# MIT App Inventor Summit 2019

*Celebrating 10 years of computational action*

# Program

We are still developing the program based on submissions for the different calls. Check back periodically for updates.

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## At A Glance

Breakfast and lunch will be provided for all three days of the conference. Coffee breaks will be offered between the two morning sessions and two afternoon sessions of each day. A networking reception with cash bar will also be held on the first day of the summit beginning one half hour after the last session.

# Day 1

| | August 1st | | |
|---|---|---|---|
| | **Lecture Hall** | **Multipurpose Room** | **Silverman Skyline** |
| 8:30 | Registration/Check-In/Breakfast | | |
| 8:45 | | | |
| 9:00 | Welcome | | |
| 9:15 | Original Google Team Panel | | |
| 9:30 | | | |
| 9:45 | | | |
| 10:00 | Keynote: Daniel Lai | | |
| 10:15 | | | |
| 10:30 | | | |
| 10:45 | | | |
| 11:00 | Coffee Break | | |
| 11:15 | | | |
| 11:30 | Presentations | Intro to App Inventor | Hackathon |
| 11:45 | | | |
| 12:00 | | | |
| 12:15 | | | |
| 12:30 | Lunch | | |
| 12:45 | | | |
| 13:00 | | | |
| 13:15 | | | |
| 13:30 | Presentations | Workshop: How to utilize Extensions and Connect External Hardware in App Inventor | Hackathon |
| 13:45 | | | |
| 14:00 | | | |
| 14:15 | | | |
| 14:30 | | | |
| 14:45 | | | |
| 15:00 | Coffee Break | | |
| 15:15 | | | |
| 15:30 | Birds of a Feather | Workshop: How to utilize Extensions and Connect External Hardware in App Inventor | Hackathon |
| 15:45 | | | |
| 16:00 | | | |
| 16:15 | | | |
| 16:30 | | | |
| 16:45 | | | |
| 17:00 | | | |
| 17:15 | | | |
| 18:00 | Youth Mobile Power App Challenge Awards Ceremony and Reception | | |
| 18:15 | | | |
| 18:30 | | | |
| 18:45 | | | |
| 19:00 | | | |
| 19:15 | | | |

Morning

*Breakfast (8:30-9:00)*

Session 1 (9:00-11:00):

- Welcome by Hal Abelson, Class of 1922 Professor of EECS, MIT, and co-creator of App Inventor
- Panel Discussion: Google App Inventor team members
- Keynote Speaker: Daniel Lai, Program Director, CoolThink @ JC

Session 2 (11:30-12:30):

- Hackathon (all day)
- Beginners workshop
- Presentation Session 1
  - Michelle Sun: "5 Lessons Learned from Teaching 10,000 Kids to Code"
  - Johannes Kretzschmar, Lucas Geitel, and Matthias Müller: "Deliberating and Programming Digital Media - Two sides of the same coin"

Afternoon

*Lunch (12:30-13:30)*

Session 3 (13:30-15:00):

- Hackathon (continued)
- Workshop: How to utilize extensions and connect external hardware in App Inventor
- Presentation Session 2
  - Haksung Kim: The Impact of MIT App Inventor on Korea
  - Tommie Lo: Nomad Hackathon - Re-designed code learning to programming for good
  - Pam O'Brien, Natasha Kiely, and Julie Power: "A pedagogical experience with Wearable Technologies using MIT App Inventor and BBC Micro:bit. The development of the App Inventor Micro:Fit"

Session 4 (15:30-17:30):

- Hackathon (continued)
- Workshop (continued)
- Birds of a Feather sessions

*Reception (18:00-19:30)*

# Day 2

| | August 2nd | | |
|---|---|---|---|
| | **Lecture Hall** | **Multipurpose Room** | **Silverman Skyline** |
| 8:30 | Breakfast | | |
| 8:45 | | | |
| 9:00 | Sneak Peek at Upcoming Features with the Development Team | | |
| 9:15 | | | |
| 9:30 | | | |
| 9:45 | Education Panel: Pedagogy with MIT App Inventor | | |
| 10:00 | | | |
| 10:15 | | | |
| 10:30 | Coffee Break | | |
| 10:45 | | | |
| 11:00 | Presentations | Workshop: Hacking Healthcare with MIT APP Inventor | Hackathon (continued) |
| 11:15 | | | |
| 11:30 | | | |
| 11:45 | | | |
| 12:00 | | | |
| 12:15 | | | |
| 12:30 | Lunch | | |
| 12:45 | | | |
| 13:00 | | | |
| 13:15 | | | |
| 13:30 | Presentations | Workshop: Hacking Healthcare with MIT APP Inventor | Poster Session |
| 13:45 | | | |
| 14:00 | | | |
| 14:15 | | | |
| 14:30 | | | |
| 14:45 | | | |
| 15:00 | Coffee Break | | |
| 15:15 | | | |
| 15:30 | Lightning Talks | | |
| 15:45 | | | |
| 16:00 | Demo Session | Workshop: Hacking Healthcare with MIT APP Inventor | Poster Session |
| 16:15 | | | |
| 16:30 | | | |
| 16:45 | | | |
| 17:00 | | | |
| 17:15 | | | |

