Computer Graphics</b> , University of Toronto Teaching Assistant for Prof. Karan Singh and Prof. Alec Jacobson	Fall 2017
<b>Intro to Theory of Computation</b> , University of Toronto Teaching Assistant for Prof. Azadeh Farzan	Fall 2015
<b>Introduction to Computer Graphics</b> , IIT Kanpur Teaching Assistant for Prof. Vinay P. Namboodiri	Fall 2014

## ACTIVITIES

<b>Committee Member</b> for SIGGRAPH Asia 2021 XR Program.	
<b>Area Chair</b> for Graphics Interface (GI) 2020.	
<b>Student Volunteer</b> at User Interface Software and Technology (UIST) 2019.	
<b>Reviewer</b> for computer graphics conferences: SIGGRAPH, SIGGRAPH Asia, and Graphics Interface (GI).	
<b>Reviewer</b> for computer graphics journals: Computer Graphics Forum (CGF), Transactions on Visualization and Computer Graphics (TVCG), Computer-Aided Design (CAD), and Computer Graphics & Applications (CG&A).	
<b>Reviewer</b> for HCI conferences: User Interfaces Software and Technology (UIST), Conference on Human Factors in Computing Systems (CHI), Designing Interactive Systems (DIS), and Graphics Interface (GI).	

**Reviewer** for specialized VR/AR conferences: Virtual Reality (IEEE VR), Virtual Reality Software and Technology (VRST), International Symposium on Mixed and Augmented Reality (ISMAR), Spatial User Interaction (SUI).

**Reviewer** for other venues: Springer Nature Applied Sciences (SNAS).