

Innovate for Good



APPALACHIAN STATE UNIVERSITY®

WALKER COLLEGE OF BUSINESS

Boys Camp Handbook

innovate.appstate.edu

July 22nd – 26th 2019

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Welcome

Dear Campers,

Welcome to the inaugural boy's camp as part of the "[Innovate for Good](#)" STEM (Science, Technology, Engineering and Math) initiative in the Walker College of Business at Appalachian State University, Boone, NC. Details of each session and other fun activities are outlined in this program booklet. On behalf of all the session leaders and volunteers, we would like to welcome you to an exciting opportunity to learn more about integration of STEM areas. The camp focuses on using Information Technology (IT) ranging from programming and mobile application development to data analytics and Internet of Things to address social problems. We hope to give you a rewarding experience where you can explore your interests and use your creativity to propose solution to relevant social problems. The goal of our program is to **increase awareness about IT education and careers among students in grades 4 through 10**. High-school students who have participated in past STEM summer camps are serving as Program Leaders and/or as near peer mentors (NPMs). Through hands-on activities, you will:

- Build and program LEGO EV3 robots using LEGO Mindstorms software
- Learn how to :
 - create animations and video games using MIT's "SCRATCH" software (scratch.mit.edu)
 - develop mobile applications using MIT App Inventor 2
 - build Internet of things using Arduino/Little bits
 - apply Data Analytics and Visualization techniques
- Learn about Internet Security and Safety
- Learn about tech tools can be use for communication

We are happy to provide you with a camp bag filled with useful materials and a complimentary flash drive in order take your projects home. We hope that you begin the program with an open mind ready to learn and experience new ways of creating and using technology. Feel free to talk to the session leaders and volunteers if you have any questions during the camp. In case of an emergency, you can contact us at the numbers given below:

Get ready to learn, create, and have fun!

Sincerely,

Lakshmi Iyer, Ph.D.

Professor and Director of Applied Data Analytics Graduate Program
Founder of Innovate for Good Initiative, Walker College of Business
Appalachian State University, Boone, NC
innovate@appstate.edu; Cell: 336-254-1190

Frances Keel

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Program Leaders: Aleah Brown, Maggi Mugi, Rithika Jonnalagadda, Kimberly Brown, Haley Wixom

Biographies of Program Leaders and Assistants

Aleah Brown: Girls Innovate IT and MIT Scratch Animation Session Leader



Hello Everyone! I am Aleah Brown. I am attending Savannah College of Art and Design in Savannah, GA. I am majoring in Animation and minoring in Graphic Design. I just completed my Freshman Year and made the Deans List. In June 2018, I graduated Magna Cum Laude from Northern Guilford High School. where I was a member of various Honor Societies and Clubs. In 2018 and 2017, I was an NCWIT Affiliate (AspireIT) Award Winner. I was a Session Leader for the 2018 Innovate for Good Camp. Also, I have been a session Leader in 2016, 2017 and 2018 at IT is for Girls & We Make IT Summer Camps at UNC-Greensboro. I have been a Presenter/Session Leader at 2016, 2017 and 2018 Tech Savvy Day sponsored by AAUW. This has been an awesome

opportunity and experience. I look forward to showing you that learning technology can be fun!

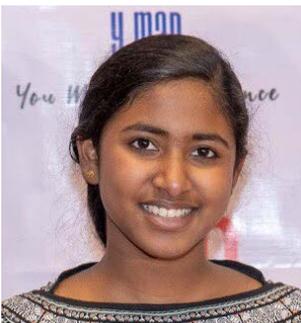
Kimberly Brown: We Make IT and IoT Session Leader



Hi! My name is Kimberly Brown. I am a rising Junior at Northwest Guilford High School. From the time I was in 4th grade, I have always loved science and technology. I first participated in FLL (First Lego League) when I was in 4th grade and I discovered I loved building and programming robots. Now, I am on an FRC (First Robotics Competition) team where I continue to learn new things about robots! I started out as a participant in the IT for Girls camp 5 years ago. Since then, I have attended the camp for 3 years, and been a session assistant for the App Inventor and Scratch sessions for 2 years. I am really excited to be the

session leader of the IoT program this year! I volunteer at the Greensboro Science Center as a Robotics Ambassador where I get the opportunity to share new advancements in the science and technology world as well as use super cool robots! Attending the IT for Girls camp allowed me to see different STEM-related careers and influenced me in my decision to pursue the IT field. I hope that I can share my knowledge and love for science and technology with you all! This week in the Internet of Things session, we will use LittleBits, Virtual Reality, and Arduino to create IoT projects that address social issues. I am very excited to meet everyone this week and explore the amazing world of IoT!

Rithika Jonnalagadda: LEGO Robotics Session Leader



Hello everyone! My name is Rithika Jonnalagadda and I am a rising junior at the Early College at Guilford. I have been a part of IT is for Girls camp and the Tech Savvy event for the last 4 years, a session assistant for 2 years after attending as a camper for 2 years, and am now leading the LEGO Robotics Session this summer. Being part of this camp has provided me with so many incredible opportunities including the chance to write a grant for the National Center for Women and Information Technology as well as receiving the Affiliate Award from the NCWIT for Aspirations in Computing. Additionally, I have participated in various STEM activities, including First LEGO League (FLL) since 4th grade, mentoring an FLL team this past year, and First Tech Challenge (FTC) for the last 2 years. Attending the IT is for Girls Camp for the first time was an incredible experience

as my eyes were opened to all of the possibilities and opportunities available to me. I have enjoyed both attending this camp as both a participant and a volunteer, learning new things every year and enjoying the chance to give back by encouraging more girls to realize their options and pursue a career in topics which interest them. This year, the LEGO robotics session will allow girls to explore how to design, construct, and program robots themselves to address a social issue. I am enthusiastic to see all of you and witness your amazing ideas and creations!

Maggi Mugi: Reinvent IT and MIT App Inventor Session Leader



Hello! My name is Maggi Mugi and I am a rising junior at The STEM Early College at A&T. I have been involved with the IT Camp for 5 years and I am very excited to work as a session leader this year! Initially, I began as a camper where I gained lots of experience about technology and it sparked my interest in helping other girls get involved in the STEM pathway. Advancing to a session assistant over the years, I hoped to educate young girls and encourage them that they can do anything IT related. In 2018/2019, I received the Regional Affiliate NCWIT Award for Aspirations in Computing which has allowed me to write a grant application and work as a Session Leader at the Aspire IT Camp in Summer 2019.

