

# Mahika PHUTANE

(647) 739-1944 • mahika.phutane@mail.utoronto.ca • linkedin.com/in/mahikap

## Education

**University of Toronto** - Cumulative GPA : 3.8/4.0

SEPT 2015 - Present

*H.B.Sc. Computer Science + Communication, Culture, Info, Tech*

*Key Focus: Artificial Intelligence, HCI, Inclusive Design, Computer Vision, Research Methods*

**Sheridan College of Arts**

SEPT 2016 - Present

*Certificate in Digital Communications*

**Nanyang Technological University, Singapore**

JUL 2017 - AUG 2017

*Design, Media, and Communications Summer Scholarship*

**International Baccalaureate Diploma, Vancouver, Canada**

SEPT 2013 - MAY 2015

## Research Experience

**Research Assistant** | *Technologies for Aging Gracefully (TAG) Lab*

SEPT 2017 - Present

Supervised by **Prof. Cosmin Munteanu**, contributed to a paper<sup>3</sup> demoed at CHI 2018, and published at MobileHCI '19

- Developed mobile-based applications to provide support for senior citizens
- Explored tactile interaction methods with tablets to align with mental models of older adults
- Conducted user evaluations, identified tool limitations, aided with revisions to the UX Design

**Research Assistant** | *University of Toronto - Dept. of Computer Science*

SEPT 2017 - Present

Supported **Prof. Daniel Zingaro** with research and accessibility aid, mentioned in several papers as an acknowledgment

- Facilitated several research projects, and provided support through accessibility tools for visual impairment
- My first introduction to assistive technologies, and how they can further/hinder research and communication

**Scholar-in-Residence** | *University of Toronto - Faculty of Information*

MAY 2017 - MAY 2019

Advised by **Prof. Jenna Hartel**, co-authored a journal publication<sup>1</sup> with iSquare team colleagues

- Conducted an arts-informed research study assessing the role of colour in the methodology of visual research
- Devised and hosted a unique exhibit with Augmented Reality (AR) components to display research results
- Worked with the data manager to preserve and deposit the collected data at UofT's Dataverse, doi.org/10.5683/SP/TJETPC

**Research Collaborator** | *CMU - Undergraduate Research Conference for Women in CS*

SEPT 2017 - OCT 2017

Collaborated with **Prof. Gabriella Marcu**, and the Empathic Research Group

- Conceptualized and designed solutions to help marginalized youth re-enter the workforce, with insight in human-centered software
- Experimented with wearable computing systems and NLP technologies; presented findings at conference

**Research Opportunity Program** | *University of Toronto - Dept. of Computer Science*

MAY 2016 - AUG 2016

Through a competitive selection process, conducted research with **Prof. Steve Engels**

- Developed a videogame for middle school students, investigated its educational value through experiments and analysis

## Publications

<sup>1</sup>Jenna Hartel, **Mahika Phutane**, Stephanie Posa, Zixi Shi, Annie Xu. (Forthcoming) *Somewhere Over The Rainbow: The Use of Color in the Draw-And-Write Study*. Journal of Visual Methodologies.

<sup>2</sup>(Manuscript in Preparation) **Mahika Phutane**, Veerpal Brar. (In Preparation). *EyeSpeak- Kalman Filter Hand Tracking to Improve ASL Recognition and Estimation*.

## Paper Acknowledgements

<sup>3</sup>Sho Conte, Cosmin Munteanu. (2019). *Help! I'm Stuck, and there's no F1 Key on My Tablet!* Proceedings of the 21st International Conference on Human-Computer Interaction with Mobile Devices and Services - MobileHCI 19.  
doi: 10.1145/3338286.3340121

## Professional Experience

### Hackathon Vision Lead | *Hacking Arts 2019 - MIT Media Lab*

AUG 2019 - Present

- Working with the Director and other teams to develop a vision, ideate themes, and see through the mission of the event
- Coordinating with industry experts and artists to fuel further innovation within MIT Media Lab

