Computer Science Academy Africa

(Formerly known as Programming Workshop for Scientists in Africa)
Website: https://www.csaafrica.org/
All other socials: https://linktr.ee/csacademyafrica

CSA Africa 2022

Invitation to Sponsor

Overview

Computer Science Academy Africa (CSA Africa) is hosting its 2022 Python programming workshop aimed at training and mentoring young Africans in STEM, to help them bridge the opportunity gap that limits their potential in computing fields. Since 2018, **we have empowered 350 young Africans in STEM** with computer programming skills, and with your partnership, we believe we can make more impact this year. The workshop will run for three weeks between 18 July - 05 August 2022, **training up to 250 beneficiaries and 40 volunteers from within Africa**. This will be followed by a one-week team-based coding challenge in October/November 2022. Our programmes will: equip our beneficiaries with the foundational programming skills that they need to enhance their studies, research, and professional career; train our volunteers on how to run similar workshops in their communities; and help them develop the confidence to pursue and thrive in a computing related career. CSA Africa 2022 is in partnership with the School of Computing Science at the University of Glasgow and NitHub, University of Lagos, Nigeria.

About CSA Africa

CSA Africa is an educational initiative empowering young Africans in STEM, whose talents and prospects are constrained by their backgrounds, to be the next generation of computer programming leaders. Founded in 2018 by Dr. Sofiat Olaosebikan, and formerly Programming Workshop for Scientists in Africa (PWSAfrica), CSA Africa has delivered computer

programming workshops in Nigeria, Rwanda, and online. This initiative provides young Africans in STEM with access to quality computer science education, as well as a role-model in our founder who inspires and motivates them.

Our first workshop was inspired by the fascinating journey of our founder into computer science after scaling through the obstacles occasioned by her limited exposure to opportunities. CSA Africa was born out of a strong desire to give back to the community by supporting other young Africans in STEM and showing them what is possible.

Our Story

Our founder, Dr. Sofiat obtained a BSc in Mathematics from the University of Ibadan, Nigeria. During her studies, she had no one to direct or mentor her about her potential and career prospects in computing. By sheer determination, she enrolled in a three-week Python programming course during her MSc at the African Institute for Mathematical Sciences, Ghana. This steered her career and led to her receiving a University of Glasgow scholarship to study for a Ph.D. in Computing Science. Dr. Sofiat founded CSA Africa while undergoing her PhD, with the support of the University of Glasgow.

Now, CSA Africa is working towards closing the gap between opportunity and talent for young Africans in STEM by providing them with access to quality computer science education. So far,

over 350 Africans from Cameroon, Egypt, Ethiopia, Ghana, Kenya, Malawi, Nigeria, Rwanda, Swaziland, South Africa, and Uganda, have benefited from our training.

With the leadership of top-notch programmers, CSA Africa has empowered young Africans in STEM with Python programming skills and confidence. As a consequence, our beneficiaries have established themselves in rewarding careers including data science, software engineering, research and teaching. In recognition of the transformational change engineered by CSA Africa, Dr. Sofiat Olaosebikan has received several recognitions including, the Future World Changer Award at the University of Glasgow. Her vision for CSA Africa is inspiring.

At present, we are rebranding from PSWAfrica to CSA Africa to reflect our impact and vision for this initiative. We plan to broaden our impact and the reach of our beneficiaries and partners by running our initiative as a non-profit, making strides toward a better world for young Africans in STEM.

Our vision

A world where young Africans in STEM have access to quality computer science education.

Our objectives

The objectives of CSA Africa are to:

- Introduce our beneficiaries to programming as a way of solving problems, facilitating their work and study, and inspiring them to pursue a career in computing.
- Bridge the gap between theory and practice for our beneficiaries, by exposing them to real-world problems whose solutions will require them to harness their programming skills.
- Train and mentor a group of beneficiaries who will be able to deliver similar programming training in their community.

The problem we are solving

While technological innovations and economic growth in many countries have been strong over the last 10 years, several countries in Africa face a huge computing skills gap, which is diluting the prospects of young people, as well as the continent's economic opportunities and development. According to a study by the International Finance Corporation (IFC) some 230 million jobs across Africa will require some level of digital skills, including computer programming skills, by 2030.