We will be working with Dr. Iyer to help make the camp an amazing experience in which the campers will learn about the STEM field, social issues, technology, and preparing for future careers! In the App Inventor session, campers will be introduced to several programming fundamentals and create their very own Android app designed to address a social issue. We are all looking forward to seeing your innovations come to life!

Haley Wixom: Data Analytics and Visualization for Social Good Session Leader



Haley co-leads the Concord Academy (CA) Big Data Club (@ConcordBigDataClub). The club learns and applies data analytics to real-world problems. Last year, the club competed in the Teradata Analytics Challenge, a global collegiate competition, as the competition's first high school team. The CA team used public data to investigate US gun violence in schools. In October 2018, Haley and her club co-head presented the CA project at Teradata's global conference in Las Vegas and won the People's Choice Award for Best Presentation. Haley has worked to share her club and competition experiences with high schools across the country with the hope of promoting big data to high school students. She works as the high school board member for the Teradata University Network (TUN),

a team dedicated to making data analytics resources accessible to students and educators. Haley creates and adapts data and analytics resources for high school audiences. To help launch TUN's High School Initiative, Haley co-keynoted a Women in IT Conference held at Xavier University. She also organized her school's first ever women in technology conference in April. In March, Haley gave a TEDx talk on the value of data analytics. Haley hopes to study data analytics in college and continue to get others excited about the topic.

Support Staff

Samantha Fuentes: Department of Computer Information Systems



Samantha Fuentes joined the Department of Computer Information Systems in 2016 and has been with Appalachian State University since 2007. Samantha was formerly the Default Prevention Coordinator for the University and was recognized in 2015 by the US Department of Education as a top 25 Default Prevention Specialist. Samantha holds degrees in Business and Office Administration and Public Management and is a native of Boone, NC. Samantha's passion is serving students and has been a program leader for WCOB Honors program, club advisor for the Appalachian Supply Chain Club, Learning Leader for ASE and has Co-led several Study Abroad trips. She also serves as a Transfer Faculty Mentor for ASU and served the Walker College of Business Computer Proficiency program from 2016-2019.

Anne Bureau: Residence Hall RA, Media and Photography



My name is Anne Bureau and I am a junior at Appalachian State currently pursuing degrees in both Computer Information Systems and Supply Chain Management. I have also been part of part of the Association of Information Technology Professionals for two years now holding officer positions of Webmaster, Officer-Elect, and now, Secretary.

Ashwini Gaikwad: Data Analytics for Social Good

Hello! I am a Graduate Student at Appalachian State University in the Applied Data Analytics program.. I



have more than 7 years of work experience in Data analytics and Business intelligence. I have worked as Junior Data Analyst with Cognizant Technology Solutions. and as a Senior Data Coordinator with TATA group in India. In India, my core domain was analysis of clinical trial data and to broaden my horizons I decided to pursue degree in Data Analytics. I am passionate about Data, Business Analytics and Machine Learning. As part of my GRAM research fellowship at Appalachian State University, I worked on data analysis of rural students from USA and their struggle to obtain education. I had a chance to represent my work at UNCC Charlotte, National Education Conference. I love working with people of diverse nature and personalities. My attitude towards life is to find solution for any problem in a collaborative way. My hobbies are cooking, hiking and watching Cricket. Currently, I am working in Sports Analytics (Cricket Analytics) project as part of my course. I am looking forward to awesome solutions using data for social benefit.

Megan MacDonald: Residence Hall RA, Program Support, and Data Analytics for Social Good



I am currently a graduate student in at Appalachian State studying Applied Data Analytics. My undergraduate degree is from Boston College in Geological Science. I am really passionate about engaging youth in STEM, and working with youth in general as I have worked for Outward Bound in the past. I also love hiking, rock climbing, and kayaking. I am looking forward to being inspired by all the awesome solutions you all can come up with when you collaborate and utilize the power of technology and data for good!

Connor Mason: Data Analytics for Social Good, Rec activities and Build a Computer



Hey I'm Connor Mason and I'm currently a graduate student in the Master's of Applied Data Analytics program, and I graduate in August. My undergraduate degree was in computer information systems which fueled my interest in this field. I grew up in Eastern North Carolina, and have always had a passion for technology. From building computers, using virtual reality, and of course data analytics, technology has become a big part of my life. I really look forward to sharing what I've learned over the years, and to find out what you're interested in!

Joshua Williams: Data Analytics for Social Good, Rec activities and Build a Computer



Hello, I am Josh Williams. I finished my undergrad in Supply Chain Management at App State, and am currently here as a graduate student in the Applied Data Analytics program. Most of my professional experience was gained as a military intelligence analyst for the US Army. I focused primarily on collecting and analyzing intercepted radio communications, which is where I got my first taste of the power of data science applications. I'm very interested in the use of data (and the scientific process in general) for solving real world problems, and am excited to share what I've learned and to explore all kinds of new topics with you as well!

Sunday Orientation for Near Peer Mentors and Program Leaders

**Orientation will take place on Sunday July 21st from 11-12 and 1- 2:30 pm
in Peacock Hall 3015**



Orientation Speaker:

Barbara Wixom, Principal Research Scientist, MIT Sloan Center for Information Systems Research



Barbara Haley Wixom joined MIT Sloan in June 2013 to serve as a Principal Research Scientist for MIT Sloan's Center for Information Systems Research (CISR). Her research explores how organizations deliver business value through data. She has deep expertise in data warehousing, business intelligence, and business analytics capabilities, with particular interest in organizational success, business value, and emerging trends. Prior to joining MIT CISR, she enjoyed a fifteen-year academic career at the University of Virginia, where she was a tenured faculty member at the McIntire School of Commerce. In 2017, Barbara was awarded the Teradata University Network Hugh J. Watson Award for her contributions to the data and analytics academic community via the Teradata University Network. She is the author of two leading systems analysis and design textbooks, published by John Wiley & Sons, Inc. She is married and has been blessed with two daughters.