### AR Software Developer Intern | *Modiface - L'Oreal Group*

MAY 2018 - MAY 2019

- Implemented a content management system (CMS) using VueJS, PHP, and MySQL through full-stack development
- Expanded Modiface's core rendering libraries using OpenCV and C++
- Researched optimal solutions to construct animations in AR, providing 1.5x real-time rendering speeds,

### Teaching Assistant | *University of Toronto - Dept. of Computer Science*

SEPT 2016 - Present

- Subjects: CSC108 (Introduction to Computer Programming), CSC148 (Introduction to Computer Science), CSC236 (Theory of Computation), CSC263 (Data Structures and Analysis) *[Current]*
- Graded assignments, tests, exams through collaboration with other staff
- Led tutorials and held office hours while encouraging students to grow beyond the syllabus

## Projects

### EyeSpeak - A Tool to Convert ASL Alphabet to Text (w/ collaborator: Veerpal Brar, Student, UofT)

JUN 2018 - Present

An independent project: From a video of a person signing ASL letters, EyeSpeak identifies and converts the signed letters to text

- Applied various skin segmentation techniques for hand detection
- Trained a neural network on over 2000 images to recognize signed alphabets, with a 75% accuracy rate
- Implemented a Kalman Filter to improve hand tracking, novel findings leading to a paper<sup>2</sup> in progress

### Spectacle - A Museum Concept that's Out of the Box (w/ collaborator: Annie Xu, MI Candidate, UCL)

OCT 2018 - Present

An independent project, pitched to the Royal Ontario Museum: Spectacle aims to solve the problem that 2% of all available artefacts are displayed in museums. The system creates 3D scans of artifacts, and displays them in AR in an empty room at museums

- Conducted qualitative and quantitative research to understand the needs, opportunities and threats in this space
- Led to creative discussions and opportunities for curators and technologists, as multiple exhibits can be organized daily

### EyeGarden - A Tactile Playground for the Visually Impaired

JAN 2018 - MAY 2018

An extra-curricular project inspired by my Inclusive Design class, practiced Design Thinking methodology for ideation and expansion

- Interviewed a child with visual impairment to understand mental models of children and their expectations of "play" and agency

### GoodNews - an iOS app that radiates positivity

DEC 2018 - JAN 2019

A solo project that bloomed out of my frustration with negative news: Fetches current news of the day, and uses the Google's Sentiment Analysis tool to filter and send a positive news story to users each day.

## Awards

### 3rd Place Winner + Google Cloud Vision API Winner - Hacking Arts 2018 | *MIT Media Lab*

OCT 2018

- Along with 5 team members, built and demonstrated [ix](#) - a tool for artists, curators, and patrons to engage in more meaningful and social exhibitional/museum experiences, demo-able on any AR compatible device
- Led me to question- how does depth-related content aid in understanding of space and environment in AR?

### 1st Place Winner - Hacking Arts 2017 | *MIT Media Lab*

NOV 2017

- Along with 4 team members, built [Choroesome](#) - a service that uses motion capture inputs to store and run spatial analysis on ethnic dance practices, to preserve folk artistry! Led to an ethnographic preservation project with the Smithsonian.
- Used Unity and Blender to build a working prototype within 24 hours; these experiences can be viewed in any VR headset

### Scholar-in-Residence | *Jackman Humanities Institute, Toronto*

MAY 2017

- Drawn from a pool of 975 applicants, 5 got the opportunity to live, learn and delve into humanities research
- Spoke in a panel at the Humanities in the 21st Century Conference, held at University of Toronto

### Horatio Alger Scholarship | *Horatio Alger Association of Canada*

SEPT 2015 - JUN 2020

### Dean's List Scholar '16, '17, '18, '19 | *University of Toronto*

SEPT 2016 - JUN 2020

### University of Toronto Entrance Scholarship | *University of Toronto*

SEPT 2015

## Interests

Poetry

Classical-Singing

Sanskrit

Songwriting

Blogging

Painting

Photography!