Our engagement with STEM students in Nigeria, Kenya, Rwanda and other African countries has shown us that quality computer science education is not readily available in these countries. Our beneficiaries are innovative and resilient, and they are already creating solutions to the challenges they face. When they are mentored and exposed to the opportunities in computer science, they can transform their lives, their communities, and contribute to developing computing solutions beneficial to the whole world. An obvious example can be seen in some of our beneficiaries working in leading companies in Africa and abroad. We have a 2018 beneficiary now a data scientist in Lithuania, another 2018 beneficiary now a software developer in Nigeria, a 2019 beneficiary now a full stack developer in California, and a 2021 beneficiary now a software engineer in the UK, amongst others.

CSA Africa's goal is to support STEM students and professionals through mentorship and computing skills development. Every year, we aim to enable about 200 young Africans in STEM, especially young women, by providing them with access to quality computer science education that will aid their research, build their confidence, and help them establish a rewarding career in computing.

Our Strategy

As part of our strategy, we give young Africans in STEM a head start and broaden their opportunities in computing. We are continuously deepening our engagement with our beneficiaries to better understand what they are truly passionate about and identify priority areas in their computing education to build on. We focus on:

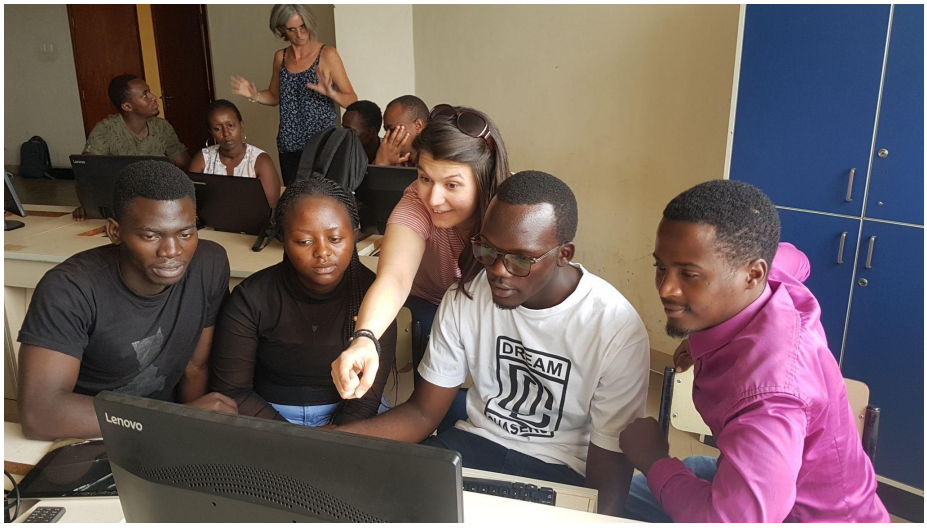
- Designing programming training: We are working on increasing educational and career inclusion by improving the programming skills and problem-solving capacity of participants with little to no programming experience.
- Mentorship and networking: With our yearly programmes, we are building a community that ensures mentorship and networking opportunities for participants during and after the training.
- Empowering young women: The young women we work with face gender-based and cultural barriers in skills development, especially in pursuing careers in computing. We are particular about their growth and are supporting them by offering childcare and other types of support to attract them to participate in our training.
- Bridging the financial gap: We provide support to enable participants constrained by their financial circumstances to attend our physical and online training.
- Train the trainers: We train academics and build the capacity and confidence of participating volunteers who will organise workshops for populations beyond our reach in their localities, hence forming a ripple effect.

Working with the different African Universities that host our workshops and our partners in the private sector, we are developing a long-term plan that will focus on training, mentorship, and internship opportunities with partners.

Our beneficiaries

Our beneficiaries are young Africans in STEM who do not have access to the same opportunity available to students in advanced countries and who are lacking the basic computing skills needed to realise their potential. This consists predominantly of undergraduates and postgraduates in STEM with little to no programming experience who are passionate about problem-solving and programming. We work with beneficiaries who require computer programming skills in their studies, researchers who require these skills to enhance their research, and postgraduates who need programming skills to give their careers a boost.

Our activities and impact



Our impact has been significant and is still growing. We have empowered **over 350 Africans** through our in-person and online training**.** CSA Africa has delivered training, mentorship programmes, and a two-week Python programming workshop at the University of Ibadan, Nigeria in 2018, the University of Rwanda, Kigali in 2019, and online in 2021. In 2020, we ran an online coding club for six weeks due to

the disruption caused by the COVID-19 pandemic, where we mentored and provided a learning community for 10 Africans who supported each other in their career advancement.