Opening Session – Monday July 22nd at 8.30 AM in PH 1020

Welcome from Dr. Heather Norris, Dean, Walker College of Business



Dean Heather Norris is Professor of Finance and Dean of Walker College of Business. Her teaching and research interests involve corporate finance and investments, with a particular emphasis on corporate restructuring. She has been published in the *Journal of Portfolio Management*, *Financial Management*, *Managerial and Decision Economics* and the *Journal of Applied Business Research*. Her work on corporate restructuring has been cited in The Wall Street Journal, Fortune, Business Week and Dow Jones Online News. Norris is a member of Beta Gamma Sigma and Phi Kappa Phi. Prior to her time at Appalachian, Norris served on the faculty at Bowling Green State University, the Pennsylvania State University and West Virginia University.

Dr. Norris serves on the Board of Directors of Homes for Children, the parent organization of Grandfather Home for Children and Barium Springs Home for Children. She is a member of the board's finance committee, foundation board and investments committee. Norris also serves on the board of directors for the Boone Area Chamber of Commerce. Norris and her husband, Rob (Appalachian '87), have a young daughter, Emma, who aspires to be a future Mountaineer.

Introduction of program leaders by Dr. Lakshmi S. Iyer



Lakshmi Iyer is Professor of Information Systems and the Director of the Applied Data Analytics Graduate Program in the Walker college of Business at Appalachian State University. Dr. Iyer obtained her Ph.D. in Management Science and Information Technology with a minor in Computer Science after completing her Master's in industrial engineering and her bachelor's degree in Chemical Engineering from Bangalore University, India.

For over ten years, Dr. Iyer has developed programs to enhance STEM educational opportunities for women and girls through the Women in Information Technology ([WIIT](#)) initiative at UNC Greensboro. She founded the *IT is for Girls* program in 2009 which expanded to a week-long summer camp since 2010 at UNCG. She received the Dr. Shirley Hall Award from the American Association of University Women (AAUW) Greensboro Branch in April 2011 and the 2015 Aspirations in Computing, Educator Awards from the National Center for Women in IT for her Community Engaged Teaching, "IT is for Girls". She served as the STEM education coordinator for the AAUW Greensboro Branch from 2012-17. The AAUW Greensboro Branch established the "Iyer" Award to recognize a member whose work has enabled the Branch to make a lasting difference in its mission of service on behalf of women and girls. Based on these experiences, she has started the "[Innovate for Good](#)" initiative in the Walker College of Business that aims to promote interdisciplinary and collaborative activities to arrive at innovative solutions to address social problems. The primary goal of the initiative is to increase diverse students' awareness about STEM (Science, Technology, Engineering and Math) education and career paths. In addition, there will be research projects that investigate pedagogical and practice themes that help advance under-represented groups in STEM education and workforce

Camp Supporters

(Sponsors/Speakers/Session Leaders/Program Assistants/Volunteers)

CIS Advisory Board Member Sponsors:

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Amanda Coggins
Cam Faison
Amy Little, Lowe's Companies Technology
Department
Steve Stone, NSU Technologies

Gayathri Vijayagopalan,
Rob Waldron
Jon West
Jim Grunder, Vaco

Program Leaders and Near-Peer Mentors (NPM)

Sonia Akkiangadi
Lindsay Alexander-Eitzman
Alicia Bao
Navya Belavadi
Aleah Brown (Undergrad, SCAD)
Kimberly Brown
Lori Brown
Roma Desai
Rithika Jonnalagadda
Riya Kannan
Shreya Mani
Maggi Mugi
Serenity Phillips
Trisha Raj
Haley Wixom

ASU IT Services

John Boitnotte (Session Assistant)
Danny Morehead (Session Leader)
Tung Ong
Julie Taubman (Session Leader)

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Charna Howson
Kerri McCaffrey
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Yingqi Wang

Walker College of Business

Maureen Allen
Sabrina Cheeves
Haley Childers
Wendy Deng
Sara Figlow (Session Co-Leader)
Samantha Fuentes
Brandy Hadley (Session Leader)
Lakshmi Iyer (Program Director)
Claudia Kelley (Sponsor)
Kim Kirby
Donna Lindabury
Dawn Medlin
Heather Norris, Dean
Erich Schlenker (Session Co-Leader)
Will Sears
Chris Taylor
Sandra Vannoy, Associate Dean
Jason Xiong

ASU Students

Anne Bureau (CIS, Undergrad)
Ashwini Gaikwad (MSADA, Graduate)
Megan MacDonald (MSADA, Graduate)
Connor Mason (MSADA, Graduate)
Joshua Williams (MSADA, Graduate)

Watauga County Schools

Scott Elliott
Ike Smith

Speakers

Maureen Allen (Session Leader)
Kathy Higgins (**Sponsor**)
Crispin Hydock (Session Co-Leader)
Amy Little (**Sponsor**)
David Schouweiler (Session Leader)
Barbara Wixom

ASU Camps and Conferences

Frances Keel
Jack Chambers
Amy Sanders
Matt Smith

Note: We apologize for any typos or omission of names



Session Leader: Rithika Jonalagadda

Session Assistants: Lindsay Alexaner-Eitzman and Riya Kannan

Lego Mindstorms allows students to design, build, and program complex autonomous robots, even if the students have limited or no experience with robotics. Lego Mindstorm uses the familiar Lego bricks and also incorporates the Lego Technic bricks. These bricks allow students to build robots that have sensors and motors!

Lego Mindstorms includes six unique components with these sensors:

- 1. The EV3 computer:** This is what powers the Lego Mindstorm sets, using a point and click programming interface that tells the EV3 computer what to do with the input from the sensors.
- 2. The touch sensor:** This allows the robot to feel and react to its environment.
- 3. The sound sensor:** This allows the robot to hear and react to sound.
- 4. The light sensor:** This enables the robot to detect not only light, but different colors.
- 5. The ultrasonic sensor:** This motor gives the robot the ability to see, measure distances, and react to various movement.
- 6. The servo motors:** These motors are used to move the robot around with precision. These motors can be designed in such a way that they equip the robot with partial angles or a continuous tread like that found on a tank.

