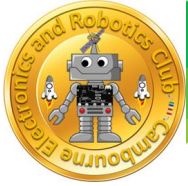# CERC Newsletter

Ignite

DECEMBER 2020

1st Edition

Shrobona
Founder

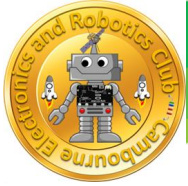**Sujit Bhattacharya**
Mentor

Venkat Kommi
Editor

Story Behind...
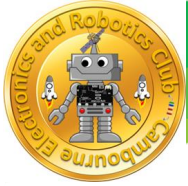
Dr. Shrobona Bhattacharya

Founder CERC

On 17th November 2017, Shrobona and Sujit started Cambourne Electronics and Robotics Club (CERC) at their residence's kitchen in Cambourne with 30 students and the dream of Electronics club grew eventually and made its global presence with more than 3000 children.

Shrobona Bhattacharya is a District and Town Councillor, community leader, visionary, charity worker who founded and continued her works through her registered Charities like Mudra Academy of Performing Arts UK, CamCare UK, UKBC and Vedic Society.

Shrobona is also a passionate ambassador of STEM with a PhD degree in Biological Sciences. She takes every opportunity to work with children and youth to unfold their potential interest in STEM. Shrobona was awarded

the Community Champions for initiating the Science Festivals in Cambourne.

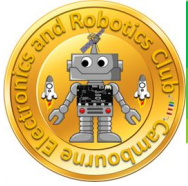South Cambridgeshire District Council awarded CERC the Outstanding Youth Initiative Award, 2018.

CamCare UK Homepage: https://camcare.org.uk/

CERC Homepage: http://camcare.org.uk/cerc/

Facebook: www.facebook.com/groups/camcarecerc
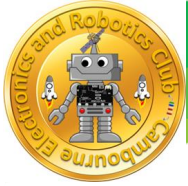
Email: shrobona@gmail.com

Message from Mentor

Dr. Sujit Bhattacharya

Cambourne Electronics and Robotics Club (CERC) provides a unique platform for students from all backgrounds to empower themselves with computational and digital skills to become tomorrow's innovators. We have 7-14 years old students from various schools engaging in three levels of Robotics courses i.e. Beginners, Intermediate and Advanced. Students from the club have been participating in FIRST Lego Championships, Pi Wars, element 14 summer competition, ESA Astro Pi, ESA Zero Mission, Global Micro:bit, Meet & Code and our teams were also selected for national competitions in Bristol. The kids have featured in many local TV and press coverage.

The contribution of the kids for this Ignite magazine will be another great opportunity for the students to showcase their STEM projects to gain social recognition and refine their science communication skills.

We encourage children going for Duke of Edinburgh award to contribute towards the design and participate in the editorial board of this magazine.

We have also launched new initiative **Cambridge Innovation Foundation** (CiF) to reach out to the students globally.
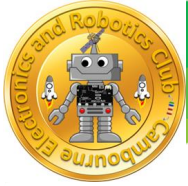
Mentor's Profile: www.linkedin.com/in/sujitb/

CiF Linkedin: www.linkedin.com/company/cifstem

Facebook: https://fb.me/CiFSTEM

Messenger: https://m.me/CiFSTEM

Twitter: https://twitter.com/cifstem

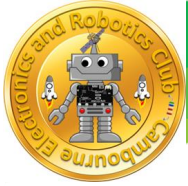**Email:** care.stem@outlook.com

Message from Editor

Venkat Kommi

It is with profound pleasure and anticipation that we celebrate the launch of CERC IGNITE Magazine with this inaugural issue. On behalf of the CERC Editorial Team, I would like to extend a very warm welcome to the readers of Ignite Magazine. I take this opportunity to thank our authors, editors and anonymous reviewers, all of whom have volunteered to contribute to the success of the Magazine.

Focus of the magazine to encourage children to write and publish their projects they are doing or exploring in related to Electronics, Science, Mathematics or any relevant educational related activities.
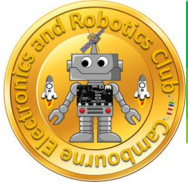
It is vital for children to gain the presentation skills from very young age so it can be useful for later stage in their studies and career.

I close this message by inviting everyone to submit their exciting projects/ research for next edition of Ignite Magazine.

