# CURRICULUM VITAE

## NAME

Dr. Mariakakis, Alex Timothy

## CONTACT INFORMATION

### Telephone

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### Email

| Personal | blackbelt812@gmail.com |
|---|---|
| Work | mariakakis@cs.toronto.edu |

### Website

| Personal | https://mariakakis.github.io |
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## LANGUAGE SKILLS

| English | Read, Write, Speak, Understand, Peer Review |
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## EDUCATION

### Degrees

**Doctorate, Computer Science and Engineering, Making Medical Assessments Available and Objective Using Smartphone Sensors (Completed)**                                       **Sep. 2015 - Jun. 2019**
*University of Washington, Washington, United States, Academic*
Supervisors: Jacob Wobbrock (2014/2 - 2019/6), Shwetak Patel (2013/9 - 2019/6)
Research Disciplines: Computer Science

**Master's Equivalent, Computer Science and Engineering (Completed)**                        **Sep. 2013 - Jun. 2015**
*University of Washington, Washington, United States, Academic*
Supervisors: Jacob Wobbrock (2014/2 - 2019/6), Shwetak Patel (2013/9 - 2019/6)

**Bachelor's, Computer Science (Completed)**                                                                     **Aug. 2009 - Jun. 2013**
*Duke University, North Carolina, United States, Academic*

**Bachelor's, Electrical and Computer Engineering (Completed)**                                    **Aug. 2009 - Jun. 2013**
*Duke University, North Carolina, United States, Academic*

## RECOGNITIONS

**Prize / Award, Best Paper Runner-Up**                                                                              **Sep. 2020 - Sep. 2020**
*IEEE Pervasive Computing*
This award was given by the journal editors for my first-author publication on "Challenges in Realizing Smartphone-based Health Sensing

**Prize / Award, Best Paper Finalist**                                                              **Apr. 2019 - Apr. 2019**
*IEEE International Conference on Radio-Frequency Identification (RFID)*
This award was given by the conference's program committee for my publication on "IDCam: Precise Item Identification for AR-Enhanced Object Interactions", for which I was a contributing author

**Distinction, Gaetano Borriello UbiComp Outstanding Student Award**                                **Oct. 2018**
*ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)*
This award is given to a graduate student "who has made outstanding research contributions to the field of ubiquitous computing". The awardee is selected by the conference's Steering Committee based on their publication records, service to the community, and a submitted research statement

**Distinction, Top 10 Innovations from the University of Washington's Paul G. Allen School That's Making the World a Better Place**                                                                            **Mar. 2018**
*Vulcan*
Vulcan, an investment company founded by Microsoft co-found Paul Allen, published a list of the top 10 innovations from the School of Computer Science that they saw as having the biggest potential to change the world for the better. One of my projects on scleral jaundice screening with a smartphone (BiliScreen) is #5 on that list

**Citation, Geek of the Week**                                                                     **Sep. 2017**
*GeekWire*
The Seattle-centric technology news site GeekWire "profiles the characters of Pacific Northwest tech, science, games, innovation, and more

**Prize / Award, Honorable Mention**                                                               **Sep. 2015 - Sep. 2015**
*ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)*
This award was given by the conference's program committee for my publication on "HyperCam: Hyperspectral Imaging for Ubiquitous Computing Applications", for which I was a contributing author

**Distinction, Graduation Cum Laude**                                                              **Jun. 2013**
*Duke University, North Carolina, United States, Academic*
Latin Honors are given to undergraduate students who maintain a high GPA throughout all four years of their studies. In the case of graduation cum laude, a student must have a GPA within the top-25% relative to the GPA distribution of the previous year's class

**Distinction, Graduation with Departmental Distinction**                                          **Jun. 2013**
*Duke University, North Carolina, United States, Academic*
Departmental Distinction is awarded to students who complete a faculty-supervised independent study project during their senior year and present that work in written and oral forms to the department's faculty. Furthermore, students who attain this distinction must also maintain a cumulative GPA of at least 3.5

**Distinction, Tau Beta Pi**                                                                       **Apr. 2013**
*Duke University, North Carolina, United States, Academic*
Tau Beta Pi is the oldest engineering honor society in the United States, honoring students who have shown significant academic achievement and commitment to personal and professional integrity

**Prize / Award, Outstanding Teaching Assistant Award in Electrical and Computer Engineering**     **Jan. 2013**
*Duke University, North Carolina, United States, Academic*
This award is given to undergraduate teaching assistants each semester who receive exceptional praise from their peers and supervising faculty


**EMPLOYMENT**

## Academic Work Experience

**Assistant Professor, Assistant Professor (Full-time)** **Aug. 2020**
*Computer Science, University of Toronto, Ontario, Canada, Academic*
As a new tenure-track faculty member, I will be responsible for leading my own research program. This responsibility includes, but is not limited to, completing publications from my postdoc, establishing an independent research agenda, supervising students, applying for grants, and teaching courses