Our past beneficiaries have improved their programming skills and self-confidence. **Two of our 2018 beneficiaries who we trained as tutors in 2019 have moved on to teach Python programming** to people in their community using our materials. Further, some of **our beneficiaries are now working in leading companies** in Africa and abroad, for example: data scientist in Lithuania (2018 beneficiary); software developer in Nigeria (2018 beneficiary); full stack developer in California (2019 beneficiary); and software engineer in the UK (2021 beneficiary). Some beneficiaries have also gone a step further to broaden their Python skills on online learning platforms. In addition, the skills they developed through our workshops helped them in learning other programming languages, applying for internships, and using programming in their research.

Further, our impact has been featured in several newspapers including, The National, Glasgow West End, and Evening Times.

Our impact in the words of our attendees

"Before the workshop, I had zero knowledge of programming. The workshop opened my eyes to the world of programming... Recently I decided to pursue a career in data science and realised python is an essential tool in the field. I have been able to build on the knowledge I gained from this workshop. I am delighted that I had the opportunity to attend PWSAfrica 2018!" Chidubem Maryjane Ezeokoli, from Nigeria, participated in the PWSA 2018 workshop.

"Specifically, participating in a Python programming workshop prepared by PWSAfrica helped me to start my journey of becoming a developer by broadening my programming skills... After the workshop, I continued the progress by taking other online courses to support what I have acquired so far in the workshop and later I started freelancing which eventually helped me to land a job at XRFoundation, but the whole journey started at the PWSAfrica workshop..." Irankunda Fabrice, from Rwanda, participated in the PWSA 2019 workshop.

"I acquired programming in python skills and I am now using it to teach my students on how to code using python" Maniru Malami Umar, from Nigeria, participated in the PWSA 2021 workshop.

Our impact in the words of our sponsors

"With all the pressures that exist today in university life to bring in research grants and to teach increasingly larger numbers of students, it is absolutely fantastic when a few people do something different and challenge preconceptions and go out and do something that I think is important." Professor Chris Johnson, Former Head of School of Computing Science, University of Glasgow.

2022 Program plan

Building on our previous work, we plan to deliver two different activities in 2022: a three-week Python programming workshop; and a coding challenge.

Programming workshop

In Summer 2022, we plan to run a three-week Python programming workshop at the University of Lagos, Nigeria, where we will train up to **250 participants** from the University of Lagos and surrounding states, as well as from other African countries. The workshop will be split into multiple tracks to give all participants – from beginners through to those with foundational experience – the opportunity to learn new computer programming skills. See https://www.csaafrica.org/csaafrica-2022 for detailed intended learning outcomes for each workshop track.

Week 1	Track 1 (beginners)	Introductory programming, for participants that have no prior experience. This week will introduce computational thinking and fundamental programming techniques in Python.
	Track 2 (advanced)	A refresher course in Python programming, for those with prior experience (either in Python or in other languages).
Week 2	Track 1 (beginners)	Building on the first week, this track will give beginners more time to build up their confidence with fundamental Python concepts, and slowly introduce them to more complex problem-solving techniques. The week will finish with an introduction to data visualisation.
	Track 2 (advanced)	Data structures and algorithms.
	Track 3 (advanced)	Machine learning fundamentals.
	Track 4 (advanced)	An introduction to the Internet of Things (IoT).
Week 3	Projects (all)	Following a brief recap of the material that has been taught, participants will be split into groups (based on their week 2 tracks) to work on a substantial programming project. Participants will be encouraged to work together to solve the task, and will present their work, as a group, on the final day.

Teaching approach: Teaching throughout the first two weeks, and across all tracks, will include a mix of taught lectures, delivered by a small group of teaching staff, and hands-on

problem-solving sessions, supported by volunteers. A problem set will be provided for each session, allowing participants to practice what they've learned. The third week, which is the project week, while largely driven by the participants, will be supported by teaching staff and volunteers, who will encourage group work, and help participants to overcome roadblocks. Participants will be awarded a certificate of completion if they have engaged with the workshop throughout, including by working on the daily exercises and contributing to their group project. The success of the workshop will be measured via pre and post-workshop surveys.