Morning

*Breakfast (8:30-9:30)*

Session 1 (09:00-10:30)

- Sneak Peek at Upcoming Features with the Development Team
- Education Panel: Pedagogy with MIT App Inventor

Session 2 (11:00-12:30)

- Workshop: Low Cost Health Devices and Apps
- Hackathon (continued)
- Presentation Session 3
  - Tommy Heng: Programming Alexa with App Inventor
  - Nichole Clarke: Augmented Reality with App Inventor
  - Jeffrey Kim & Murielle Dunand: Introduction to the Look Extension
  - Natalie Lao: Machine Learning with App Inventor

Afternoon

*Lunch (12:30-13:30)*

Session 3 (13:30-15:00)

- Workshop (continued)
- Setup for poster session
- Presentation Session 4
  - Ingrid Roche: "App Inventor in the field: Pedagogical experiences and results"
  - Jere Boudell: "The biology code: increasing technological literacy in undergraduate biology majors using MIT App Inventor"
  - Lyn Turbak: "Lessons from the Wild: What We've Learned from Analyzing Millions of App Inventor Programs"

Session 4 (15:30-17:30)

- Lightning Talks
- Workshop (continued)
- Poster Session
- Tech Demo Session

# Day 3

| | August 3rd | |
|---|---|---|
| | **Lecture Hall** | **Multipurpose Room** |
| 9:00 | Breakfast | |
| 9:15 | | |
| 9:30 | Keynote: Lissa Soep | |
| 9:45 | | |
| 10:00 | | |
| 10:15 | | |
| 10:30 | Coffee Break | |
| 10:45 | | |
| 11:00 | Workshop: The Mobile CSP Computer Science Principles Curriculum | Workshop: A practical introduction to Internet of Things(IOT) using MIT App Inventor and Micro:bit |
| 11:15 | | |
| 11:30 | | |
| 11:45 | | |
| 12:00 | | |
| 12:15 | | |
| 12:30 | Lunch | |
| 12:45 | | |
| 13:00 | | |
| 13:15 | | |
| 13:30 | Workshop: The Mobile CSP Computer Science Principles Curriculum | Workshop: A practical introduction to Internet of Things(IOT) using MIT App Inventor and Micro:bit |
| 13:45 | | |
| 14:00 | | |
| 14:15 | | |
| 14:30 | | |
| 14:45 | | |
| 15:00 | Closing Ceremonies | |
| 15:15 | | |

Morning

*Breakfast (8:30-9:30)*

Session 1 (09:30-10:30)

- Keynote: Lissa Soep, YR Media

Session 2 (11:00-12:30)

- Workshop: A practical introduction to Internet of Things(IOT) using MIT App Inventor and Micro:bit
- Workshop: The Mobile CSP Computer Science Principles Curriculum

Afternoon

*Lunch (12:30-13:30)*

Session 3 (13:30-15:30):

- Workshops (continued)
- Award and Closing Ceremonies

*The Summit ends earlier on the third day in order to accomodate visitors travel needs.*

# Keynote Speakers



**Daniel Lai, Program Director, CoolThink @ JC**

Daniel is the Program Director of Coolthink@JC - a Computational Thinking and Coding Education Program for primary school students in Hong Kong. The program is being funded by Hong Kong Jockey Club Charities Trust ("JCCT"), and co-created by JCCT, Massachusetts Institute of Technology, Education University of Hong Kong, and City University of Hong Kong. The aim of the program is to inspire digital creativity of students in this digital age. Since its launch in 2016, Coolthink@JC has trained 110 teachers and is being run in classes in 32 schools for 16,000 students.

Daniel was Vice-President (Administration) and Professor of Practice (Computing) of Hong Kong Polytechnic University from 2015-2017, Government Chief Information Officer of Hong Kong SAR Government from January 2012 to January 2015; Head of Information Technology of MTR Corporation Ltd. from 1999 to 2011, and held senior IT managerial positions at The Hong Kong Jockey Club (HKJC) in Hong Kong and Australia between 1978 and 1999.

Daniel is a seasoned information technology professional with 50 years' experience. He is a graduate of Hong Kong Polytechnic University and Griffith University, with a Master in Technology Management. He is a Distinguished Fellow and Past President of Hong Kong Computer Society, Founding Chairman of CIO Board, and a Fellow of Hong Kong Institute of Engineers.