**Postdoctoral Researcher (Full-time)** **Sep. 2019 - Jul. 2020**
*Computer Science and Engineering, University of Washington, Washington, United States, Academic*
I conducted research involving the use of passive sensing (via smartphones, smartwatches, and Bluetooth beacons) to detect significant life events. I also led the writing of an NSF Smart & Connected Health grant proposal on the detection of heavy-drinking episodes using a similar approach to my work on significant life events. That grant was rejected, but we have plans of adapting that grant to other domains

**Professional Master's Program Lecturer, Lecturer (Part-time)** **Mar. 2018 - Jun. 2018**
*Electrical Engineering, University of Washington, Washington, United States, Academic*
I taught an introductory course on ubiquitous computing to ~35 students who were studying for their Master's degree while working in industry. The course was held 1 day a week for 3 hours. Beyond providing lectures, leading discussions, and grading assignments, I also redesigned the course so that the assignments had greater cohesion. In addition, I updated the curriculum to include more lectures on machine learning and discussions on newer topics in ubiquitous computing

**Teaching Assistant (Full-time)** **Sep. 2013 - Jun. 2014**
*Computer Science and Engineering, University of Washington, Washington, United States, Academic*
I provided supplemental lectures to ~100 undergraduate students on topics related to software design and implementation (e.g., event-driven programming, program structure, program correctness). I delivered the same 1-hour lecture 3 times a week to cover all of the students. In some cases, I was asked to reinforce what was taught in the main lectures; in other cases, I was asked to teach new content that was required for the homework assignments

## Non-academic Work Experience

**Postdoctoral Researcher** **Sep. 2019 - Jul. 2020**
*Sage Bionetworks, Research*
Sage Bionetworks often runs open competitions called "challenges" where researchers attempt to achieve the best accuracy on a particular machine learning challenge. One such challenge with the Michael J. Fox Foundation aims to quantify the severity of Parkinsonian symptoms using motion sensor data. I helped verify that there was useful signal in the challenge's two datasets by producing a baseline machine learning model. In addition, I have been leading the creation of a study that would produce the largest dataset of continuous at-home gait in the world. With this dataset, we will create and validate various algorithms for estimating gait parameters (e.g., step cadence, speed) for an eventual large-scale deployment through the National Institutes of Health. This dataset will eventually be open-sourced along with datasets from other gait researchers to form a standard in that research community

**Research Intern** **Jan. 2018 - Sep. 2018**
*Microsoft Research, Private Sector*
I helped an interdisciplinary team of chemists, computer scientists, and designers create chemical sensor patches that produce colorimetric readouts of ultraviolet radiation. Beyond informing the design of these sensors and catering this research to a computer science audience, I created a smartphone app that automatically interprets the sensor patches' colors regardless of the ambient lighting conditions. his work led to a conference publication

**Research Intern** **Jun. 2015 - Sep. 2015**
*FX Palo Alto Laboratory, Private Sector*

I helped create a web interface that surfaces coincidences and similarities in egocentric video collections. The interface merges segments of geo-tagged videos using location and visual similarity to automatically generated time-lapses of commonly viewed places during a person's daily commute

**Research Intern**                                              **Jun. 2014 - Sep. 2014**
*Samsung Research America, Private Sector*
I led an investigation of how the sensors on a smartwatch can be used to determine whether a person is a driver or passenger inside a vehicle. In this investigation, I explore both motion sensing (accelerometer) and scene recognition (camera) could be used to achieve high classification accuracy. This work led to a conference workshop publication. I also helped with the development of other smartwatch sensing modules for activity recognition, such as a module for detecting eating and gait episodes

**Research Intern**                                              **Jun. 2013 - Aug. 2013**
*HP Labs, Private Sector*
I helped create an indoor localization system that only requires a person's smartphone to be near a single wireless access point. While my mentor was responsible for implementing a way of estimating the distance between a person's smartphone and an access point using wireless signal processing, I implemented a holistic dead-reckoning system that leveraged the smartphone's inertial measurement unit to estimate a person's instantaneous speed and heading. This work led to multiple patents and a conference publication


**RESEARCH FUNDING HISTORY**

**Co-investigator, Grant, Extending the Use of Time-of-Flight Cameras for Mobile Health (Awarded)   Nov.   2020 - Nov. 2022**
Project Description: Research in mobile health (mHealth) has primarily focused on the sensors that have been on standard smartphones over the past decade: IMUs, microphones, and cameras. The goal of this proposal is to leverage the time-of-flight (ToF) sensor embedded in Huawei's newest smartphones for mHealth. The ToF camera provides rich spatial information that can overcome many limitations of past computer vision-based apps. This proposal will produce two mHealth applications that highlight different strengths of the ToF camera. The first application will leverage the fact that the ToF camera can objectively measure length, area, and volume to detect instances of craniosynostosis— skull deformation that can happen during infant development. The second application will leverage the ability of ToF cameras to track 3D motion to quantify the severity of Parkinsonian tremor. These approaches will be generalizable to other problem settings, enabling new applications for the latest smart-phone technologies
Funding Sources
 - Huawei Technologies: Huawei-University of Toronto: Mobile AI Innovation Lab Total: $193,000.00 (Canadian dollar) Received: $45,000.00, (competitive)


