

"Grooming the next generation of science and engineering leaders"

2023 Barbados Junior Robotics Camps

Students' Robotics Showcase

**August 17th, 2023
1:00 PM – 4:15 PM
Lecture Theatre 1, Roy Marshall Building
UWI Cave Hill Campus**

AGENDA

1:00 - 1:15 pm: **Welcome and Introductions**

- Prof. Cardinal Warde, Interim Executive Director, CSF

1:15 – 1:35 pm: **Sponsors' Remarks**

- Mrs. Karlene Nicholls, ADM – Barbados Mills LTD
- Mrs. Allison Lynch, City of Bridgetown Credit Union
- Ms. Modupe Sodeyi-Boadu, The Maria Holder Memorial Trust
- Mr. Paul Inniss, SAGICOR Life

1:35 – 1:40 pm: **Camp Curricula, Showcase Overview**

1:40 - 1:50 pm: **Introduction of the Coaches**

1:50 – 2:30 pm: **Level I Camper Presentations**

Introduced by Coach Christopher Boyce

2:35 – 3:00 pm: **Level II Camper Presentations**

Introduced by Coach Darrel Springer

3:05 – 3:30 pm: **Level III Camper Presentations**

Introduced by Coach Fabian Clarke

3:35 – 4:05 pm: **Level IV Camper Presentations**

Introduced by Coach Jelani Payne

4:10 - 4:15 pm: **Vote of Thanks**

BJRC 2023 Camp Overview

The Barbados Junior Robotics Camps (BJRC) are offered at four levels. Our modified VEX robotics curriculum for levels I, II and III comprises a mix of classroom teaching and hands-on building using VEX Robotics Kits. Through this curriculum, the students are introduced to STEM and robotics. They learn about the basic components of robots and see examples of how science and math are applied to engineering.

At the camps, students participate in team-based projects in a fun environment, supervised by several coaches. All Levels of the Camp expose the campers to practical experiences and reinforce critical and logical thinking. The camps also offer personal development sessions which build confidence, as well as social, communication and conflict resolution skills. Teamwork is an essential skill that is emphasized at all levels of the camps.

The Level I Camp focuses on “tele-operated” robots (robots operated remotely). More specifically, the curriculum includes learning about simple machines and motion, learning about mechanisms such as motors and gear ratios, learning how sensors work, and an introduction to the basics of programming in Scratch.

The Level II Camp focuses on completely autonomous robots, and its goal is to design and build robots that can run a fairly sophisticated obstacle course autonomously (without human intervention). Thus, the Level II Camp involves substantially more computer programming than the Level I Camp.

The Level III Camp focuses on both teleoperated and fully autonomous robots that require more complex programming than Level II. Level III also involves the use of AppInventor and Arduino controlled robots. Campers learn to document their program-algorithms using standard practices, and work with maps for navigation.

In Level IV the students build their own robots from a given set of components, and Level IV robots must include the use of a microcontroller, and programming with C++ or Python.

This booklet summarizes the projects the campers will be presenting in the Showcase of the 2023 Barbados Junior Robotics Camp. More information is available at <http://caribbeanscience.org/barbados-junior-robotics-camp/>.

Level I

COACHES: *Christopher Boyce, Shiloh Trotman, Adam Roachford*

TEAM 1A: Herd of Nerds

Team members:



Juliandra Sterling



Aidan Jackson



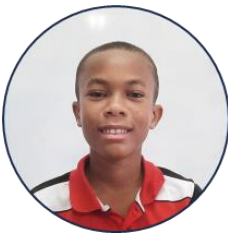
Kieron Viren

Robot: David

David is a Fling bot whose main purpose is to shoot projectiles to a certain distance with accuracy. The inspiration for the name came from the biblical character who fought against the giant Goliath.

TEAM 1B: The Guardians

Team members:



Ashton Edgehill-Watson



Dante Baptiste



Tariq Oderson

Robot Name: The Plow

The Plow Defender is a Slick bot that has six wheels (2 were added to the original design) and it has a giant plow at the front. The role of our bot is to push objects. Additional modifications include 'spikes' in the plow, a rubber band to keep the wheels together and other reinforcements.