Daniel contributed significantly in promoting the development and application of IT in Hong Kong and the region. In recognition of his contribution to the development and promotion of IT, he was awarded Bronze Bauhinia Star (BBS) by the Hong Kong Government in 2004. Daniel has received many CIO Awards including Computerworld Laureate, Top China CIO Award, ZDNet CIO of the Year, and IDC Asia CIO of the Year etc.

**Lissa Soep, YR Media**

Elisabeth (Lissa) Soep is Executive Producer for Journalism and Founding Director of the Innovation Lab at YR Media (formerly Youth Radio), the Oakland-based national network for next-generation news and arts. YR stories Lissa has produced with teen reporters have been recognized with honors including two Peabody Awards, five Murrow Awards, an Investigative Reporters and Editors Award, two Third Coast International Audio Festival Awards, and the Robert F. Kennedy Journalism Award. With a PhD from Stanford University's School of Education, Lissa has written about digital media and learning for academic journals, popular outlets (NPR, Boing Boing), and books including Youthscapes (with Maira, UPenn Press), Drop that Knowledge (with Chávez, UC Press), and Participatory Politics (MIT Press). With Asha Richardson, she founded YR's Innovation Lab, a partnership with MIT and Cornell Tech that was among the first community-based initiatives in the US to teach teens to code, and the first embedded in a newsroom. Her work as a writer, producer, and editor has been featured on NPR, the New York Times, The Atlantic/CityLab, and Teen Vogue. In 2011, she became one of six members of the MacArthur Foundation's Youth and Participatory Politics Research Network, which explored how young people use digital and social media to express civic voice and agency. For more than ten years, Lissa served on the Board of Directors of the United States' premier youth poetry organization, Youth Speaks.

# Panels

## Meet the Original Google Team

Meet the team that started it all. Members of the original App Inventor team at Google will talk about the beginning days of App Inventor and share their thoughts on computer science education in the 10 years since the debut of App Inventor.

For more details about the Original App Inventor Team panel, please see the announcement.

## Sneak Peek at Upcoming Features with the Development Team

Lead Developer Evan Patton will demonstrate upcoming features for MIT App Inventor. Afterward, he will be joined by development team members Susan Lane and Jeffrey Schiller for a round table discussion with attendees about App Inventor development.

## Education Panel: Pedagogy with MIT App Inventor

Karen Lang and Selim Tezel of the education team will participate in a discussion about curriculum development at MIT.

# Workshops

Attendees of the MIT App Inventor Summit 2019 will be able to participate for free in any of the following workshops taking place over the course of the three days of getthe summit.

## MIT App Inventor Hackathon

*Led by Jere Boudell, Clayton State University*

Show off your app building skills by participating in an all day hackathon with MIT App Inventor. The first part of the hackathon will include ideation and team formation. Teams will have the remainder of the first day and a portion of the second day to design and build their apps.

Hackathon teams should submit their apps by 5pm EDT on Aug 2nd so that judges will have time to review code. Teams will also present their projects to the summit participants on the morning of Aug 3rd. The hackathon winner will be announced at the closing ceremonies on Aug 3rd.

## Low Cost Health Devices and Apps

*Jointly organized by MIT App Inventor and MIT Little Devices Lab*

The MIT App Inventor and MIT Little Devices Lab teams partner to present an all-day workshop on App Inventor and IOT for medical purposes. The workshop will be divide into three parts:

1. Explore: Tour of the MIT Little Devices Lab and get an introduction to 3D printing and design
2. Build: Using 3D printed components, Arduino, and MIT App Inventor, build a spirometer and an app to read its data
3. Hack: Brainstorm with other participants and design or prototype an app based on what you've learned!

Teams that participate in this workshop will have an opportunity to share their ideas on the last day of the summit.

Participants will need a computer and an Android enabled phone for the building and hacking portions of this activity.

# The Mobile CSP Computer Science Principles Curriculum

*Led by Beryl Hoffman[1] and Pauline Lake[2], [1]Elms College and [2]College of St. Scholastica*

The Mobile CS Principles (Mobile CSP) curriculum, using MIT App Inventor, is one of the NSF-supported, College Board-endorsed curricula for the new AP Computer Science Principles (CSP) course. Since 2013, the Mobile CSP project has trained more than 700 teachers, and the course has been offered to more than 20,000 students with great success on the AP exam. Mobile CSP's goal is to provide engaging introductory high-school CS curriculum to increase students' interest in further study and possible careers in CS, especially for those who are traditionally underrepresented in CS. Mobile CSP uses MIT App Inventor with the motto "Teach them where they live" – on their smartphones! The curriculum engages students by encouraging them to build creative, socially-useful mobile apps that solve real-world problems in their own communities.