**Principal Investigator, Contract, University of Toronto Startup Funds (Awarded)          Aug. 2020 - Aug. 2025**
Funding Sources
 - University of Toronto Total: $600,000.00 Received: $600,000.00


**Co-applicant, Fellowship, Qualcomm Innovation Fellowship (Completed)          Sep. 2016 - Sep. 2017**
Other Investigators: Hanchuan Li (Co-applicant)
Funding Sources
 - QUALCOMM Incorporated (USA): Innovation Fellowship Total: $100,000.00 (United States dollar) Received: $50,000.00, (competitive)


**Principal Applicant, Fellowship, National Science Foundation Graduate Research Fellowship (Completed)   Sep. 2015 - Sep. 2018**
Funding Sources
 - National Science Foundation (USA): Graduate Research Fellowship Total: $102,000.00 (United States dollar) Received: $102,000.00, (competitive)

# ACTIVITIES

## TEACHING ACTIVITIES

### Courses Taught

**Instructor, Spring EE 590A: Advanced Topics in Ubiquitous Computing**          **Mar. 29, 2018 - Jun. 07, 2018**
*Electrical Engineering, University of Washington, Washington, United States, Academic*
Ubiquitous computing, Graduate, Number of Students: 30
Lecture Hours Per Week: 2, Tutorial Hours Per Week: 2

### Course Development

**Course Developer, Advanced Topics in Ubiquitous Computing**                          **Mar. 29, 2018**
*Electrical Engineering, University of Washington, Washington, United States, Academic*
The aim of this class is to introduce students to ubiquitous computing (ubicomp). The content focuses on how traditional topics of computing have evolved to support the vision of a connected, portable, and human-centric computing environment. Because ubicomp is an applied field, the course covers contributions across various fields: human-computer interaction, embedded computing, computer vision, distributed systems, machine learning, and electrical engineering. Students gain practical experience in developing sensing systems for activity recognition and gestural interaction. The course is a combination of lectures, tutorials, class discussions, and demonstrations. Occasional tutorials on necessary skills are provided in the first half of the class-time (e.g., Android and Arduino programming). The rest of the class time is used for discussions on the required readings, Co-developers: Wang, Edward

## ADMINISTRATIVE ACTIVITIES

### Event Administration

**Online Conference Co-Chair, Conference, ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) (Sep. 2020 - Sep. 2020)**                          **Jun. 2020 - Sep. 2020**

**Video Preview Co-Chair, Conference, ACM Conference on Human Factors in Computing Systems (CHI) (Apr. 2019 - Apr. 2019)**                          **Jan. 2019 - Apr. 2019**

**Founder and organizer, Workshop, DUB (Design, Use, Build) Doctoral Colloquium (Apr. 2017 - Apr. 2017)**
**Jan. 2017 - Apr. 2017**

**Organizer, Workshop, National Science Foundation Graduate Research Fellowship Information Session and Workshop (Sep. 2016 - Sep. 2018)**                          **Sep. 2016 - Sep. 2018**

## ASSESSMENT AND REVIEW ACTIVITIES

### Journal Review Activities

**Reviewer (Double Blind)**                          **Mar. 2019**
ACM Transactions on Computer-Human Interaction (TOCHI), Number of Works Reviewed / Refereed: 1

**Reviewer (Double Blind)**                          **Feb. 2017**
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), Number of Works Reviewed / Refereed: 16

**Reviewer (Blind)**                          **Dec. 2019 - Dec. 2019**

IEEE Sensors, Number of Works Reviewed / Refereed: 1

**Reviewer (Double Blind)**                                          **Nov. 2018 - Nov. 2018**
Biomedical Optics Express, Number of Works Reviewed / Refereed: 1

**Reviewer (Double Blind)**                                            **May. 2018 - Jul. 2018**
ACM Conference on Computer Supported Cooperative Work (CSCW), Number of Works Reviewed / Refereed: 1

**Reviewer (Double Blind)**                                            **Oct. 2015 - Oct. 2019**
IEEE Pervasive Computing, Number of Works Reviewed / Refereed: 2

**Conference Review Activities**

**Reviewer, Double Blind**                                                          **Jul. 2020**
International Symposium on Wearable Computers (ISWC), Number of Works Reviewed / Refereed: 1

**Reviewer, Double Blind**                                                          **Jun. 2019**
ACM Human-Computer Interaction with Mobile Devices and Services (MobileHCI), Number of Works Reviewed / Refereed: 1

**Reviewer, Double Blind**                                                          **Nov. 2016**
ACM Conference on Human Factors in Computing Systems (CHI), Number of Works Reviewed / Refereed: 29