All of these pieces make up the physical aspect of Lego Mindstorm. This enables the students to become incredibly creative with their designs and see those designs come to life. Beyond just the physical Lego pieces that make up Mindstorm, it also comes with software to program the EV3 brain of the robot. This software uses a visual interface that allows the builder to drag and drop the various sensors of the robot to trigger events without having to write any code!

The benefits the student will gain from this workshop falls into every category of STEM (Science, Technology, Engineering, and Mathematics.)

Science: investigating energy, forces and speed, power relationships and the effect of friction

Technology: programming and controlling input and output devices, using wireless communication, researching and sharing information via networks

Engineering: developing solutions, selecting, building, testing and evaluating

Mathematics: measuring, using coordinate systems, conversion and applied mathematics

Sphero is a robot ball with several features that can be controlled through mobile apps, including computer programs that the students build. The main features are:



1. **Rolling** - The Sphero can roll at a given speed and heading for a given amount of time.
2. **Colors** - The Sphero can light up in any color.
3. **Bluetooth** - Sphero connects to devices such as iPads, iPhones, and Android phones and tablets through wireless Bluetooth connections. This allows the Sphero to be controlled by several apps.

There are 4 education related apps available to control Sphero. Each of these is available for free from app stores such as iTunes and Google Play.

1. Sphero - This is the main Sphero app used for firmware updates and general driving.
2. Draw and Drive - Allows you to draw a shape with multiple colors and have Sphero roll in that shape and color.
3. MacroLab - Creates simple programs (“macros”) that are a series of instructions for the Sphero through an easy-to-use graphical user interface.
4. OrbBasic - Creates more complex programs using a text-based programming language.



Session Assistants:

Lindsay Alexander-Eitzman



Lindsay Alexander-Eitzman is a rising senior at the North Carolina School of Science and Math in Durham. Her experience in STEM includes participating the Watauga High School Robotics club freshman and sophomore year, and attending the Maryland Air Force Cyber Defense course during the summer of 2018. Her other interests include art, piano, and playing Go. Lindsay is considering going to a liberal arts college with a major in physics.

Riya Kannan:



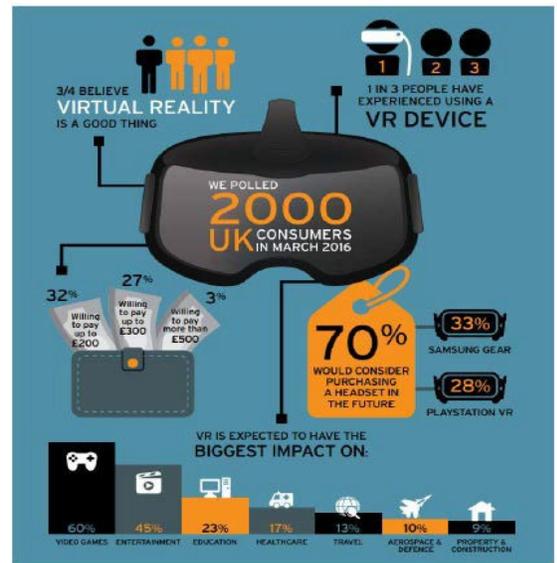
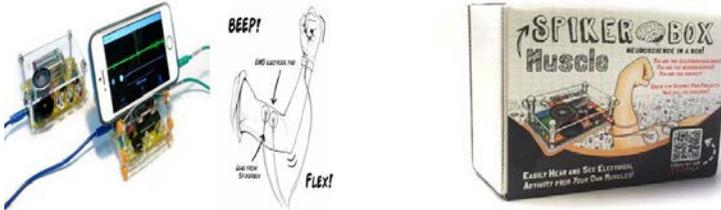
Hi everyone! I’m Riya Kannan, and I’ll be a rising freshman at the Western Guilford High School’s AP Capstone program. I first attended this camp in 2016, and came back in 2018 because of how much fun it was. This year is my first time coming back as a session assistant, and I couldn’t be more excited. This camp, along with other AAUW and WIIT opportunities (Triad Tech Savvy, STEM conference for women, etc) broadened my interests and thoughts about technology like never before. The camp introduced different sessions and activities, and I was able to pinpoint my specific interests. After having lots of fun in the IoT session the first year I did the camp, I chose the same session when I returned 2 years later, so I could advance my knowledge. I can easily say that was a great decision on my part; I learned so much, even the second time through. Even though this camp is meant to let girls choose their favorite session and learn more about it, there’s brilliant exposure to every session there is. You’ll end up learning a little of everything. The volunteers do an amazing job of intriguing you, and they have you roped into the activities in no time. Not only does this camp benefit you in terms of IT, but it also lets you have this sense of social freedom while learning and working. I have met so many new and amazing people through this camp, I can’t imagine my life without them. I’m very excited to see what wonderful creations are made by the amazing campers this year, I hope you have lots of fun this week!

We Make IT - Internet of Things (IoT)

Session Leader: Kimberly Brown

Session Assistants: Lori Brown and Serenity Phillips

Imagine your makeup bag calling your phone when you're out of eyeliner. Imagine your fridge ordering your milk when you're out. Imagine your trash can tweeting "Pick me up!" when it's too full. The Internet of Things is a world of sensors – a network of objects, from your fridge to your phone that can communicate with one another through sensors connected to the Internet.



The girls will learn:

- The basics of a circuit through easy, fun circuits called LittleBits!
- Be exposed to basic Internet of Things (IoT) concepts and applications in healthcare
- How to visualize electrical activity from the muscles through Backyard Brains kits.

Using Styros VR headsets, the girls will:

- Learn the basics behind what a virtual reality is.
- Discuss applications of VR in healthcare, entertainment, and education.
- Apply VR to their final projects in some aspect.

Session Assistants:

Lori Brown



Hello! My name is Lori Brown, and I am a rising freshman at the Early College at Guilford. I was exposed to STEM in fourth grade when I joined an FLL team at the Science Center. It was very fun and I met many people who shared my interests. I have participated in the IT is for Girls camp for four years and attended numerous Tech Savvy events. These experiences have made me more interested in pursuing a career in STEM and have motivated me to learn more outside of the camps and school. I am very excited to be able to come back as a volunteer and get more girls interested in STEM!

