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Roya Shams

Experience

Alpha Coach for Hatch Coding — Sept. 2017- Current

- **Classroom instructor** for afterschool program towards students aged 7-17, assists students with **python projects,** or **processing.js**

Toronto ACM SIGGRAPH Chapter Executive Member — Sept. 2017- Current

- Publicizes upcoming events, resources, and developments in the field of computer graphics in Toronto alongside other committee members.

Projects

Personal Site: www.royashams.com in **HTML, CSS, JS** — Jul. 2017

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

Snackerman: royashams.pythonanywhere.com in **Django/Python** — Dec. 2017

- **Web app** allowing users to find, bookmark, and review food places on the University of Toronto Campus, directed towards students and faculty
- **Collaborated** with 3 students, using and extending the cobalt.qas.im API
- Implemented **back-end HTTP routing methods** to our **RESTful API**, and created django.db databases for storing, updating, and deleting messages and reviews to the server

Course Projects in Computer Graphics

Shaders in **OpenGL** — Mar. 2018

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

Ray tracing in **C++** — Apr. 2018

- **Collaboration** with a partner on a ray tracer that computes intersections and renders spheres and planes
- Computes shadows and **recursively** bounces rays off of objects to produce reflections
- Additionally implemented **anti-aliasing** using normal sampling, simulated **depth of field** following the thin-lens model.

Triangulation Matting in **NumPy** and **OpenCV** — Feb. 2018

- ("Blue Screen Matting", Smith & Blinn, 1996)
- Computes alpha and color values of a foreground object from 2 sets of images containing a foreground object and a background, and images with the removed foreground object.
- **Composites final images** given foreground and a new background.

Image Inpainting in **NumPy** and **OpenCV** — Mar. 2018

- ("Exemplar-Based Image Inpainting", Criminisi et al. 2004)
- Removes large gaps from digital images using background patches and **similar edge detection.** Fills the remaining area using this information.
- Computed **gradients, curve normals, and confidence values** given an image patch.

Education

University of Toronto, St. George
Toronto, ON, Canada
(H.B.Sc) **Computer Science** Specialist

Technical Skills

- **Languages:** Python, Java, C, C++, SQL, HTML, CSS, JavaScript, Verilog
- **Frameworks and Libraries:** OpenGL, processing.js, JQuery, Ajax, OpenCV, Django, NumPy
- **Git** and Version Control
- **OSX** and **Linux**
- Graphic Design with **Adobe Creative Suite**
- **Autodesk Maya**

Extracurricular

- **Vice President** of University of Toronto Computer Graphics club (UTCG) (Current)
- **SIGGRAPH 2017** Student Volunteer in Los Angeles (Aug. 2017)
- **Computer Science Student Union** Office Operations (Current)
- Hart House Singers – Choir Member (2016-2017)
- Independent **photographer, musician, designer and sculptor**

Courses

- Introduction to Visual Computing
- Computer Graphics
- Operating Systems
- Software Design
- Web Development
- Design of Interactive Computational Media
- Introduction to Databases
- Algorithm Design, Analysis, and Complexity