**Reviewer, Double Blind**                                                          **Apr. 2015**
ACM User Interface Software and Technology (UIST), Number of Works Reviewed / Refereed: 22

**Reviewer, Double Blind**                                            **Jan. 2018 - Feb. 2019**
ACM Conference on Human Factors in Computing Systems, Late Breaking Work (CHI LBW), Number of Works Reviewed / Refereed: 5

**Reviewer, Double Blind**                                            **Aug. 2017 - Sep. 2017**
IEEE Virtual Reality and 3D User Interfaces (VR), Number of Works Reviewed / Refereed: 1

**Reviewer, Double Blind**                                            **Apr. 2016 - Apr. 2016**
ACM Symposium on Applied Perception (SAP), Number of Works Reviewed / Refereed: 1

**Reviewer, Double Blind**                                            **Apr. 2015 - May. 2016**
ACM Ubiquitous Computing (UbiComp), Number of Works Reviewed / Refereed: 8

**Knowledge and Technology Translation**

**Presenter / Mentor**                                                **Mar. 2019 - Mar. 2017**
Community Engagement, National Center for Women & Information Technology, Academic Personnel, https://www.aspirations.org/aspirations-community/washington-seattle-and-west
Outcome / Deliverable: As a graduate student, I led our research group's involvement with the NCWIT. We had at least 5 female interns from middle or high school complete summer internships with our research group, and I specifically mentored three of those individuals. Additionally, I have provided demonstrations at the NCWIT award ceremonies, which taught students and their parents about applications of computer science
Activity Description: The National Center for Women & Information Technology (NCWIT) is a nonprofit designed to increase the meaningful participation of girls and women in computing. Our research group has worked with middle and high school women who have later received awards from the NCWIT. We have also provided demonstrations at the NCWIT award ceremony, which has both taught attendees about applied topics in computer science and allowed us to recruit talented girls and women for summer internships

**Course Consultant**                                                                            **Oct. 2017 - Dec. 2017**
Consulting for Industry, Microsoft, Industry/Business (>500 employees), https://www.edx.org/course/introduction-to-device-programming
Outcome / Deliverable: I helped create Microsoft edX's course called "Introduction to Device Programming". I provided input on many of the courses modules, but I specifically created Module 2 on basics of the C programming language
Activity Description: Microsoft offers introductory online courses for people who are interested in learning a new skill in computer science. I was recruited by Kasey Champion, a member of Microsoft's Learning Team, to provide input on a course related to device programming. This course includes overviews of Arduino, the C programming language, simple circuits, and integrating Arduino with Azure Cloud resources

**Lecturer**                                                                                     **Jul. 2016 - Jul. 2017**
Community      Engagement,      Seattle-Area      High      School      Teachers,      Academic      Personnel, https://news.cs.washington.edu/2016/07/10/10th-anniversary-of-uw-cses-cs4hs/ https://cs4teachers.cs.washington.edu
Outcome / Deliverable: I taught a lecture in the program that introduced the teachers to the fields of human-computer interaction and ubiquitous computing. The lectures also included demonstrations of concepts and technologies that could be reproduced in their classrooms
Activity Description: The University of Washington's CS4HS program is designed to teach local high school teachers about the importance of computer science and the help them identify ways that they could get exposure their students to the field before their students graduate

**Presenter**                                                                                    **Jun. 2016 - Jun. 2016**
Community Engagement, Government Personnel, https://news.cs.washington.edu/2016/06/18/sen-maria-cantwell-uw-cse
Outcome / Deliverable: I provided demonstrations and presentations on applications of computer science for mobile health and interaction. The work included my own research as well as other projects from research group during my PhD
Activity Description: Senator Maria Cantwell visited the Department of Computer Science and Engineering to learn about how the state government's funding of the University of Washington has led to new innovations that have broad impacts outside of academia

**Researcher**                                                                                   **Feb. 2016 - Jul. 2017**
Involvement    in/Creation    of    Start-up,    Senosis    Health,    Industry/Business-Small    (<100    employees), https://www.geekwire.com/2017/exclusive-google-buys-seattle-health-monitoring-startup-senosis-bolstering-digital-health-push
Outcome / Deliverable: Senosis Health was acquired by Google in July 2017. My project on scleral jaundice (BiliScreen) was part of the intellectual property included in the agreement
Activity Description: Senosis Health is a startup created by my PhD advisor for his research group's mobile health research. Senosis was acquired by Google in July 2017 to help with their endeavors in digital health

**Presenter**                                                                                    **Sep. 2015 - Sep. 2015**
Community      Engagement,      University      of      Washington      Foundation,      Academic      Personnel, https://news.cs.washington.edu/2015/09/15/changing-the-world-faculty-and-students-demonstrate-cses-impact-to-the-uw-foundation-board
Outcome / Deliverable: I provided demonstrations and presentations on applications of computer science for mobile health and interaction. The work included my own research as well as other projects from research group during my PhD
Activity Description: The University of Washington Foundation is a group of alumni and other major donors to the University. The Department of Computer Science and Engineering held an event where graduate students working on particularly impactful projects were asked to present their work to members of the Foundation