This half-day workshop will provide an overview of the free Mobile CSP curriculum at course.mobilecsp.org, hands-on activities using some of the curriculum material to build a Map app using the new map component in App Inventor, and pedagogical materials/tools from the teacher companion site teach.mobilecsp.org to help engage students in the classroom with an emphasis on broadening participation. Attendees will hear from experienced Mobile CSP teachers and will also be provided with information about available professional development. There will be a Q & A time for new CS teachers to interact with current Mobile CSP teachers and learn how to bring AP CSP to their schools.

This course has been used primarily at the high school level, but can also be used at the middle school or college level as a CS0 course. The target audience is middle, high school, and college instructors; high school, college, and graduate students; and anyone else interested in free curriculum! Laptop with wifi access and a Google account are required. Tablets will be provided during the activities. The online curriculum and pedagogical materials will be made available to participants under a Creative Commons license.

Agenda (3 hours):

1. Welcome: AP Mobile CSP course overview (20 minutes)
2. Sample hands-on App Inventor lesson (Map App using the new Map component) (1 hour)
3. Break (10 minutes)
4. Pedagogy and broadening participation, sample hands-on lessons (1 hour).
5. Q & A Panel: Bringing the course to your school (20 minutes)
6. Professional Development information and wrap up (10 minutes)

# How to Utilise Extensions and Connect External Hardware in App Inventor

*Led by Queena Ling, Preface Nomad*

## Workshop Objectives

- Allow participants to explore expanded functionality in App Inventor by extensions. e.g. handling keyboard events (keyboard input), advanced sound player, learn how to connect to other hardware within the App Inventor project
- Advocate the use of App Inventor through demonstrating the wide-ranged varieties of apps which can be created
- Empower participants to recreate their own designs using App Inventor to build projects that engages with users and community

## Workshop Overview

Participants create their own version of a well-known game - Chrome Dinosaur which was played 270 million times globally since its launch more than 4 years ago to highlight on the "power" of App Inventor being able to recreate games of tremendous impact and extended functionalities.

## Workshop Content

Through the App Inventor platform, participants will be able to create a replication of the famous "Chrome Dinosaur" game in which players have to control a pixelated T-Rex to jump over incoming obstacles. The workshop will also cover the use of the KeyEvent extension, enabling the game to be played with other external buttons for input besides just using touch screen. More advanced coding techniques like scrolling effects and involvement of basic physics in animations will be introduced.

## Workshop Agenda and Duration

It is a three hour workshop that will include the following:

- Idea brainstorming and sharing in groups + pair programming
- Sharing on App Inventor Extensions: integrating extensions into projects and other examples
- Live-coding session in building codes for Dino game with participants
- Final Product Showcase and Q&A Session

## Topics Covered

- Extensions in App Inventor
- Advanced Coding Techniques in App Inventor
- Hardware controllers as input

# A Practical Introduction to Internet of Things (IOT) Using MIT App Inventor and Micro:bit

*Led by Natasha Kiely[1], Julie Power[2], and Pamela O'Brien[1], [1]Limerick Institute of Technology and [2]Lero*

With the number of connected devices in use worldwide now exceeding 17 billion and the number of connected Internet of Things(IOT) devices estimated to reach 10 billion by 2020, educators and students alike have an increased awareness and appetite to explore developments and careers in this sector.

The aim of this workshop is to explore Internet of Things(IOT), the concepts, technologies and applications that are possible through the use of Mobile Applications and Micro-controllers. The workshop will take participants through a hands on experience in IOT design and development using App Inventor and Micro:Bit technologies. It will explore the needs and requirements of today's society, looking at solving real world problems. A variety of IOT key themes will be demonstrated and developed such as Smart Health,Smart Cities, Smart Homes, Smart Cars, Smart Farming, Smart Buildings, Smart Appliances and Wearable technologies.

Participants will work in teams,collaborating through the use of shared technologies and Maker Education practices. Ideas will be shared and coded providing teachers with a wealth of knowledge, experience and practical materials that can be disseminated directly into their classrooms. Experiences will be gained and demonstrated, with workshop tutors identifying the key strengths of content delivery and indeed the pitfalls to avoid during live classroom lessons and activities. This knowledge has been acquired from experience gained by workshop facilitators in the development of IOT applications delivered to Irish educators and students across all levels of the Irish Education System.

# Other Events

## Poster Session

Present your latest App Inventor work at the poster session overlooking the beauitful Charles River and Boston, MA. Exchange ideas with your fellow app inventors and get inspired to build the next great app!

## Reception

The first night of the summit will include a reception for all participants to relax and mingle with with App Inventor team.