# Cheryl Lao

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## EDUCATION

### MASTER OF MATHEMATICS (MMATH) — SEPTEMBER 2020 – OCTOBER 2023

**CHERITON SCHOOL OF COMPUTER SCIENCE, UNIVERSITY OF WATERLOO**

- Thesis-based master's program co-supervised by Prof. Craig Kaplan and Prof. Daniel Vogel
- Research in **Human-Computer Interaction, Virtual Reality, Spatial Augmented Reality, Creativity Support Tools**
- Thesis: Perceptual Allowances of Anamorphic Interaction Cues in Spatial Augmented Reality
- GPA: 4.0/4.0 | 95.5%

### HONOURS BACHELOR OF SCIENCE (HBSC) — SEPTEMBER 2015 - JUNE 2020

**DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF TORONTO**

- Computer Science Specialist, focus in Computer Vision
- Graduated with High Distinction (3.57/4.0 | 83.2%)
- Coursework:
  - Human-Computer Interaction
  - Computer Graphics
  - Introduction to Image Understanding
  - Introduction to Machine Learning
  - The Design of Interactive Computational Media
  - Calculus I and II (Multivariable)
  - Algorithm Design, Analysis and Complexity

## WORK EXPERIENCE

- **SOFTWARE ENGINEER III** — **OCTOBER 2023 – PRESENT**
  **META INC. TORONTO ON, CANADA**
  - Software engineering for Reality Labs Research

- **RESEARCH ENGINEER INTERN** — **SEPTEMBER 2022 – DECEMBER 2022**
  **META INC. TORONTO ON, CANADA**
  - Developing research prototypes for Augmented Reality (AR) / Virtual reality (VR) experiences

- **RESEARCH INTERN** — **MAY 2022 – AUGUST 2022**
  **ROBLOX CORP. VIRTUAL**
  - Implemented multiplayer **Virtual Reality (VR)** research prototypes on **Roblox Studio** using **Luau** and designed a user study

- Published late-breaking work at **ACM CHI 2023** (Conference on Human Factors in Computing Systems)

- **RESEARCH INTERN** **MAY 2021 – AUGUST 2021**
  **ADOBE INC. VIRTUAL**
  - Conducted HCI research on typographical layouts with the Graphics Intelligence & Learning Lab
  - Developed a typography layout prototype using **TypeScript** and ran an online experiment built using **JsPsych**
  - Extended work to publish a peer-reviewed **research paper** and **patent**

- **RESEARCH ASSISTANT** **JULY 2020 – AUGUST 2020**
  **UNIVERSITY OF TORONTO, VIRTUAL**
  - Conducted user studies and reported findings in a research paper (accepted to SUI 2021) based on a VR prototype that I had built
  - Reviewed existing research on virtual reality (VR) authoring tools
  - Designed a novel interaction technique for visualizing for VR design space exploration
  - Developed the VR prototype in **Unity (C#)** for **Oculus Rift**
  - Devised and conducted remote user studies to evaluate the prototype

- **SOFTWARE DEVELOPER INTERN** **MAY 2019 – AUGUST 2019**
  **AUTODESK INC. TORONTO ON, CANADA**
  - Developed features for Autodesk Maya's Render Setup using **pyMEL**, **Python** and **Qt**
  - Worked closely with designers and other software developers to create a more intuitive user experience with additional capabilities

- **SOFTWARE DEVELOPER INTERN** **MAY 2018 - MAY 2019**
  **INTEL CORP. TORONTO ON, CANADA**
  - Architected and implemented an infrastructure in **Python** and **PostgreSQL** for organizing product attributes
  - Maintained and extended a set of automated dashboards that displayed completion statistics for project management
  - Coordinated project development with international teams
  - Used mathematical models to predict FPGA static power consumption and wrote supporting software in **C++** and **Python**

- **SOFTWARE DESIGNER INTERN** **MAY 2017 - AUGUST 2017**
  **NOKIA CORP. OTTAWA ON, CANADA**
  - Wrote various **python** and **bash** scripts used in daily build testing
  - Improved work efficiency by automating common tasks such as installing new builds of our product, setting up passwordless login between network computers and modifying files for product installation
  - Mentored other summer students and taught them about the **Robot framework** as well as **bash scripting**

## PUBLICATIONS

- [C3] **Cheryl Lao**, Craig S Kaplan, Daniel Vogel, Jose Echevarria, Paul Asente. 2023. Generating Packed Rectilinear Display Text Layouts with Weighted Word Emphasis. In *Graphics Interface* (*GI '23*). Victoria, BC, Canada
- [C2] **Cheryl Lao**, Yanting Zhang, Daniel Vogel, Craig Kaplan. Morgan McGuire, Victor B. Zordan. 2021. A Preliminary Study of World Customizability for Virtual Reality Co-Play. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23)*. Hamburg, Germany, Article 12, 1–7. DOI:https://doi.org/10.1145/3544549.3585605
- [C1] **Cheryl Lao**, Haijun Xia, Daniel Wigdor, and Fanny Chevalier. 2021. Attribute Spaces: Supporting Design Space Exploration in Virtual Reality. In *Symposium on Spatial User Interaction* (*SUI '21*). Association for Computing Machinery, New York, NY, USA, Article 11, 1–11. DOI:https://doi.org/10.1145/3485279.3485290

## PATENT

- [P1] **Cheryl Lao**, William F Kraus, Paul John Asente, Jose Ignacio Echevarria Vallespi, Craig Steven Kaplan, Daniel John Vogel. 2022. Text Importance Spatial Layout. US 11538210

## THESIS

- [T1] **Cheryl Lao.** 2023. Perceptual Allowances of Anamorphic Interaction Cues in Spatial Augmented Reality. UWSpace.