**Presenter**                                                                                    **Nov. 2014 - Dec. 2018**

Community Engagement, DawgBytes Program, General Public, https://www.cs.washington.edu/outreach/k12
Outcome / Deliverable: As a graduate student, I organized, led, and presented our research group's booth at the yearly DawgBytes Computing Open House event
Activity Description: The DawgBytes Program is the official K-12 outreach program for the School of Computer Science and Engineering at the University of Washington. One of the events that DawgBytes holds every year is the Computer Open House where children and their parents can come on campus to learn more about computer science

**Presenter**                                                       **Apr. 2014 - Apr. 2018**
Community        Engagement,        Engineering        Discovery        Days        Program,        General        Public, https://www.engr.washington.edu/about/k12/discovery-days
Outcome / Deliverable: As a graduate student, I organized, led, and presented our research group's booth at the yearly Engineering Discovery Days event
Activity Description: The Engineering Discovery Days Program is the official K-12 outreach program for the School of Engineering at the University of Washington. Every April, the program organizes a 2-day event where students visit the campus to learn about and experience real-world applications of different disciplines in engineering

## International Collaboration Activities

**Co-Lead Organizer and Mentor**                                    **Jul. 2020 - Sep. 2020**
*China*
I helped co-create and organize the Access Computing Summer Program, a program sponsored by the Global Innovation Exchange as part of a long-term collaboration between the University of Washington and Tsinghua University. The program is targeted towards senior undergraduate and junior graduate students in the United States and China who are interested in developing research skills in ubiquitous computing and human-computer interaction. The students in this program not only receive guidance on a summer project, but also regularly attend group meetings, guest lectures, and workshops to expand their knowledge base (virtually due to COVID-19)

**Mentor**                                                          **Sep. 2018 - Oct. 2018**
*Singapore*
The Broadening Participation Workshop at the ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) aims to increase the involvement of women, all researchers from developing countries, as well as underrepresented minorities, including persons with disabilities, in the field of ubiquitous and wearable computing

# MEMBERSHIPS

## Committee Memberships

**Committee Member, Interaction Techniques Program Subcommittee**   **Sep. 2020 - Dec. 2020**
*ACM Conference on Human Factors in Computing Systems (CHI), Academic*
Selected reviewers, provided reviews, and moderated reviews for ~15 submissions; contributed to the final decisions of paper acceptances/rejections

**Committee Member, Program Committee**                             **Apr. 2019 - Jul. 2019**
*ACM Symposium on User Interface Software and Technology (UIST), Academic*
Selected reviewers, provided reviews, and moderated reviews for ~15 submissions; contributed to the final decisions of paper acceptances/rejections

**Committee Member, Late-Breaking Works Program Committee**         **Jan. 2019 - Feb. 2019**
*ACM Conference on Human Factors in Computing Systems (CHI), Academic*
Selected reviewers, provided reviews, and moderated reviews for ~5 submissions

**Committee Member, Program Committee**                             **Jul. 2018 - Aug. 2019**

*International Workshop on Ubiquitous Personal Assistance (UPA), Academic*
Selected reviewers, provided reviews, and moderated reviews for ~5 submissions