If you have any questions, suggestions, or concerns, please address them to vkommi@gmail.com
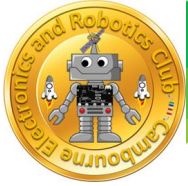
Vivek Kommi

Young Scientist

I joined CERC 3 years ago when I knew absolutely nothing about electronics and programming. I started doing the Beginners batch for the micro-bit and I enjoyed it. As I was getting to the end of primary school, I finished the Beginners Batch and moved onto the Intermediate Batch.

When I moved to Secondary school, I started to gain interest in robotics and participated in the FFL (First Lego League) last year and this year.

UK Bebras Challenge 2020

Vivek Kommi

of

The Perse Upper School

was awarded 111 points and received a

GOLD AWARD

Intermediates (12-14)

Peter Millican
Professor Peter Millican
Hertford College Oxford

Hertford College

Also, I started to learn about the Raspberry Pi by myself and managed to learn a lot of python and started to work with most electronic components.

For example:

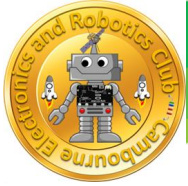Transistors - A semiconductor that switches electronic signals
Capacitors - A component that stores electricity
Resistors - A component that reduces electricity flow
Thermistors - A component whose resistance depends on the temperature
Photoresistor - A light Dependent Resistor (LDR)

I made many things with my Pi: Robots, Intruder Detection Systems, and many more. When I moved into Secondary School, I finished Intermediate and moved to Advanced Batch. I also started Pi Wars but unfortunately, it got cancelled. When I was in lockdown, I had opportunity to finish the advanced batch.
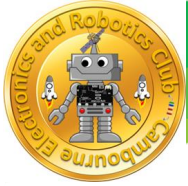
I started Python for Teens with Sujit Sir and started to learn Arduino (A computer like a Raspberry Pi) myself and learned even more.

When I moved to Year 8 and I started a YouTube channel to share my knowledge about Electronics (Here is my Electronics YouTube channel: https://www.youtube.com/channel/UCBQKNmYintadFtLoGLwydmA). I have joined ESA Astro Pi challenge, PA consulting competition, and Python Advanced course.

As a result of Gold Merit in Bebras Coding Challenge I also qualified for second round of the Oxford Computing Challenge which will be held in Feb/Mar 2021.

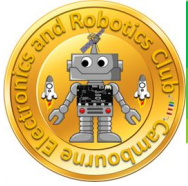I must thank CERC for helping me getting interested in electronics and gain knowledge.

Message from Parent of Vivek Kommi

As parent of two kids with no electronics background, one of friend mentioned about CERC what they are doing. My son joined the Micro:bit Sunday sessions. Sujit's classes particularly made my son Vivek very much interested in electronics. Then we started dismantling broken household electronics started to fixing circuits.

I still do not have much knowledge in electronics but Vivek is self-learning other computing skills with foundation gained from CERC sessions. Once child shown interest you just need to show right path.

With technology is changing rapidly having core industry skills along with mathematics and computing skills might secure for your children future in 21st century. CERC is right place to start exploring skills for your children.

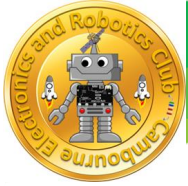# Ignite

Aaron Balan
Young Scientist

I really like coding in Python and JavaScript (mainly p5.js for JavaScript) and I am passionate about math's, my favorite topics are calculus with derivatives and integrals, and linear algebra with vectors and matrices.

I must thank Sujit and the CERC team for showing me how to combine complex math's and complex coding together to create wonderfully cool projects.

You can reach Aaron at

aaron.ch.balan@gmail.com

wandering-kiwi · GitHub

Avni Balan

Young Scientist

 I really like to code. I am mainly Python-based, but I also practice p5.js. It is fun to investigate computing logic and the kinds of problems you can solve. I am also interested in law and a little bit of politics. Someday, I would like to somehow participate in court and look a little further into magistrate or high court, as well as brush up my debating skills.

You can reach Avni at

avni.k.balan@gamil.com

not-that-python · GitHub

Foo Bar challenge from Aaron and Avni

Foo bar is a secret recruitment system for Google developers that opens when you google coding related searches online for a certain number of times. When we got this invite, we knew we were not going to get hired by google because of our age but we thought it would be a fun challenge. After getting invited, foo bar gives you a random challenge to complete within seven days. These challenges can be solved and submitted using only either python or java. Because we were more familiar with python, that is what we chose. Along with your problem, you get given test cases that your code will be tested against, including hidden test cases, to make sure you do not cheat. Once you think you are finished with the solution to the problem and have written your code, you can verify it in the console, and it will tell you if all the tests passed, or which ones failed if any. If all your tests pass, you can submit the project, to see a wonderful animation and an image saying level one completed. Level one takes one challenge completion, level two takes two level completions, level three takes three, but level 4 takes 2 and 5 only has one ultra-hard puzzle but giving you twenty-two days instead of seven due to its complexity.