TEAM 1C: The 3 Crusaders

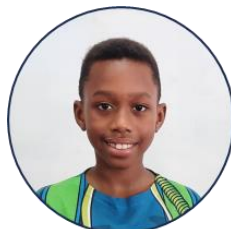
Team members:



Rochelle Jones



Jonathan Cotton



Blake Cummings

Robot Name: Mecha Godzilla

Mecha Godzilla is a V-Rex bot. It is tall and does not use wheels to move; it steps. There was one motor that controlled all of the bot's movements, but we added two more motors. This allowed the head and tail to be controlled individually. We also had to make the feet longer to avoid toppling over. For our bot, when moving forward, slower is better.

TEAM 1D: Smart People

Team members:



Jonathan Onyekwe



Luke Spencer



Abiola Lynch-Phillips

Robot Name: Cheddar Chomper

Cheddar Chomper is an Allie bot which originally contained 4 motors. Two motors were added so that the head and tail can be controlled. This robot does not use wheels to move forward. Its legs are designed to allow it to lunge and escape enclosures that are too low.

TEAM 1E: The Vexketeers

Team members:

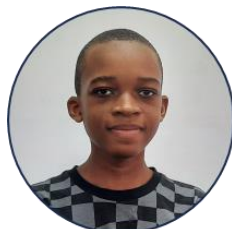


Kirk Dawson



Kemani

Husbands-McBurnie



Kyle-Alexander

Brewster

Robot Name: Mike

Mike, an Ickle bot, can move his upper body back and forth, open and close his hands, stack blocks and move his entire body backwards and forwards with his wheels. When he drives, the touch sensor changes depending on what action he is doing.

TEAM 1F: Girl Power

Team members:



Nyasia Grant-Holder



Ciara Baptiste

Robot Name: R.O.B.

R.O.B. is a Linq bot and he carries loads from one place to another. We made some modifications because when you lifted the front carry case full of blocks, the centre of gravity shifted and caused the bot to fall over. We added extra support to the back to counterbalance the weight. Now we can carry twice as many blocks.

Individual Projects

- (i) **Aidan Jackson** - Vex switch (using the touch sensor and bumper sensor to play a game on the brain.)
- (ii) **Juliandra Sterling** - Baa Baa Black Sheep (Playing a song using the robot with lightshow)
- (iii) **Luke Spencer** - Game using Scratch

Level I Classroom Photos



Level II

COACHES: Darrel Springer, De Shad Bostic

TEAM 2A: Automation Agents

Team members:



Charles Wood



Haley Browne

Robot name: Auto truck

The Auto Truck can carry up to 4 blocks in its basket. The auto truck travels through a maze by determining the colour of the blocks which then determines which direction to turn.

TEAM 2B: Coding Is Hard (C.I.H)

Team members:



Dylan Headley



Noah Watson



Dmitri Chase

Robot Name: Wall Crawler

The Wall Crawler scales walls and can carry objects simultaneously. At the back of the robot is a sensor that detects the distance the wall is from it. It is programmed to move parallel to the wall. If the Wall Crawler is too far from or close to the wall it will adjust itself until it is parallel to the wall.

TEAM 2C: The VEX Gardeners

Team members:



Sayid Hinds



Nylan Hutchinson



*Jon-Claude
Allsop*

Robot Name: Harvester Bot

Our group designed and programmed a VEX bot that has a saw designed to 'cut' the sugar cane on the pink Bristol board and not cut the white 'grass'.

TEAM 2D: Tetris Teacher

Team members:



Dominic Headley



Nylan Hutchinson



Jon-Claude Allsopp

App Name: Tetris Game

Tetris is an old school game made in 1984 by Alexey Pajitnov. Tetris is a block game which uses skill in block placement and thinking skills. The goal of Tetris is to get a horizontal line of blocks. After you do this the line will disappear and add +1 to your score. If the block hits the top the game will end.

TEAM 2E: Two Musicians, One Piano

Team members:



Amara Sterling



Haley Browne

Robot Name: The Keyboard

Our robot functions as a Piano/ Music player, the touch led acts as a switch between the 2 modes: music player and keyboard.

