

# From Camp to Conferences: Experiences in Leveraging Tech Conferences to Inspire Black and Latinx Girls to Pursue Coding and Tech Careers

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**Abstract**—This experience report highlights the impact of taking Black and Latinx middle and high school girls to tech conferences. INTech Camp for Girls took five girls who previously participated in our summer camps and after school program to the #blackcomputeHER Conference in Washington, DC where they were able to network with Black women in tech, participate in a coding workshop designed just for them, and hear from Black Girls ROCK! Founder and DJ, Beverly Bond. Additionally, four INTech High School scholars earned an all expenses paid trip to the Facebook Achievement Summit as a result of their project submission and participation in the Facebook Engineer for the Week program. While at the summit, Team INTech participated in a one day hackathon where worked along Facebook engineers to build an app called “Air to Spare” using Scratch. Our team placed top eight in the country amongst twenty teams, as well as, won the Best Pitch Award. While in Silicon Valley, they were also able to meet 13 Apple Engineers, as well as, receive a tour of the Netflix HQ and speak with two engineers and a User Experience designer about what life in tech is like. This report describes how these experiences inspired INTech girls to pursue coding and technical careers.

**Keywords**—*Broadening Participation in Computing, Hackathon, Tech Conference*

## I. INTRODUCTION

Computer science education provides a gateway to high-paying career opportunities and upward economic mobility. Across the nation, there is a significant and growing demand for professionals who understand how to apply fundamental computer science principles to solve problems across many disciplines and industries. According to the US Bureau of Labor Statistics, jobs that require computing knowledge and skills represent the top source of new wages in the United States. Growth in employment opportunities related to computer and information science is projected to continue over the next several years, outstripping job openings in all other occupation at twice the growth rate [1]. In the state of North Carolina, specifically, there are more than 15,100 unfilled

computer science jobs in the state of North Carolina, with the average salary for those jobs being \$91,422 [2].

Most of the high-paying career opportunities require a bachelor’s in computer science or related field, or the equivalent. A recent report shows that, overall, students who take a computer science course in high school are 6 times more likely to pursue a computer science major in college; women who study computer science in high school are 10 times more likely to study in college [2]. However, only 15% of North Carolina high schools offered an Advanced Placement computer science course during the 2016-17 school year [2].

The INTech Camp for Girls was founded in order to ensure that students, particularly those from underrepresented groups, have opportunities to learn about engineering, technology, and computer science and to have access to lucrative tech-focused career paths. A 501(c)(3) non-profit organization, the mission of INTech is to *inform* and *inspire* girls of color to *innovate* in the technology industry. Specifically, INTech engages Black and Latina girls in grades 6-12 across North Carolina in out-of-school time experiences, typically through summer camps and after school programs. Through an after school program called INTech Academy, high school girls are able to gain the education that they may miss by not having AP Computer Science in their high school. These INTech experiences are designed around 3 pillars:

- **Inform.** INTech provides girls with opportunities to master essential computer science concepts, such as creativity, abstraction, algorithms, and programming, and to learn about different potential pathways for technology careers.
- **Inspire.** INTech introduces young women of color to women with a background in the technology industry, who share their educational and career experiences.
- **Innovate.** INTech provides girls with opportunities to work together in lightweight teams [3] in which they learn how to create and implement technology solutions. Working in a team setting, girls reap the benefits of peer teaching, peer learning, and increased student engagement [3].

Funding for the trip to Facebook was made possible through Facebook.

INTech has recently introduced conference attendance as a new component of the INTech Academy, with the goal of fostering community building, providing exposure to real-world views of industry professionals and settings, and building skills in computing. This report describes the motivation, design, and experiences in developing this new component as part of INTech Academy.

## II. PROGRAM DESCRIPTION

INTech offers two different types of out-of-school opportunities for Black and Latina girls to learn about computing and tech careers: INTech summer camps and the INTech Academy.

### A. *INTech Summer Camp*

The INTech Summer Camp is a 5-day experience for Black and Latina girls who are in middle school. There are two different tracks:

- **Track 1 - HTML/CSS** in which girls who are new to INTech learn how to build a website about a social issue of their choice
- **Track 2 - User Experience Design** in which girls who have attended INTech previously learn how to design and prototype mobile applications

In the morning of each camp day, girls spend time in teams of 3 to 4 where they build a tech product, depending on their track, about a social issue that they would like to research during their time at camp. Project topics include racism, LGBTQ+ issues, homelessness, animal poaching, etc.

In the afternoon, we visit tech companies local to Charlotte, NC and Raleigh, NC so that our middle school girls can make the connection between what they learn in the classroom and what a career could look like for them. So far, we have visited Google Fiber, Microsoft, Red Ventures, AvidXchange, Red Hat, SAS, Lithios, IBM, Bank of America, Google, Accenture and Komplex Creative.

Additionally, we also increase the social capital of our scholars by introducing them to Black and Latina women in tech who share their journey of how they got into tech. At the end of the week, we celebrate the work they have done with a community celebration where students are able to present their projects to their family and community partners.