This is what the window looks like, with the problem, the chessboard and a little bit of the code visible (this isn't the final code, and it may change later drastically because it doesn't pass all the tests yet).

We are both currently working on level 2. Aaron's is the 'Don't Get Volunteered' challenge and Avni has just finished the 'Power Hungry' challenge.
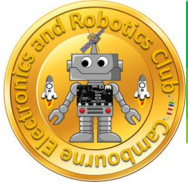
Pranaav Shukla

Young Scientist

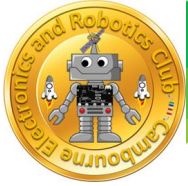When I joined CERC 3 months ago I knew nothing about

FLL (First Lego League) and I knew nothing much about EV3 or programming and electronics. I am now in the FLL batch CERE and learning a lot very fast. I started joining a weekly meeting with my coach.

In CERC, I wanted to learn Microbit and the opportunity came when I came to know about the extra projects you have to make or program something by giving a future concept of an exercise, (this year's task) to the people in need who can't move and making a way for them to be able to do exercise by doing something simple. I was interested in mini-mu music because you had use the Microbit and make a glove whenever the hand would move the Microbit would make a noise or you could put on lights and when you move there would be music and the lights would be controlled by the movement of the hand.

So far, my experience at CERC has been really good and I'm looking forward to the FLL REPLAY 2021 competition.

Sreenidhi Kunisetty
Young Scientist

I have been with CERC from the time it started in Sujit's house (prior to the club became CERC). When I joined CERC I had no experience with Electronics and Robotics but had very basic computing knowledge like Scratch and Imagine LOGO from my primary school.

I started with simple Microbit coding which was easy and enjoyable to learn such as a flashing heart and rolling dice. Then gradually developed my skills with Micro Python and Python for Pre-teens courses from simple programs and

techniques into interactive games and projects.

At the end of each course, everyone showcases the knowledge they have gained by creating their own projects and demonstrating them. This helped me enhance the skills I have learned throughout the course. Additionally, I started exploring Arduino, HTML, Tinkercad.

Over the course of the journey with CERC, I had an opportunity to participate in many events like 3D printing and laser cutting at Makespace in Cambridge, AstroPi, and First Lego League (FLL).
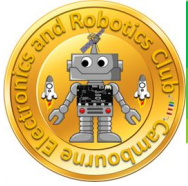
This is my third year of participation in FLL global STEM competition. For the last two consecutive years our team stood as winners of the Cambridge regional tournament and was given the opportunity to progress to the National for UK and Ireland Finals in Bristol.

This competition motivated me to take part in many more STEM-based challenges.
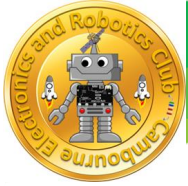
Thehan De Silva

Young Scientist

When I was in year 6, I joined CERC and began with a Microbit course taught by Sujit. Before I had joined Sujit's class I knew barely anything about Microbit and when I learnt it at school, I found it a bit boring. But when I started going to Sujit's class I saw it in a whole new light, I had lots of fun with Micro-Bit and made some very cool projects. It was very fun.
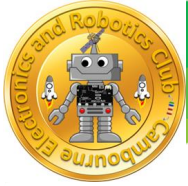
This began my interest in electronics and later I joined the CERC FirstLego league team where I had lots of fun with Lego, coding and made some new friends from different schools. In FLL we had to design robots and program them to do tasks to get points. There were also two other sections to the competition such as the project and core values. For the project we had to create play equipment that was accessible friendly for people of all abilities.

So, we came up with many designs and made them: Some out of Lego, some from cardboard and some were even 3D printed! In last year's competition we won the Project award. FLL was great fun last year so I am continuing to do it this year alongside some of last year's teammates and I am already finding it lots of fun!

By the end of primary school, I moved up to the intermediate batch and this year I have started a new course with Sujit about Python with maths. It is very interesting, and I am sure I will learn many new things in the future.

