

EDUCATION

University of Toronto, St. George

Toronto, ON, Canada

(H.B.Sc) **Computer Science** Specialist

Expected Graduation: April 2020

TECHNICAL SKILLS

Languages:

- Python
- C
- C#
- C++
- SQL
- Java
- HTML
- CSS
- JavaScript
- Verilog

Frameworks/Libraries:

- ReactJS
- Express.js
- Node.js
- jQuery
- OpenCV
- OpenGL
- NumPy
- Django
- Processing.js
- Ajax
- Unity3D
- D3.js

Other Technologies:

- Adobe Creative Suite
- Autodesk Maya
- Git and Version Control
- OSX and Linux
- Microsoft Graph API

ACTIVITIES AND LEADERSHIP

- **Vice President** of University of Toronto Computer Graphics club (UTCG) (2017 - Present)
- **Toronto ACM SIGGRAPH** Executive Committee Member (2017 - Present)
- **SIGGRAPH Student Volunteer**
Vancouver (2018)
Los Angeles (2017)
- Hart House Singers – Choir Member (2016 - 2017)
- Independent **photographer, musician, designer and sculptor**

EXPERIENCE

University of Toronto – Undergraduate VR Researcher

 Oct. 2018 – Present

- Currently undergoing research for two **VR projects** in **Unity3D** with Professor Karan Singh and Rahul Arora in the Dynamic Graphics Project (DGP) lab
- **3dSketching**: Investigating the best methods for **projecting drawing strokes** onto a 3D mesh with the **HTC Vive**
- **MagicMirrors**: Designing **creative tools** with the **Oculus Rift** for mesh manipulation by generating mirrors with **interactive reflections** in the scene

Autodesk Research – User Interface Developer Intern

 Jan. 2019 – Aug. 2019

- Designed and implemented features in **D3.js** and **Node** for Aware, an internal web-based tool for **visualizing** the corporate hierarchy
- **Lead developer** for shared documents, where users upload slide decks that can be **fully previewed** by other employees in a **simple UI**
- Used **Microsoft Graph API** for **prototyping backend** functionality to handle HTTP requests for **SharePoint and OneDrive**

Dot Health – Software Developer Intern

 Sept. 2018 – Oct. 2018

- Implemented **backend** features in **Node** and **Express**, built **frontend user and admin interfaces** in **React**
- **Reduced search filter time** for incoming requests
- Created additional **endpoints** and **routing methods** in a **RESTful API** to give administration read and write access to prescription records

Hatch Coding – Classroom Instructor

 Sept. 2017 – Sept. 2018

- **Instructed students** aged 7-17 in after school program, assisted students with designing and implementing **python** or **processing.js** projects

PERSONAL PROJECTS

Fracture Fracture

 Jan. 2019

- Created **mobile android app** that takes a picture of a restaurant bill, and splits the total amongst participants by joining a “room” with a verification PIN
- Responsible for all aspects of **front-end** mobile development using **React Native**
- Developed for UofTHacks with using the **Microsoft Computer Vision, Azure, and Interac** APIs

Personal Site (www.royashams.com)

 Jul. 2017

- Developed using **HTML, CSS, and JQuery**
- Designed all graphic components using **Adobe Photoshop**
- Used an **iterative design process** and **cognitive walkthrough** with multiple users
- **Prototyping, testing, and observing user feedback** for key refinements

COURSE PROJECTS IN COMPUTER GRAPHICS

Basic Shaders

 Mar. 2018

- Used **OpenGL** to implement ambient, diffuse, and specular components of Phong and Gouraud **photorealistic shading models**, as vertex or fragment shaders
- Modified these models to obtain **stylistic results**

Image Inpainting

 Mar. 2018

- (“Exemplar-Based Image Inpainting”, Criminisi et al. 2004)
- Used **OpenCV, NumPy**, background patches and **similar edge detection** to remove large gaps from digital images and fills in the remaining area
- Computed **gradients, curve normals, and confidence values** given an image patch