## CONTRIBUTIONS

1.  Mariakakis, Alex T.. (2020). *EcoPatches: Maker-Friendly Chemical-Based UV Sensing*. ACM Conference on Designing Interactive Systems (DIS), Eindhoven, Netherlands.
2.  Mariakakis, Alex T.. (2020). *Objectifying Subjective Medical Assessments Using Smartphone Sensors*. University of Toronto Department of Computer Science Lecture Series, Toronto, Canada.
3.  Mariakakis, Alex T.. (2019). *Objectifying Subjective Medical Assessments Using Smartphone Sensors*. University of Virginia Department of Computer Science Lecture Series, Charlottesville, United States.
4.  Mariakakis, Alex T.. (2019). *Objectifying Subjective Medical Assessments Using Smartphone Sensors*. Georgia Tech School of Interactive Computing Lecture Series, Atlanta, United States.
5.  Mariakakis, Alex T.. (2018). *BiliScreen: Smartphone-based Scleral Jaundice Monitoring for Liver and Pancreatic Disorders*. mHealth Symposium, Seattle, United States.
6.  Mariakakis, Alex T.. (2018). *Drunk User Interfaces: Determining Blood Alcohol Level Through Everyday Smartphone Tasks*. ACM Conference on Human Factors in Computing Systems (CHI), Montreal, Canada.
7.  Mariakakis, Alex T.. (2017). *PupilScreen: Using Smartphones to Assess Traumatic Brain Injury*. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp), Maui, United States.
8.  Mariakakis, Alex T.. (2017). *BiliScreen: Smartphone-based Scleral Jaundice Monitoring for Liver and Pancreatic Disorders*. Seattle Quantified Self Meetup, Seattle, United States.
9.  Alex T. Mariakakis, Wang E. (2017). *Using Mobile Devices to Quantify Traditionally Qualitative Health Measures*. HalfMoon Education: Internet of Things Workshop, Seattle, United States.
10. Mariakakis, Alex T.. (2017). *BiliScreen: Smartphone-based Scleral Jaundice Monitoring for Liver and Pancreatic Disorders*. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp), Maui, United States.
11. Mariakakis, Alex T.. (2017). *BiliScreen: Smartphone-based Scleral Jaundice Monitoring for Liver and Pancreatic Disorders*. University of Washington Computer Science and Engineering Industry Affiliates, Seattle, United States.
12. Mariakakis, Alex T.. (2016). *Ocular Symptom Detection Using Smartphones*. University of Washington Computer Science and Engineering Industry Affiliates, Seattle, United States.
13. Mariakakis, Alex T.. (2016). *Ocular Symptom Detection Using Smartphones*. ACM International Joint Conference on Pervasive and Ubiquitous Computing, Doctoral School (UbiComp DS), Heidelberg, Germany.
14. Mariakakis, Alex T.. (2016). *A Smartphone-based System for Assessing Intraocular Pressure*. Microsoft Student Summit on Mobility, Systems, and Networking, Petaluma, United States.
15. Mariakakis, Alex T.. (2015). *SwitchBack: Improving Interaction with Mobile Devices*. ACM Conference on Human Factors in Computing Systems (CHI), Seoul, Korea, Republic of.
16. Mariakakis, Alex T.. (2014). *SwitchBack: Improving Interaction with Mobile Devices*. University of Washington Computer Science and Engineering Industry Affiliates, Seattle, United States.

## INTERVIEWS AND MEDIA RELATIONS

### Broadcast Interviews

1.  Mariakakis, Alex. (2017, November 22 - 2017, November 22). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. NSF Science Now. The National Science Foundation.
2.  Mariakakis, Alex. (2017, September 13 - 2017, September 13). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. Science & Health. VOA News.
3.  Mariakakis, Alex. (2017, September 8 - 2017, September 8). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. KIRO 7 News. KIRO 7.

4.  Mariakakis, Alex. (2017, September 7 - 2017, September 7). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. KOMO News. KOMO 4.

5.  Mariakakis, Alex. (2017, September 3 - 2017, September 3). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. KING 5 News. KING 5.

6.  Mariakakis, Alex. (2017, September 1 - 2017, September 1). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. BBC News. BBC.

7.  Mariakakis, Alex. (2017, August 30 - 2017, August 30). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. KIRO 7 News. KIRO 7.

8.  Mariakakis, Alex. (2017, August 30 - 2017, August 30). *BiliScreen: smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. KUOW Public Radio. KUOW - NPR Seattle Affiliate.

9.  Mariakakis, Alex. (2017, August 28 - 2017, August 28). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. KTLA 5 News at 10. KTLA 5.

## Text Interviews

1.  Mariakakis, Alex. (2020, August 30). *The future of mobile health*. To Vima (Greek newspaper).
2.  Mariakakis, Alex. (2020, July 21). *Colorimetric chemical sensors for detecting environmental hazards*. New Scientist.
3.  Mariakakis, Alex. (2017, October 9). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. NVIDIA.
4.  Mariakakis, Alex. (2017, September 22). *Feature profile as "Geek of the Week*. Geekwire.com.
5.  Mariakakis, Alex. (2017, September 11). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. Newsweek.
6.  Mariakakis, Alex. (2017, September 7). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. New Atlas.
7.  Mariakakis, Alex. (2017, September 6). *PupilScreen: a smartphone app for measuring the pupillary light reflex as an indicator of traumatic brain injury*. Xconomy.
8.  Mariakakis, Alex. (2017, August 31). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. IEEE Spectrum.
9.  Mariakakis, Alex. (2017, August 30). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. USA Today.
10. Mariakakis, Alex. (2017, August 28). *BiliScreen: a smartphone app for measuring scleral jaundice as an early screening tool for pancreatic cancer*. United Press International.