Serenity Phillips



Serenity is a rising junior at Northwest Guilford High School. She's the session assistant for Internet of Things. She has been with IT is for girls since she was a seventh grader and has been volunteering since the eighth grade. At IT is for girls UNCG, Serenity worked as the Session Leader for App Inventor. Serenity has an avid passion for ensuring that the girls that attend these camps fully gain an understanding of what they are learning.

Reinvent IT: MIT App Inventor 2



Session Leader: Maggi Mugi

Session Assistants: Alicia Bao and Trisha Raj

Reinvent IT will be exploring the use of MIT App Inventor 2 for Android app development. MIT App Inventor 2 was a collaboration between Google and the Massachusetts Institute of



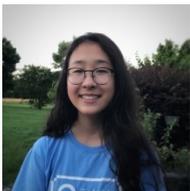
Technology (MIT) to make programming more accessible to people of all ages. Through this online program, participants will be able to build fully functional apps for smartphones and tablets.

The blocks-based tool, as well as its intuitive, visual programming environment, is a powerful tool that can serve as a gateway to understanding more traditional programming techniques, such as event handlers and conditionals, that they will be able to apply to more advanced programming languages in the future. They will also document their experiences to create a digital diary of their trials and successes to share with their fellow campers and judges.

If participants choose this program to create a project with, they have the potential to achieve a positive social impact in the local communities and beyond, just as many users have done before them. For example, a group of young women from Moldova built a crowd-sourcing app to help people access safe drinking water, thus combatting the high rate of water-borne Hepatitis A. A group of middle-school girls in Texas created an app to help blind students navigate the halls in their school. A girl from Chennai, India created an app to coordinate relief efforts following major floods. We're excited to see what you do next!

Session Assistants:

Alicia Bao



Hey Everyone! This is Alicia Bao, and I'm a rising sophomore at the STEM Early College. I first attended the IT is for Girls Camp in 2015, and started volunteering for it in 2017. In addition, I volunteered at the first Aspire IT Summer Camp last year as a session assistant for the MIT App Inventor session. Since joining high school, I've started to learn Java and Python and received honorable mention for the Aspirations in Computing Award. I enjoy playing my viola, learning programming, and drawing.

Trisha Raj



Hello everyone! My name is Trisha Raj, and I am a rising sophomore at the STEM Early College at NC A&T. It will be my fourth year being part of this camp. Last year, I volunteered as a session assistant for IoT. This year I will be a session assistant for MIT App Inventor 2. I received National Honorable Mention of the NCWIT Award for Aspirations in Computing this year. I am an active participant of FTC Robotics for ECG, and this year, my role is a programmer. I have also volunteered as a python programmer assistant for IT for Girls. I am excited to spend my week with you, helping you learn more about programming and how to create your very own Android app!

MIT's Scratch Session

scratch.mit.edu



Session Leader: Aleah Brown

Session Assistants: Shreya Mani and Navya Belavadi

What is Scratch?

Scratch is a simple programming environment, designed so that it's easy to create animations and simple games. You're not going to use it to calculate the 10 billionth digit of pi, or to write a very involved game like Halo, but it allows you to do some really interesting things and share them easily. You can browse the Scratch website and look under "Featured Projects" to find programs that other students have created.



How do I use Scratch?

To create animations/games in Scratch, you need to download and install scratch.

- Open a web browser and go to <http://scratch.mit.edu>. Click the "Download Scratch" button, which takes you to a registration page. If you don't mind sharing your information, you can fill out the form because it is information that the people who made Scratch would like to see. However, for now, it works fine just to leave everything blank and hit the button at the bottom ("Continue to Scratch download").
- Select the **Windows** installer, and it will do the install (click through a few "continue" and "next" buttons). At the end of this, you should have the option to start Scratch!

Once you are in the Scratch software, you can Click "File ... Open" and select "Examples" to see lots of sample Scratch apps.

What do I need to know about using Scratch?

You must understand the main Scratch concepts. Open up the Trampoline example under Animations in order to follow along with this next section (*File ... Open > Examples > Animations > Trampoline*).

1. **Stage**: The "stage" is the background in the program environment. In the Trampoline example, the stage is the beach background that is shown.
2. **Sprites**: Any object in a scratch animation/game is referred to as a "sprite" - this can be characters, inanimate objects, backgrounds, ... A Sprite has three things associated with it:
 1. How it acts ("**Scripts**"),
 2. How it looks ("**Costumes**"), and
 3. How it sounds ("**Sounds**").



Question: What are the sprites in this example?

- There are two Sprites at the bottom right - *Allison* and the *Trampoline*.

3. The “**Scripts**” tab should be selected. You can switch between the sprites to show how the actions (scripts) change for each sprite.
4. Go over to “**Costumes**” for Allison. Click on the different costumes to show how it changes the main window.
5. Next look at “**Sounds**” - note that the ones that are in the sample include “Meow” - is that used in the app? Doesn’t look like it, but someone just left it there unnecessarily! You can record different sounds and add it into a program.
6. Now go back to the **Scripts** and look at the parts.
 - The first one just makes Allison jump up and down (glides up, glides down, and repeats forever).
 - Others are reactions to actions. So, what happens if you repeat turning 30 degrees 12 times (answer: you rotate 360 degrees, or one full turn - that’s how you make a sprite “flip”).

Now that you understand the basics in a Scratch program, you can run the app by clicking the green flag. Pressing the arrow keys allow for *Allison* to do different actions, depending on what was defined in the scripts.

There is a lot more that can be added to scripts. Go through different operations on the left that can be added to scripts. You can actually click on them in the left panel to execute them immediately, or you can drag them into scripts in the scripts panel. The different operations include: **Motion, Looks, Sound, Pen, Control Sensing, Operators, and Variables**

How do I save a Scratch program?

You can save a Scratch project by clicking on “File ... Save As”. Always save your work on a USB drive. There is a “Share” button you can click on to share your creation with others on the Scratch web site!

Session Assistants:

Navya Belavadi



Hello all! I’m Navya Belavadi, and I am a rising senior at The Early College at Guilford. I first attended IT is for Girls for 2 years in 2015 and 2016, then returned the following year as a session assistant in Microsoft Kodu. Since then I have volunteered as a session assistant for Film Festival at IT Camp. Additionally, I’ve served as a Near Peer Mentor for the technology aspect of the BRIDGES Saturday Academy under a grant from the National Science Foundation. The positive influence I’ve received throughout these programs has helped foster my passion in STEM which I’m so grateful for, and I hope you all will dive in and find your passion too this week!