Volunteers: We will recruit 40 volunteers from within Africa. Our target group are individuals who have participated in our previous worksop and who want to develop their skills in mentoring or teaching others how to code. The volunteers will also gain the necessary skills needed to organise coding clubs, training sessions, and engage with secondary school students in their community. They will be selected through an interview process, and they will be required to submit a short report outlining activities that they have organised no longer than six months following the end of our workshop.

Coding Challenge

The goal of the coding challenge is to enable beneficiaries who have gone through our workshops (and other interested programmers) to further develop their skills by working in a team and by solving practical problems proposed by our partners. We hope to run this over a week, and no longer than four months after our programming workshop. The participants will have the chance to work on some bite-size problems followed by a bigger challenge set by partners and our sponsors.

Highlights for this year's workshop

We aim to:

- Provide lunch for 250 young Africans in STEM expected to attend this workshop.
- Pay for the travel, accommodation and feeding for participants attending from outside the host city (Lagos).
- Pay for the travel, accommodation and feeding for the 40 volunteers who will support the facilitation of the workshop.

- Provide childcare support to participants and volunteers with childcare responsibilities.
- Pay for the travel, accommodation, and feeding for the 10 team members from the University of Glasgow who will deliver the workshop.
- Provide the necessary hardware and Internet of Things (IoT) gadgets for the workshop track on IoT.
- Provide workshop merchandise e.g., USB drives, notebooks, pens, t-shirts, banners, lanyards, etc.
- Generate electricity using solar panels and/or generators.

Our partners

Here are our strong and consistent partners who have supported us since 2018

University of Glasgow

acm's women in computing acm-w

UNIVERSITY OF RWANDA

sicsa* The Scottish Informatics & Computer Science Alliance

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF IBADAN

Scottish Funding Council
Promoting further and higher education

GCRF
Global Challenges Research Fund

UNIVERSITY OF LAGOS
IN DEED AND IN TRUTH

Sponsorship opportunity

We take a lot into consideration before inviting a company to work with us as a sponsor. We carefully align ourselves with partners who are committed to equipping young people with the skills and tools they need to grow.

Our workshops over the years have grown in stature, credibility, and reach. Applications to attend CSA Africa workshops have increased year on year from young people across Africa. A growing list of organisations offer their support to our programme, and many have pledged for that support to continue in 2022.

We would be delighted if you would join us in sponsoring the CSA Africa 2022 by taking one of the many sponsorship opportunities available and at the same time, using this partnership to meet your goals. We have a wide range of sponsorship packages; we are also open to more strategic partnerships that can maximise your investment at the same time as spreading your social or philanthropic message.

The benefits of the sponsorship packages can be tailored to the sponsoring organisations, depending on their individual requirements. The standard packages are highlighted below.

	Platinum Sponsor (£30,000 or greater contribution)	Gold Sponsor (£10,000 to £30,000 contribution)	Silver Sponsor (£5,000 to £10,000 contribution)	Bronze sponsor (£2,000 to £5,000 contribution)
Your company logo will be displayed on our website under the chosen category of sponsor package, main banner, and in all email correspondence with beneficiaries of our 2022 programme.	✓	✓	✓	✓

Opportunity for our participants, volunteers, team, and host institution to post and share your sponsorship of the workshop via their social media platforms, including Twitter and LinkedIn.	✓	✓	✓	✓
Distribution of branded company merchandise during our workshop.	✓	✓	✓	
Opportunity for the representatives of the company to network with our beneficiaries virtually and deliver a talk about who they are and what they do during our workshop (e.g, via Zoom or a similar platform).	✓	✓	✓	
Company logo to be printed on the official CSA Africa hoodies, t-shirts.	✓	✓		
Opportunity for the company to propose a problem for the project phase of the workshop as well as the coding challenge.	✓	✓		

Opportunity for a staff member from the company to travel to Lagos, Nigeria anytime between 18 July and 05 August 2022, to integrate with the team, network with the participants, discuss onboarding and internship opportunities, collaborate physically with groups working on the problem proposed by the company, and potentially teach some of the modules.	✓			

If you wish to make a sponsorship offer or create a package that suits your company, please contact Dr. Sofiat Olaosebikan at sofiat.olaosebikan@glasgow.ac.uk.

We acknowledge that some individuals or companies may wish to give smaller donations, so we are open to receiving contributions from £500 to £2,000 under the category "Friends of CSA Africa". This contribution will be acknowledged on our website and social media platforms.