Mahika PHUTANE

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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 Communcations 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[3] 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[1] with iSquare team colleagues
- Ideated, constructed and conducted an arts-informed research study assessing the methodology of visual research
- Devised and hosted a unique exhibit with Augmented Reality (AR) components to display research results
- Worked with a 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, received opportunity to assist **Prof. Steve Engels**
- Developed a videogame for middle school students, investigated its educational value through experiments and analysis

Publications

[1] Jenna Hartel, **Mahika Phutane,** Stephanie Posa, Zixi Shi, Annie X. (2019). *Somewhere Over The Rainbow: The Use of Color in the Draw-And-Write Study.* Journal of Visual Methodologies. (Forthcoming)

[2] (Manuscript in Preparation) **Mahika Phutane**, Veerpal Brar (2020). *EyeSpeak- Kalman Filter Hand Tracking to Improve ASL Recognition and Estimation.*

Paper Contributions

[3] 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 Sofware 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
- Lead 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[2] 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 qualititative and quantative 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 disabilities to understand mental models of children and their expactations 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 practicies, to preserve folk artistry! Led to an ethnographic preservation project with the Smithsonian.
- These experiences can be viewed in any VR headset, Used Unity and Blendr to build a working prototype within 24 hours

Scholar-in-Residence | *Jackman Humanities Institute, Toronto* MAY 2017

- Drawn from a pool of 975 applicants, selected 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!**