## PUBLICATIONS

### Journal Articles

1.  Lyon V, Suchsland M, Chilver M, Stocks N, Lutz B, Su P, Cooper S, Park C, Lavitt L, Mariakakis A, Patel S, Graham C, Rieder M, LeRouge C, Thompson M. (2020, November). Diagnostic accuracy of an app-guided, self-administered test for influenza among individuals presenting to general practice with influenza-like illness: Study protocol. *BMJ Open. (Accepted)*

2.  Mariakakis A, Chen S, Nguyen B, Bray K, Blank M, Lester J, Ryan L, Johns P, Ramos G, Roseway A. (2020). Project Calico: Wearable Chemical Sensors for Environmental Monitoring. *arXiv preprint*. doi:https://arxiv.org/abs/2006.15292

3.  Mariakakis A, Wang E, Patel S, Goel M. (2019). Challenges in Realizing Smartphone-Based Health Sensing. *IEEE Pervasive Computing*, 18(2), 76--84. doi:10.1109/MPRV.2019.2907007
    Best Paper Runner-Up

4.  McGrath L, Eaton J, Law A, Mariakakis A, Patel S, Levitt M. (2019). Mobile Digital Pupillometry for Rapid Triage of Patients With Severe Traumatic Brain Injury. *Neurosurgery*, 66(Supplement), nyz310_844. doi:10.1093/neuros/nyz310_844

### Dissertations

1.  (n.d.). *Making Medical Assessments Available and Objective Using Smartphone Sensors*. doi:http://hdl.handle.net/1773/44138

**Conference Publications**

1.  Sieberts S, Mariakakis A, Shawen N, Snyder P, Evers L, Bar-Gad I, Beaulieu-Jones B, Borzymowski H, El-Hanany Y, Goschenhofer J, Guan Y, Huang Y, Javidnia M, Keller M, Matzner A, Page A, Saqib M, Smith G, Venuto C, Zielinski R, Pandey G, Foschini L, Omberg L. (2020, November). Parkinson's Disease Symptom Assessment in Free-Living Conditions: The BEAT-PD Challenge. In *RECOMB/ISCB Conference on Regulatory & Systems Genomics with Dream Challenges (RSGDREAM)*.

2.  Mariakakis A, Chen S, Nguyen B, Bray K, Blank M, Lester J, Ryan L, Johns P, Ramos G, Roseway A. (2020, July). EcoPatches: Maker-Friendly Chemical-Based UV Sensing. In *ACM Conference on Designing Interactive Systems (DIS)* (p. 1983–1994). doi:10.1145/3357236.3395424

3.  Park C*, Mariakakis A, Yang J, Lassala D, Djiguiba Y, Keita Y, Diarra H, Wasunna B, Fall F, Gaye M, Ndiaye B, Johnson A, Holeman I, Patel S. (2020, June). Supporting Smartphone-Based Image Capture of Rapid Diagnostic Tests in Low-Resource Settings. In *International Conference of Information and Communication Technologies on Development (ICTD)* (p. 1–11). doi:10.1145/3392561.3394630

4.  Xu X, Shi H, Yi X, Liu W, Yan Y, Shi Y, Mariakakis A, Mankoff J, Dey Anind. (2020, April). EarBuddy: Enabling On-Face Interaction via Wireless Earbuds. In *ACM Conference on Human Factors in Computing Systems (CHI)*. doi:10.1145/3313831.3376836

5.  Li H, Whitmire E, Mariakakis A, Chan V, Sample A, Patel S. (2019, April). IDCam: Precise Item Identification for AR Enhanced Object Interactions. In *IEEE International Conference on Radio-Frequency Identification (RFID)*. doi:10.1109/RFID.2019.8719279
    Best Paper Finalist

6.  Mariakakis A, Parsi S*, Patel S, Wobbrock J. (2018, April). Drunk User Interfaces: Determining Blood Alcohol Level through Everyday Smartphone Tasks. In *ACM Conference on Human Factors in Computing Systems (CHI)*. doi:10.1145/3173574.3173808

7.  Mariakakis A, Banks M*, Phillipi L, Yu L, Taylor J, Patel S. (2017, September). BiliScreen: Smartphone-Based Scleral Jaundice Monitoring for Liver and Pancreatic Disorders. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)*. doi:10.1145/3090085

8.  Mariakakis A, Baudin J, Whitmire E, Mehta V*, Banks M*, Law A, McGrath L, Patel S. (2017, September). PupilScreen: Using Smartphones to Assess Traumatic Brain Injury. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)*. doi:10.1145/3131896

9.  Mariakakis A, Patel S. (2016, September). Ocular Symptom Detection using Smartphones. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)* (p. 435--440). doi:10.1145/2968219.2971354

10. Mariakakis A, Wang E, Patel S, Wen J. (2016, August). A Smartphone-based System for Assessing Intraocular Pressure. In *IEEE Engineering in Medicine and Biology Society (EMBC)* (p. 4353--4356). doi:10.1109/EMBC.2016.7591691

11. Mariakakis A, Srinivasan V, Rachuri K, Mukherji A. (2016, March). WatchUDrive: Differentiating Drivers and Passengers using Smartwatches. In *IEEE International Conference on Pervasive Computing and Communication (PerCom)*. doi:10.1109/PERCOMW.2016.7457171

12. Wang E, Lee T, Mariakakis A, Goel M, Gupta S, Patel S. (2015, September). MagnifiSense: Inferring Device Interaction using Wrist-worn Passive Magneto-inductive Sensors. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)* (p. 15–26). doi:10.1145/2750858.2804271