TEAM 2F: Belt Boy

Team members:



Dylan Headley

App Name: The Conveyor Belt

The conveyor belt uses a pulley system with rubber bands to move items automatically without the use of a remote or human intervention. The distance sensor is used to stop the conveyor belt when an item is detected and starts when an item isn't detected. This is to help the crane pick up the blocks and carry them.

TEAM 2G: Terminators

Team members:



Shadeyro Alleyne

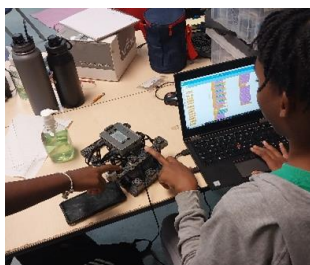
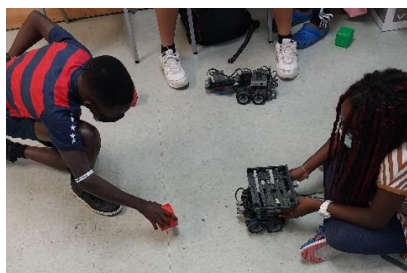


Jamari Scantlebury

Robot Name: Cranny

It is a custom designed crane that can be used to lift blocks and different items. It is powered by 7 motors.

Level II Classroom Photos



Level III

COACHES: Fabian Clarke, Samiya Allen

TEAM 3A: Bionic Boyz

Team members:



Matteo Felician-Baird



Jayden Cover



Darryn Catlyn

SMARsbot

Three programmed robots with the following functions: 1) 3D printed attachment to draw a pre-programmed shape with a BLE (Bluetooth) attachment for remote control manipulation; 2) autonomous navigation of designed maze; 3) autonomous robot with line-following sensor and pre-programmed code to navigate surroundings.

AppInventor Games

- Ping Pong game: player vs. computer ping pong game where each successful exchange increases the speed of the ball with continuous enhancements. The game automatically resets following a point scored by either the player or computer.
- Mini fighting game: Player assumes the role of a character with 3 interactive buttons (block, light attack and heavy attack) against computer.

TEAM 3B: Arduino Trio

Team members:



Aleezah-Jane McCarthy



Jaden Wiltshire



Kael Hamilton

2 curiebot rover robots with the following functions

- Robot #1: Autonomous navigation of maze.
- Robot #2: BLE-controlled robot to connect with Bluetooth app for remote control navigation.

TEAM 3C: 3 Circuiteers

Team members:



Kristen Walcott



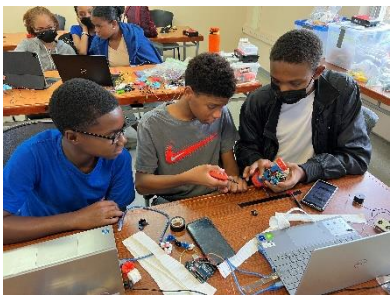
Amara Browne



Leila Bernstein

- 3D-printed robot utilizes a different driver motor in comparison to the previous 2 teams, that allowed for utilization of joystick for motion manipulation.
- The distance indicator utilizes an ultrasonic sensor to detect an object's distance from the sensor and indicate proximity through the number of LEDs that are lit (the greater the number of lit LEDs, the closer the object is).

Level III Classroom Photos



Level IV

COACHES: Jelani Payne, Kelilah Mayers

TEAM 4A: Apollo V Circuit Breakers

Team members:



Nathan Reid



Jovani Gittens



Dominic Clarke



Khaidan Greaves-Howell



Warren Holder

Robot Name: Hexatron

- Hexapod - six (6) legged robot
- Abilities: Autonomous walking, Teleoperation using mobile phone

TEAM 4B: Ingenious Geniuses / Raspberry Pioneers

Team members:



Nathan Reid



Warren Holder

- Raspberry Pi Computer Vision Artificial Intelligence
- Abilities: Facial Recognition

TEAM 4C: STEMINISTS / Pixel Perfect Posse (P++)

Team members:



Nyah Briggs-Blenman



Danielle Rowe



Jiya Ramchandani



Micah Quinton



Johnathan Thompson

Robot Name: Burna Bot

Hexapod - six (6) legged robot

- Bi-pedal Robot - balances on two (2) wheels
- Abilities: Autonomous line following

TEAM 4D: Tech Collective

Team members:



Nyah Briggs-Blenman



Danielle Rowe



Jiya Ramchandani

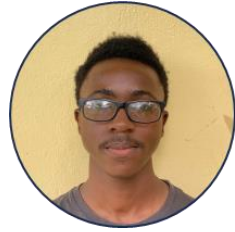
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Micah Quinton



Johnathan Thompson



Nathan Reid



Jovani Gittens



Dominic Clarke



*Khaidan
Greaves-Howell*



Warren Holder

Robot Name: The Force

- Wearable Controller - glove which controls robot
- Abilities: Teleoperated

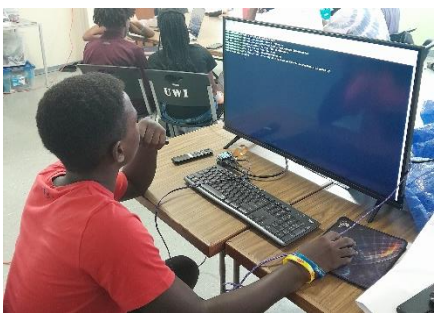
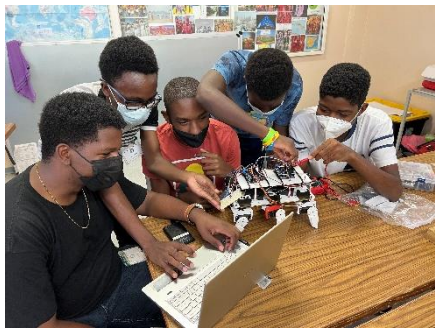
TEAM 4E: Special K Robotics

Team members: Nyah Briggs-Blenman, Danielle Rowe, Jiya Ramchandani, Micah Quinton, Johnathan Thompson, Nathan Reid, Jovani Gittens, Dominic Clarke, Khaidan Greaves-Howell, Warren Holder (pictures above)

Robot Name: The Force Job Steelers

- Wearable Controller – robot controlled by controller glove
- Abilities: Teleoperated robot

Level IV Classroom Photos



BJRC 2023 Camp Coaches



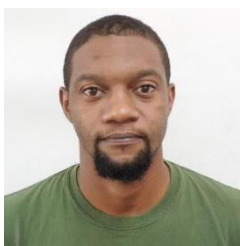
Christopher Boyce
Teacher,
Trinity Academy



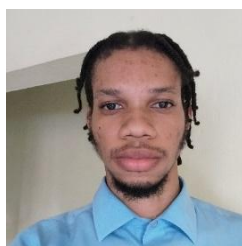
Shiloh Trotman
Student,
Barbados Community
College (BCC)



Adam Roachford
Student,
Edinburgh Napier
University



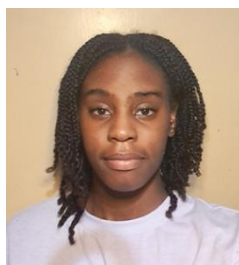
Darrel Springer
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BCC



De Shad Bostic
Student,
UWI Cave Hill



Fabian Clarke
Teacher,
Lockerbie College



Samiya Allen
Student,
UWI Cave Hill



Jelani Payne
Educator,
Adjunct Programme
Manager (CSF)



Kelilah Mayers
Student,
UWI Cave Hill

BJRC 2023 Camp Facilitators

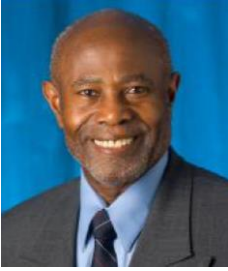


Cathy-Ann Radix
Lecturer,
UWI St. Augustine



David Thorpe
Software Engineer

CSF Staff



Cardinal Warde
Interim Executive Director



Dinah Sah
Co-Executive Director



Dee-Ann Wood
Administrative Assistant



Richelle Haynes
Project Assistant

Thanks to BJRC 2023 Sponsors and Partners

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