Shreya Mani



Hello! My name is Shreya, and I am a rising sophomore. I am passionate about math, science, community service, and travelling. I have been involved with the IT camp for four years; three years as a participant and a year as a volunteer. I enjoy exploring the STEM field and this camp has really helped to open up various opportunities.

Data Analytics and Visualization for Social Good

Session Leader: Haley Wixom

Session Assistants: Roma Desai, Sonia Akkiangadi, and Lindsay Alexander-Eitzman



What is data analytics?

Data analytics is the process of collecting information and looking for patterns to solve problems. Common examples of everyday data analysis include diet, sleep, and exercise tracking.

Why should I use data analytics?

Data analytics is used to solve problems. Right now, data is being used to predict natural disasters, diagnose and treat disease, and predict trending restaurants.

How do I design and complete a data project?

Every data project can be broken up into three steps:

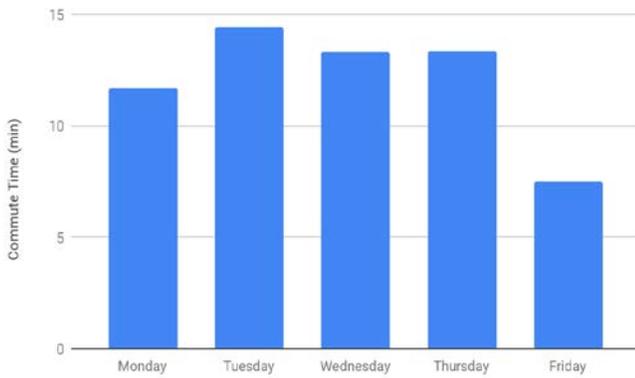
1. Data collection: conducting an experiment or recording observations to collect numbers, words, or images for analysis
2. Data analysis: creating visualizations or conducting statistical tests to find relationships between variables
3. Value creation: solving problems based on the analytical findings

Here's an example:

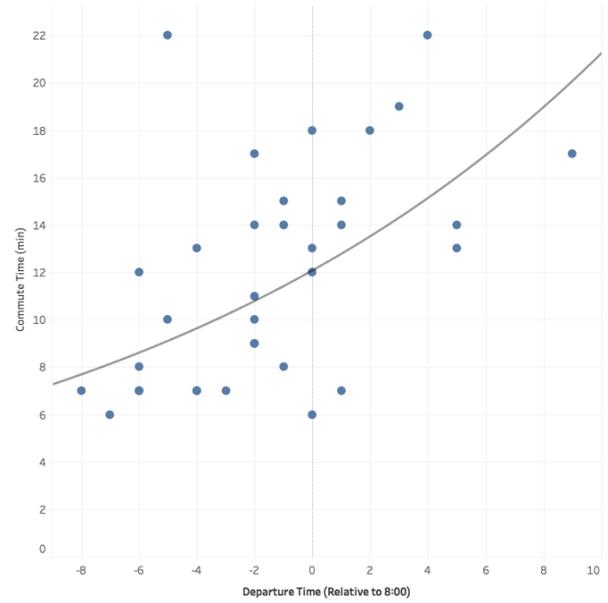
Problem - There's a lot of traffic on my way to school and I want to figure out what's the best time to leave the house to get to school on time.

1. Data collection: Everyday for about a month, my sister recorded the time we left for school and the time we arrived at school.
2. Data analysis: I looked for relationships between the time it took to get to school and the time we left the house and the day of the week.
3. Value creation: I learned that we could leave later on Fridays since there is less traffic and that it's important to leave before 8:00 to avoid most of the traffic.

Day of Week Averages



Departure Time Impact



What tools do I need to complete a data project?

Simple data projects can be completed in Google Sheets or Excel, more advanced projects need tools like Tableau

while can handle larger quantities of data and make more complicated visualizations. The graph on the left above was created using Google Sheets and the graph on the right above was created using Tableau.

In this session, we will be designing and completing our own data projects based on social problems that inspire us to take action. We will follow the three steps and learn how to utilize cool tools along the way.

Session Assistants:

Roma Desai



My name is Roma Desai, and I am a rising freshman at the Early College at Guilford. In the past, I have attended IT for Girls at UNCG, and other similar camps that have accentuated my interest in STEM. This will be my first year serving as a session assistant. I believe that IT for Girls exposed me to various topics such as robotics, and IOT, allowing me to make new friends. One thing that I really enjoy is meeting and collaborating with new people and friends. I am very passionate about engineering, science, music, and travelling. I am very excited for this summer camp at APP State and cannot wait to explore new ideas in this role!

Sonia Akkiangadi

My name is Sonia Akkiangadi and I've been associated with the IT is For Girls camp for the past 4 years. I'm a rising sophomore at the Early College at Guilford, where I am on an FTC robotics team that allows me to embrace my passion for STEM through programming. In my free time, I like to play the flute, watch Netflix, & play volleyball. :)



Internet Safety and Security

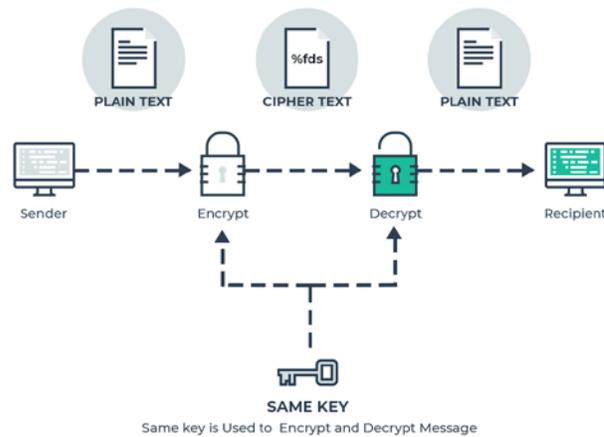
Session Leader: Mr. Chris Taylor

Session Assistants: Near Peer Mentors (see schedule)

This session explores issues that arise in computer and internet security. The first topic will be on encryption, discussing where it came from, and how widely it is used today. Students will experience first-hand how to utilize basic encryption standards to keep their information safe. This will be accomplished through discussions with interactive demos and ending with a hands-on simulation showcasing the ability to send covert (encrypted) messages between the participants.