13. Goel M, Whitmire E, Mariakakis A, Saponas S, Joshi N, Morris D, Guenter B, Gavriliu M, Borriello G, Patel S. (2015, September). HyperCam: Hyperspectral Imaging for Ubiquitous Computing Applications. In *ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp)* (p. 145–156). doi:10.1145/2750858.2804282
    Honorable Mention

14. Mariakakis A, Goel M, Aumi M, Patel S, Wobbrock J. (2015, April). SwitchBack: Using Focus and Saccade Tracking to Guide Users' Attention for Mobile Task Resumption. In *ACM Conference on Human Factors in Computing Systems (CHI)* (p. 2953–2962). doi:10.1145/2702123.2702539

15. Mariakakis A, Sen S, Lee J, Kim K. (2014, June). SAIL: Single Access Point-Based Indoor Localization. In *ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)* (p. 315–328). doi:10.1145/2594368.2594393

**INTELLECTUAL PROPERTY**

**Patents**

1. Taylor J, Patel S, Mariakakis A. (2018, June 1). Bilirubin estimation using sclera color and accessories therefor Patent No. US20200121228A1.
   Pancreatic cancer is one of the deadliest forms of cancer worldwide because it is often detected in later stages. One of the few characteristic symptoms of pancreatic cancer is jaundice — the yellowing of the skin and eyes due to the build-up of a compound called bilirubin. Although jaundice is obvious in severe cases, the ability to identify more subtle instances of jaundice could lead to earlier detection or continuous monitoring. This patent describes an algorithm that analyzes a photo of someone's eyes to estimate their bilirubin level. The algorithm uses computer vision to separate the sclera (the white part of the eye) from the rest of the image and summarize its color. A machine learning algorithm uses that color feature vector to report a bilirubin level. Ambient lighting can affect the appearance of colors in an image, so the patent describes two methods for color control: a 3D-printed box for color control or color references for calibration

2. McGrath L, Law A, Bly R, Patel S, Mariakakis A, Baudin J. (2018, May 31). Smartphone-based digital pupillometer Patent No. US20200129063A1.
   There is no definitive way of diagnosing traumatic brain injuries (TBIs) — head injuries caused by an external force that leads to brain damage. Recent medical literature has posited that the pupillary light reflex — the involuntary change in a person's pupil size in response to a light stimulus — can be a useful biological signal for objective TBI assessment. Some hospitals have a clinical device called a pupillometer, which is able to measure a person's pupillary light reflex using an infrared camera; however, this device typically costs thousands of dollars and is thus not often used by paramedics. This patent describes how the smartphone can be used to produce similar measurements. The system uses a 3D-printed box to control the lighting around the eyes as the smartphone's flash provides a light stimulus. The smartphone's camera records the response, and the pupillary light reflex is measured using a deep learning

3. Wen J, Mariakakis A, Wang E, Warren N. (2017, February 1). Applanation tonometer Patent No. US20170215728A1.
   Measuring intraocular pressure is an important test that ophthalmologists conduct to monitor cases of glaucoma. Ophthalmologists normally measure intraocular pressure using specialized and expensive equipment in a clinic, so patients often have to travel great distances for regular monitoring. This patent describes a system that allows ophthalmologists to measure intraocular pressure using only their smartphone and an unpowered smartphone accessory. The smartphone accessory gently applies pressure to the patient's eye, and the deformation of the eye is recording by the smartphone's camera. A computer vision algorithm is applied to the video to produce an intraocular pressure readout

4. Sen S, Lee J, Mariakakis A. (2019). Localization using access point Patent No. US10349214B2.
   GPS does not work indoors, so many researchers have explored other sensing modalities for localizing a person inside a building. Indoor localization could help people find their way through unfamiliar buildings or provide people with personalized directions to their destination. The most common indoor localization techniques use people's smartphones to measure the wireless signal strength from nearby access points for triangulation or trilateration; however, these techniques often require coordination between many devices, which induces a significant overhead on the access points.This patent describes a way of providing indoor localization using just a smartphone and a single access point. The smartphone's sensors record the user's steps and heading to infer their local trajectory, and the access point periodically estimates the user's distance from a known location. These measurements produce a geometrical problem that can be solved to infer the user's location

5. Sen S, Lee J, Mariakakis A. (2018). Localization using access point Patent No. US9883342B2.
   GPS does not work indoors, so many researchers have explored other sensing modalities for localizing a person inside a building. Indoor localization could help people find their way through unfamiliar buildings or provide people with personalized directions to their destination. The most common indoor localization techniques use people's smartphones to measure the wireless signal strength from nearby access points for triangulation or trilateration; however, these techniques often require coordination between many devices,

which induces a significant overhead on the access points. This patent describes a way of providing indoor localization using just a smartphone and a single access point. The smartphone's sensors record the user's steps and heading to infer their local trajectory, and the access point periodically estimates the user's distance from a known location. These measurements produce a geometrical problem that can be solved to infer the user's location

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