Roya Shams

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EDUCATION

University of Toronto, St. George
Toronto, ON, Canada

(H.B.Sc) **Computer Science** Specialist
Expected Graduation: December 2020

TECHNICAL SKILLS

Languages:

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

Frameworks/Libraries:

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

Other Technologies:

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

ACTIVITIES AND LEADERSHIP

- **Vice President**
  University of Toronto Computer Graphics club (UTCG)
  (2017 - Present)

- **Toronto ACM SIGGRAPH**
  Executive Committee Member
  (2017 - Present)

- **SIGGRAPH Student Volunteer**
  Los Angeles (2019, 2017)
  Vancouver (2018)

- **Hart House Singers**
  Choir Member
  (2016 - 2018)

- Independent **photographer, musician, designer and sculptor**

EXPERIENCE

Autodesk Research – User Interface Developer Intern Jan. 2019 – Aug. 2019

- Designed and implemented features across **full-stack** in **D3.js** and **Node** to build an **internal web-based** tool for **visualizing** the corporate hierarchy
- **Lead developer** for shared documents feature, 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 **internal 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

PROJECTS IN COMPUTER GRAPHICS

Virtual Reality Research Jul. 2019 – Present

- Currently undergoing research for two **VR projects** in **Unity3D** with Professor Karan Singh in the Dynamic Graphics Project (DGP) lab. Projects include:
- **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

Visualizing Stereo Image Pairs Jan. 2020

- Independently built tool using **Python, OpenCV, NumPy,** and **MEL** that allows users to view two **2D stereo images with 3D context**.
- **Command Line Interface (CLI)** gives freedom to create a red-and-cyan anaglyph image, or build a disparity map using **MiddEval3 SDK** or **OpenCV StereoBM** functions
- Custom **Maya UI** **and scripting** allows users to select their own colour texture and displacement map to **automatically generate a 3D model** of a raised surface

Ray Tracing Apr. 2018

- Used **C++, calculus** and **vector geometry** to build a **ray tracer** that computes intersections and **renders** spheres and planes
- Computes **shadows** and recursively bounces rays off of objects to produce **reflections**
- Implemented **anti-aliasing** using **normal sampling** and simulated **depth of field** following the thin-lens model

PERSONAL PROJECTS

Facture 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