The second topic will discuss social media, how to stay safe while using it, and develop a positive digital footprint. We will provide students with examples of good secure apps, showcase ways to secure mobile devices and end with a discussion on cyberbullying.



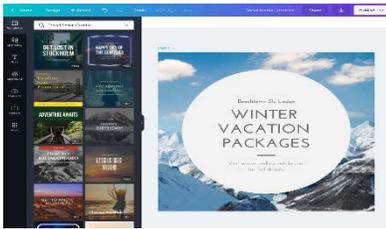
Christopher W. Taylor is a Senior Lecturer of Computer Information Systems in the Walker College of Business at Appalachian State University. He obtained his Master of Business Administration and Bachelor of Science in Business Administration from Appalachian State University. He holds the Certified Ethical Hacker Certification. He is also a consultant for the Security Operations Center for Quadrant Information Security, a firm with a focus on Information Security. His works have been published in the Southeast Decision Sciences Institute Conference Proceedings, The Journal of Information Technology Management as well as the Appalachian State University archives.

Tech Tools for Communication

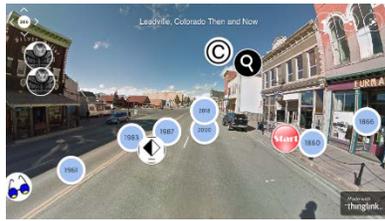
Session Leader: Mr. David Schouweiler

Session Assistants: Near Peer Mentors (see schedule)

In this activity, participants will explore various tech tools for communicating information in visually appealing ways to public audiences. In this choice-driven session, participants will explore best practices for clearly and beautifully communicating information. Participants will then have time to explore various tools that can be used to communicate different types of information such as infographics, virtual tours, interactive maps, apps, and more. Tech tools will include:



Canva



Thinglink



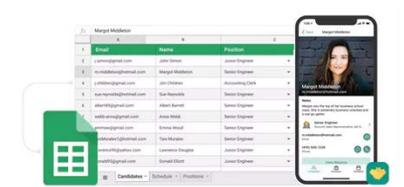
Google My Maps



Tour Builder



Loom



Glide



David Schouweiler began his career as a high school science teacher in North Carolina after graduating from the University of Michigan in 2011. He taught Science for five years in both traditional and magnet school settings and loved it so much that he is returning to teaching this year. He specializes in instructional technology and making cool explosions. He began pursuing his PhD in Teacher Education at the University of North Carolina at Greensboro in 2016, during which time he also began teaching courses at Lenoir Rhyne University as an adjunct in Teacher Education.

Build a Computer

Session to be held in Anne Belk Hall, room 135

Session Leader: Mr. Danny Moorhead

Session Assistants: John Boitnotte, Connor, Josh, Serenity, & Lindsay

In this session students will take a Dell desktop computer apart, put it back together, then install the Windows 10 operating system. Step by step instructions will be provided and any questions will be answered as they arise throughout the session.

Mr. Danny Moorhead is an IT Analyst/Supervisor at Appalachian State University with about 23 years of experience. He is specialized in computer systems and hardware, is an A+ Certified, Apple Certified Mac Technician and Apple Authorized Service Provider Administrator.

Technical assistants:

Michael Morgan

Sam Devine

Trevor Sawyer

Forrest Roberts

Ethan Hahn



Closing Session Friday July 26th, 2019

Remarks by Dr. Sandra Vannoy, Associate Dean for Graduate Programs and Research



Dr. Sandy Vannoy joined the Walker College of Business faculty as a lecturer in the department of computer information systems in 1998 and remained in this role until 2005. After achieving her PhD in Information Systems in 2010, Vannoy returned to the Walker College as an assistant professor. Vannoy was drawn to Appalachian State University and the Walker College of Business because of its student focus and sense of community. Prior to her career in academia, Vannoy owned a small software development company and held administrative positions in the healthcare and banking fields. Vannoy's teaching and research interests involve the role of information technology in organizational decision-making and social dynamics.. She is also serving as the interim Chair of the CIS

Department.

Kathy Higgins Vice President, IT Business Management at Lowe's

As vice president, IT Business Management, Kathy Higgins is responsible for the



development and delivery of Vendor Management, Software Asset Management, Resource & Demand Management, Central Program/Project efforts that support transformational efforts within the Technology team. She has served in this role since 2018. A 23-year Lowe's veteran, Kathy began her career in accounting, expanding into multiple financial areas with increasing levels of responsibility. She later transitioned to the operations side of the business, where she was charged with leading Special Order Sales, Store Selling tools and Merchandising Support functions. Since 2011, she has held several technology leadership positions, from Technology Solutions, Enterprise Program Delivery and IT Enterprise & Architecture Services. Kathy earned a bachelor's degree in accounting and computer information systems

from Appalachian State University and holds a Certified Public Accountant (CPA) license.

Amy Little, Senior Director, Technology Program Delivery at Lowe's



As director for program delivery, Amy is responsible for ensuring successful program execution across a portfolio of new initiatives sponsored by Lowe's Chief Information Officer. Amy has over 25 years of IT experience in academic and retail environments, specializing in portfolio planning and governance, program and project management, business analysis, and database design and administration. Amy joined Lowe's in 1996 and has held various technical positions in data architecture and database administration as well as several leadership positions in planning, and program/portfolio management. Amy considers herself extremely fortunate to work for a company that values their employees and is thrilled to be

celebrating her 23rd anniversary with Lowe's this June. Amy earned a bachelor's degree from UNC Chapel Hill and MBA from Appalachian State University ('91). She is a longstanding member of the Board of Advisors for the CIS department in the Walker College of Business. A Walker College of Business alumna and former staff member of the CIS department, Amy has a strong commitment to the continued development and expansion of the CIS department and its programs and is thrilled to support Innovate for Good!

Remarks by Program Leaders, Acknowledgements, and Awards

Thank you and enjoy the rest of your summer!