I must thank CERC for getting me into electronics and teaching me many new things.
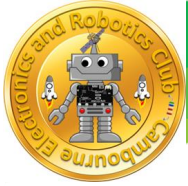
Ignite

Sadhbh Gorman
Young Scientist

I started with CERC at Shrobona's kitchen table and have learnt a lot since it first started.

I started by learning to code in blocky script on a Micro-bit, carrying out experiments using all the sensors and functions on it. We learnt how to use the sensors and outputs on a Micro-bit including the compass, accelerometer, and pins. From there I went on to learn micro-python and then I had the opportunity to compete in Pi-Wars with a team from CERC; where we had to complete a series of challenges utilising a robot powered by a Raspberry-Pi, despite not having used a Pi before, the team came second in our category on our first attempt.
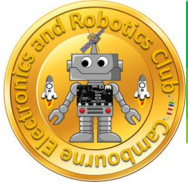
The next year I decided to have a go at Lego FLL and learn a new set of skills, revolving around teamwork, Innovation, Impact, Inclusion, Discovery and Fun. Through this I gained skills in researching topics and developing innovative ideas on how to help our community.

Through CERC I have been exposed to opportunities like going to Makespace where I learned about 3D printing and laser cutting and how you can program a computer to make parts for a robot or other project.

Announcement:
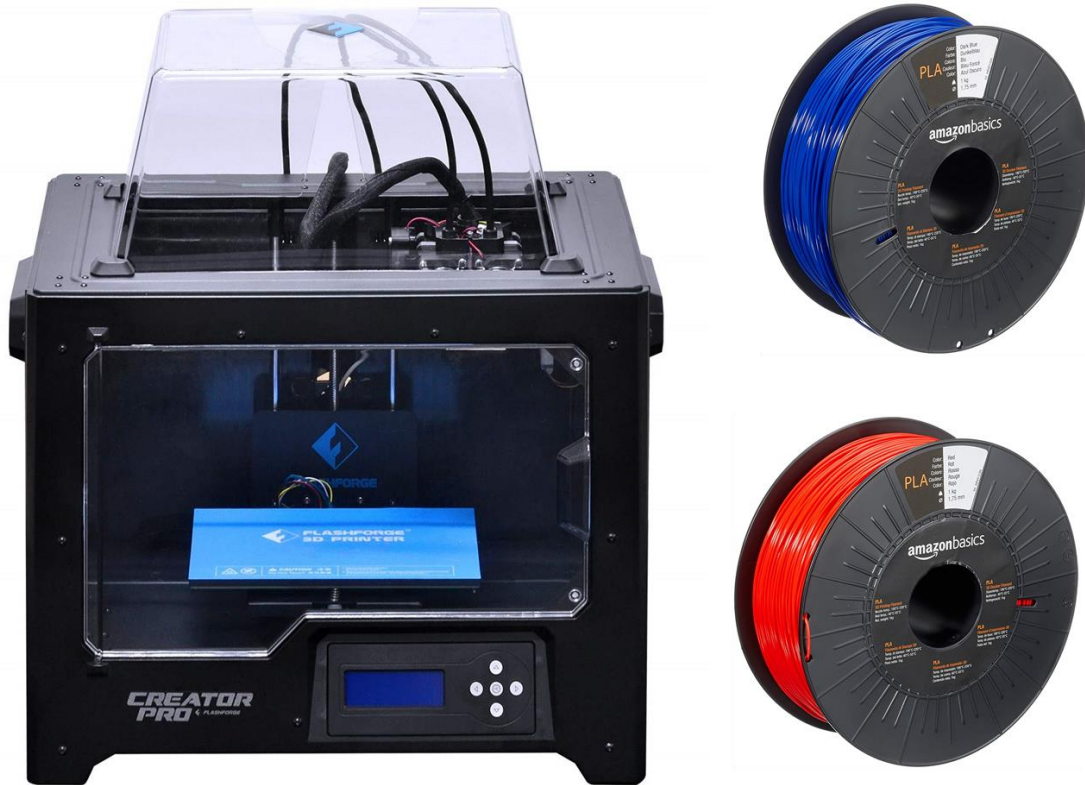
CERC has been successful with the South Cambridgeshire District Council (SCDC) Community chest funding application for 3D printer supported by TTP Consulting. We will soon organise a workshop on 3D design for the kids to incorporate mechanical designs in their electronics projects.

Volunteers Needed:

CERC Ignite Team is looking Young volunteers with Knowledge of Editing/Presentation Skills, HTML, Web Authoring tools.