### B. *INTech Academy*

During the fall of 2018, INTech hosted a pilot after-school program, called INTech Academy, where eight high school girls met on Tuesdays and Thursdays after-school from 3pm-5pm for 9 weeks to learn about game development, mobile app development, and User Experience Design. During the first three weeks of the program, we implemented the nationwide Facebook Engineer for the Week (EFTW) program. EFTW aims to demystify the world of tech, empowering teens to build a working tech product and develop computer science skills [4].

There are two project tracks that can be selected for the EFTW program: Play for Impact and Chatbots for Change. INTech Academy chose the Play for Impact track where

two girls built a game called "Playing for Equality" using Scratch, where they addressed the issue of racism, sexism, and education insensitivity within a soccer game. The game had several levels and as you advanced to a new level, you learned about a new issue. Determined to create a great game, the girls spent time outside of the allotted INTech Academy time to fine tune the game for a final submission. As a result of their submission, the team was selected to attend the Facebook Achievement Summit to participate in a hackathon at Facebook's Headquarters in Menlo Park, CA.

## III. CONFERENCE ATTENDANCE

In order to create a culminating experience for girls who have participated in INTech programs, we decided that attending tech conferences would be a great way to expand upon our 3 pillars (inform, inspire, innovate) and truly allow our scholars to build their tech community [5], learn about tech careers, gain additional tech skills, and tour tech companies outside of the cities in which they live.

**#blackcomputeHER Conference 2019:** blackcomputeHER.org is dedicated to supporting computing+tech education and workforce development for black women and girls. The aim for blackcomputeHER.org is to generate knowledge and disseminate information that creates a spirit of urgency around the lack of sustainable diversity. blackcomputeHER.org organizes the annual #blackcomputeHER conference and supports the community of black women and girls in computing+technology through education and workforce development [6].

INTech took two middle school girls and three high school girls who previously attended INTech Camps to the 2019 #blackcomputeHER conference in Washington, DC where nearly 200 black women technologists attended and experienced masterclasses for professional development on topics including entrepreneurship, data science, and career development.

**Facebook Achievement Summit:** The Facebook Achievement Summit is 2-days of learning, collaboration, and celebration for the Engineer for the Week finalist teams and facilitators at Facebook Headquarters in Menlo Park, CA. The summit includes a 2-day hackathon, panels with Facebook teams, facilitator workshops and more [7]. INTech took four high school girls, the INTech Academy program lead instructor, and an INTech parent who also serves as a school partner.

Next, I will discuss the experience of the two conferences in regards to INTech's three pillars - inform, inspire, innovate.

### A. *Inform*

Through our inform pillar, girls learn about various forms of technology and how it impact their daily lives. While at the Facebook Achievement Summit, our INTech girls soaked up valuable knowledge during several interactive STEM workshops. They were introduced to the Agile Methodology where they created a kanban board with swim lanes titled To-Do, In-Progress, To-Verify, and Done to keep up with their tasks. They also learned story boarding concepts to thoughtfully plan

out the flow of their game, keeping in mind the different levels a user would have to go through and the goal of each level. Additionally, they participated in a Oculus Virtual Reality (VR) Demo where they learned from Oculus engineers about how VR technology works.

### B. Inspire

While there has been a decline in the amount of Computer Science Bachelor's degrees earned by Black women [8]–[10], it is our goal at INTech to expose our scholars to as many women who look like them as possible. The #blackcomputeHER conference, with over 200 women in attendance, gave our girls multiple opportunities to interact with women in tech who look like them through various workshops.

**A Conversation with Beverly Bond:** On the first day of the #blackcomputeHER Conference, Beverly Bond, DJ and Founder of Black Girls ROCK!, participated in a lunch time fireside chat where she discussed GIRLS ROCK! TECH, an after-school program for STEM development through music, media and digital technologies [11]. One of our high school girls became so inspired that she purchased the Black Girls ROCK! book, received an autograph and picture with Beverly Bond, and shared with her that she was inspired to become a DJ.

**Beyond Black Girl Magic!:** In this workshop, Dr. Siobahn Day and Pamela Gibbs explored the life dynamics of black women as well as their identities outside of technology. The workshop provided tools and techniques fostered a healthy discussion regarding balancing everyday demands and maintaining our unique identities [12]. All five of our girls attended this workshop and they left inspired and excited about their future. One of our high school students who now attends North Carolina A&T State University became inspired by Dr. Day, as she was the first Black woman to graduate with a Computer Science degree from North Carolina A&T State University.

**Silicon Valley Visit:** In order to make the most of our trip to Silicon Valley during the Facebook Achievement Summit, we planned a lunch with 13 Apple engineers, a tour of the new Apple Company store, a behind the scenes tour of Netflix where they had an intimate discussion with two engineers and a user experience designer, and a tour of Stanford University. Since we had girls on the trip who are interested in user experience design and software engineering, we wanted to provide them with the opportunity to hear from employees at companies whose products they use every day. They were able to ask questions about living far away from home, adjusting to California, working at a large tech company, and what classes they should think about taking in order to prepare them for a tech career.