Stay Connected on Facebook for updates on future events –www.facebook.com/innovateforgood



Peacock Hall

Anne Belk Hall

Roess Dining Hall

Rivers Street Parking Deck

- LEGEND**
- Academic
 - Residential
 - Support Services
 - Recreation
 - Major Roads
 - Minor Roads
 - Pedestrian Paths

CAMPUS NEIGHBORHOODS & CIRCULATION

Mon July 22	8:00 - 8:25 AM	8:30 - 9:00 AM		9:05 - 10:35 AM	10:35- 10:45 AM	10:45 AM-12:15 PM
	Check-in	Orientation / Welcome	Session	Robotics	Break / Transition	IoT
	Peacock Hall (PH) 1020 Lobby	Peacock Hall (PH) 1020	Room Leader	PH 4020		PH 3015
	All	All	Assistant	Lindsay Jonnalagadda		Kimberly Brown
		Group	Lindsay Alexander-Eitzman and Riya Kannan	Lori Brown, Roma Desai		
Tue July 23	8:00 - 8:25 AM	8:30 - 9:00 AM		9:05 - 10:35 AM	10:35- 10:45 AM	10:45 AM-12:15 PM
	Check-in	Deming Social	Session	Robotics	Break / Transition	App Inventor 2
	Peacock Hall (PH) 1020 Lobby	Peacock Hall (PH) 1020	Room Leader	PH 4020		PH 3019
	All	All	Assistant	Rithika Jonnalagadda		Maggi Mugi
		Group#	Lindsay Alexander-Eitzman and Riya Kannan	Alicia Bao, Trisha Raj		
Wed July 24	8:00 - 8:25 AM	8:30 - 9:00 AM		9:05 - 10:35 AM	10:35- 10:45 AM	10:45 AM-12:15 PM
	Check-in	Role Models	Session	Robotics	Break	Robotics
	Peacock Hall (PH) 1020 Lobby	Peacock Hall (PH) 1020	Room Leader	PH 4020		PH 4020
	All	All	Assistant	Rithika Jonnalagadda		Rithika Jonnalagadda
		Group#	Lindsay Alexander-Eitzman and Riya Kannan	Lindsay Alexander-Eitzman and Riya Kannan		
Thu July 25	8:00 - 8:25 AM	8:30 - 9:00 AM		9:05 - 10:35 AM	10:35- 10:45 AM	10:45 AM-12:15 PM
	Check-in	Career Paths	Session	Robotics	Break	Robotics
	Peacock Hall (PH) 1020 Lobby	Peacock Hall (PH) 1020	Room Leader	PH 4020		PH 4020
	All	All	Assistant	Rithika Jonnalagadda		Rithika Jonnalagadda
		Group#	Lindsay Alexander-Eitzman and Riya Kannan	Lindsay Alexander-Eitzman and Riya Kannan		
Fri July 26	8:00 - 8:25 AM	8:30 - 9:00 AM		9:05 - 10:35 AM	10:35- 10:45 AM	10:45AM-12:00PM
	Check-in	Group Pictures	Session	Robotics	Complete and Record Presentation	Complete and Record Presentation
	Peacock Hall (PH) 1020 Lobby	Peacock Hall (PH) 1020	Room Leader	PH 4020		PH 4020
	All	All	Assistant	Rithika Jonnalagadda		Rithika Jonnalagadda
		Group#	Lindsay Alexander-Eitzman and Riya Kannan	Lindsay Alexander-Eitzman and Riya Kannan		

12:15-1:00 PM	Break	12:15-1:00 PM	1:00-1:15 PM	1:15 to 2:45 PM	2:45 to 3:00 PM	3:00 to 4:30 PM	4:30 to 4:45 PM	Mon July 22
		LUNCH	Transition to next session	Scratch PH 3017 Aleah Brown	Break and Transition	Data Analytics PH 3020 Haley Wixom	Pick-up	
		Dining Hall	All	Shreya Mani, Navya Belavadi	Roma Desai, Sonia Akkiangadi	Megan MacDonald		
12:15-1:00 PM	Break	12:15-1:00 PM	1:00-1:15 PM	1:15 to 2:45 PM	2:45 to 3:00 PM	3:00 to 4:30 PM	4:30 to 4:45 PM	Tue July 23
		LUNCH	Transition to next session	Tech Tools for Communication PH 1020 David Schouweiler	Break and Transition	Outdoor Games (alternate rain plans indoor games)	Pick-up	
		Dining Hall	All	Serenity, Lindsay, Riya Kanna	Josh, Connor	Lindsay, Serenity		
12:15-1:00 PM	Break	12:15-1:00 PM	1:00-1:15 PM	1:15 to 2:45 PM	2:45 to 3:00 PM	3:00 to 4:30 PM	4:30 to 4:45 PM	Wed July 24
		LUNCH	Transition to next session	Internet Safety and Security PH 4020 Chris Taylor	Break and Transition	Build a Computer Anne Belk Hall 135	Pick-up	
		Dining Hall	All	Serenity, Lindsay, Riya Kanna	Josh, Connor, Lindsay, Serenity	Danny Morehead		
12:15-1:00 PM	Break	12:15-1:00 PM	1:00-1:15 PM	1:15 to 2:45 PM	2:45 to 3:00 PM	3:00 to 4:30 PM	4:30 to 4:45 PM	Thu July 25
		LUNCH	Transition to next session	Work on Projects with Respective Groups	Work on Projects with Respective Groups	Work on Projects with Respective Groups	Pick-up	
		Dining Hall	All	Session Leaders and assistants same rooms as AM	1:15-1:35 PM Presentations	1:40 to 2:00 PM Presentations		
12 to 12:15 PM	Complete Surveys (ALL)	12:15 - 1:00 PM	1:00 - 1:15 PM	1:15-1:35 PM Presentations	2:05 to 2:25 PM Presentations	2:30 to 2:50 PM Presentations	2:55 - 3:15 PM Presentations	Fri July 26
		LUNCH	Transition to next session	Each session will be repeated to allow visitors to view different presentations in small groups	Presentations	Presentations	Presentations	
		Dining Hall	All	Girls Camp: IoT - PH 1012 ; Data Analytics - PH 1013; App Inventor 2 - PH 1020;	Each session will be repeated to allow visitors to view different presentations in small groups	Scratch PH -1018;	Closing, Awards, and Pick-up at end of session	

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