## TEACHING EXPERIENCE

- **INSTRUCTIONAL APPRENTICE** **SEPT. 2020 – AUGUST 2023**
  **UNIVERSITY OF WATERLOO**
  - Helping students to understand programming concepts in introductory CS classes
  - Clarifying course concepts and providing assistance with coursework in office hours
  - Marking lab submissions
- **TUTOR** **NOV. 2021 – SEPT. 2022**
  **INDEPENDENT**
  - Planned and delivered regular lessons for high school students preparing for university programs in computer science

## SERVICE

- **Vice Chair**, Toronto ACM SIGGRAPH Chapter (2021-present, Executive member sine 2018)
  - Organized various computer graphics-related events such as industry talks, screenings, and workshops

- **Panelist**, SPARCS Lite (2023)
  - Presented an overview of my research and answered questions from about 100 high school students who were interested in technology
- **Speaker**, RevolutionizeSTEM (2022)
  - Presented an hour-long talk on opportunities in Virtual Reality research to high school and early undergraduate students
- **Panelist**, SPARCS Lite (2022)
  - Presented an overview of my research and answered questions from about 60 high school students who were interested in technology
- **Panelist**, Careers in Computing Panel (2021), University of Waterloo
  - Prepared a short talk and answered questions from undergraduate students looking to learn about computer science
- **Student Volunteer**, UIST 2020 Conference
  - Assisted in various virtual conference tasks such as streaming and monitoring discussions
- **Panelist**, Women in CG Panel, SIGGRAPH 2020 Conference
  - Shared academic and professional experiences in a panel discussion
- **Student Volunteer Team Leader**, SIGGRAPH Conferences (2019, 2020, 2021)
  - Coordinated student volunteer activities for over 200 students
  - Provided on-the-ground support for conference attendees and presenters
- **Moderator**, Toronto SIGGRAPH Chapter (2020)
  - Moderated a live panel discussion on *Immersive Technologies for Creation and Communication*
- **Session Chair**, University of Waterloo WatCHI Event (2020)
  - Introduced authors and their papers during the online event
- **President** and **Founder** of the University of Toronto Computer Graphics Club (2016-2020)
  - Took the initiative to start a club and grew it to over 350 members over 4 years
  - Coordinated research talks, taught workshops and hosted events at least monthly
  - Organized a computer graphics job fair with several leading companies in computer graphics, VFX, and interactive techniques
- **Student Volunteer**, SIGGRAPH 2018 Conference
  - Assisted in various conference tasks such as greeting attendees and monitoring sessions
- **Microsoft Student Partner** (2017-2020)
  - Organized technical events such as a tutorial on the Microsoft Computer Vision API
- **Executive Member** University of Toronto Undergraduate Research in Computer Science (2019-2020)
  - Worked with other executives to host an undergraduate CS research conference
- **Vice President** of University of Toronto Computer Science Student Union (2017-2018)
  - Served as Acting President when the President was unable to continue fulfilling duties
  - Coordinated efforts to create a more inclusive computer science community
  - Instituted a general council for greater student body involvement

- Organized a semi-formal dinner for faculty and students

## TECHNICAL SKILLS

- Python
- C#, C++, C
- Java
- JavaScript
- HTML
- CSS
- SQL
- Git & Perforce
- Unity
- OpenCV
- PyTorch
- P5.js
- Docker
- Qt
- Photoshop
- Maya

## HONOURS AND AWARDS

- **Adobe Women-in-Technology Scholarship** (2022)
  - Recognizes outstanding female undergraduate and master's students in North American universities studying computer science, computer engineering, and closely related fields.
  - 10,000 USD awarded to 16 recipients in North America for educational expenses
- **University of Waterloo Mathematics Domestic Masters Scholarship** (2020)
  - Awarded to incoming Canadian master's students
- **University of Toronto Canada Chinese Computer Science Association Scholarship** (2017)
  - Awarded to an undergraduate computer science student of high academic standing who has demonstrated interest in Chinese literature, language or culture
- **University of Toronto Dean's List** (2016, 2017, 2020)
  - Awarded to students who achieved an average above 3.50/4.0 in the past 5.0 credits
- **Organizer's Choice Award (3rd place),** The Lady Hacks (2016)
  - Awarded to hackathon groups with the the best projects as decided by the organizers
- **University of Toronto Friends of Victoria University Library Scholarship** (2016)
  - Awarded on the basis of academic performance in the first group of 5.0 credits