### C. Innovate

**Inspiring and Supporting the Next Generation of Black Women in Computing+Tech:** The #blackcomputeHER 2019 Student Track included a two-hour hands-on workshop designed to engage middle/high school students with computing skills and technological applications. This session fostered

early connections and exposure to the sisterhood of Black women in computing. During the session, our girls were able to use Scratch to begin building a game. While the time period for building the game was short, our girls were able to become familiar with the Scratch platform and gain gaming concepts that they could build on later.

**Achievement Summit Hackathon:** During the two-day event, INTech girls participated in a hackathon in which they competed against 100 students from all over the country. INTech girls used Scratch to develop "Air to Spare", an environmental app inspired by their concerns about pollution in Charlotte. The game tasks players with finding alternative modes of transportation producing the least amount of pollution during a simulated work commute. During the hackathon, each team was assigned a Facebook Engineer who served as a mentor to assist them with their project.

Once the hackathon was over, each team prepared a two-minute pitch to share out in a science fair style session where Facebook engineers walked around to judge the pitches to determine who would make the top eight teams to pitch during the dinner celebration. Out of the 20 teams, INTech advanced to the top eight teams to do a final pitch and shared their two-minute pitch on stage in front of everyone at the dinner celebration. There were four awards given: Most Creative, Best Social Value, Best Pitch, and Best Overall. Out of the eight teams, team INTech received the award for Best Pitch.

## IV. REFLECTIONS

While each conference experience provided multiple opportunities for INTech girls to be informed, inspired, and to innovate, when looking back, the inspiration from those around them had the largest impact.

Two of our middle school girls, who were the youngest attendees of the #blackcomputeHER conference, has participated in all of the INTech Summer Camp's in Raleigh, NC. They stated:

I enjoyed the #blackcomputeHER conference because it gave me an opportunity to talk to other women in the computer science field. Listening to all the different jobs people did broadened my aspects on what I would like to do in the future.

It was [also] very exciting meeting Beverly Bond. Among all women employed in computer and information science occupations, only 12% are Black or Latina women, and some of the women in that room made up that 12%.

While at the #blackcomputeHER conference, two INTech Board Members received awards. Dr. Dena Ford Robinson received the Rising Star award and I received the Lift As You Climb award. This moment was also inspiring to one of the girls who stated:

It was extra special because Ms. Khalia received an award and it felt good to know that one of my mentors received recognition for her hard work. It

made it “real” that I can do anything I set my mind to do.

The four high school students who attended the Facebook Achievement Summit also reflected on how inspiring the trip and summit was for them.

[While] in California, I was able to get deeper into technology. It was great to hear minorities speak about how they turned negative outcomes into positive outcomes. I loved listening to their stories. They made me realize this is what I want to do!!

EFTW and the California experience overall was very motivating and exciting. I met several friendly people from similar backgrounds that ended up going to extraordinary places. The Facebook team and competition was welcoming and my team worked well together and efficiently. All the places we got to see were life-changing and amazing.

Teamwork was another theme of the Facebook Achievement reflections. One of the students stated:

I can honestly say that I enjoyed my time at the EFTW Achievement Summit. Learning and interacting with my teammates was the highlight of my experience. I learned how to work under pressure and complete an app within a short amount of time. This is something I will never forget and inspires me to learn more about coding.

The parent of the middle school students reflected:

The excitement in my two daughter’s voices telling me about their experience at the#blackcomputeHER conference was one of my happy and proud moments as a parent. The description of how they felt being among all the other attendees was priceless...I look forward to what they gained and what they will continue to learn from this exposure.

We also had a parent come to California with us who was my former Chemistry teacher and is now the Career and Technical Education facilitator for the school we held INTech Academy. She stated:

The biggest impact for me...a former student mentoring my daughter!! It takes a village and my village has come full circle. Thank you Khalia Braswell!

## V. LESSONS LEARNED AND FUTURE WORK

### A. Planning

The Facebook Achievement Summit was an all expenses paid trip in which Facebook coordinated the flights and hotel rooms for four students and two facilitators to attend. We also had a parent attend who paid for her own flight expenses.

The #blackcomputeHER Conference took more planning since it was largely funded by INTech. We sent out an interest form to 11 past INTech camp participants (middle and high school students) in both Raleigh and Charlotte North Carolina. Out of the 11, we received eight responses to attend and was

able to take five students (three from Charlotte and two from Raleigh) and two chaperones. In the future, we would start the planning sooner so that parents can plan around their students being out of school and hopefully increase the number of girls who can attend.

We asked parents if they would be willing to pay to supplement some costs and all of them responded that they would be able to pay. For the families that decided to attend, we offered a discount for our summer camp registration fee. Expenses included the hotel, two rental cars and gas, and dinner on the first night. Fees from the parents went towards conference registration and hotel expenses.

### B. Future Work

In the future, we would like to seek out sponsorship opportunities so that more INTech girls can attend the #blackcomputeHER Conference.

Three of the girls who attended the Facebook Achievement Summit attend the same high school and have decided to participate in the EFTW program again in order to attend another Achievement Summit. They have the support of their school staff, former INTech facilitator, and INTech.

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