Sue Nelson

Hello, I'm Sue Nelson and welcome to the Create the Future podcast, brought to you by the Queen Elizabeth Prize for Engineering. Celebrating engineering visionaries and inspiring creative minds.

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Charlette N'Guessan is a young engineer and tech entrepreneur from the Ivory Coast, whose work is already having a big impact. She's the co-founder and CEO of the BACE group in Ghana, and last year became the first woman to win the Royal Academy of Engineering's. Africa Prize. The prize was for developing BACE API, the software for a digital verification system that uses AI and facial recognition, specifically to verify the identities of Africans remotely, something that's especially useful during a pandemic and in real time too. It doesn't need special hardware and uses a phone or computer's built-in camera. But since facial recognition isn't new, I began by asking Charlette, what made their product different to existing facial recognition software.

Charlette N'Guessan

Since we are based in Africa, we target people of colour, but our system can actually work with dark skin and even white skin. We don't have any plans right now, we are just targeting the Africa market. So in terms of what makes us different, what I will say is how we use our facial recognition. We have a live detection where we can help the clients to know that if a person is looking at a camera is a real, is a human. And the second one is matching faces, where we can make sure that the person who is trying to apply for online services is actually the owner of the ID document. So that's basically the process of verification using BACE API and how we differentiate ourselves.

Sue Nelson

There have been difficulties in the past haven't there in terms of facial recognition, not working as well with darker skins?

Charlette N'Guessan

Yeah, a few years ago, it was actually a huge conversation, people were talking about that. Even when we started, we had those challenges, "okay we are going to use facial recognition in the Africa market, are you sure it's actually going to fit that market?". So, we had a lot of questions we asked ourselves. But at the end we software engineered it, we know it's about training your models so we were like "ok let's start and see how this goes" and we focused on the local market and we trained our models with the data that we had. Right now, we have done some testing already, some pilot faces, and so far the product works the way we were expecting and I believe that even in the next few years I believe there will be better performance because we're still working on that as well.

Sue Nelson

And what made you decide to develop it, was there a gap that needed filling?

Charlette N'Guessan

Basically, in 2017, I moved to Ghana, to attend a one year training programme for tech entrepreneurs and that's where I met my co-founders. And we decided to start with the local market and the African market and talk to banks and businesses. We noticed that they have a huge problem in terms of KYC (Know Your Customers) and also, they spent a lot of money in that process. And when we went back to talk about the solutions, they were actually more reactive, they were like "actually that's solved that issue and has enabled us to get more clients, people that want to access our services, they can do this remotely". In terms of the choice of facial recognition, because we know that we have a different type of biometric technology, fingerprint and iris. In Africa fingerprint is more used, I mean, in terms of limited technology it is the one people are used to. But we wanted

to keep that feeling like when people go to, maybe let's say, a bank, to open a bank account, they meet an agent, they provide the ID card, the agent will look at the face and said that "okay, that's the person" then they process it. We wanted to keep that natural feeling to make sure that people don't feel like they have to come take the finger again, or their eyes. We wanted to keep that natural feeling "I'm using my face to verified" alright. Even in COVID-19 that was a time where it showed that facial recognition is actually a good option because people can do a lot of things remotely and be verified. We don't have to go to be physically there and have access to, let's say fingerprint. In terms of costs, it was much easier to invest in facial recognition for us as fingerprint antiquates a lot of devices. That's why we chose that technology and that's why we are working on that industry.

Sue Nelson
So that's actually, the pandemic has sort of helped you, in a way, particularly as there is this issue with identity fraud within banks. And it sort of benefits the customers, as well, as you say, not having to actually physically be there. What does the uptake been in Ghana?

Charlette N'Guessan
In terms of clients, we are with FinTech companies right now, in small businesses, but actually they have these kind of challenges in terms of KYC, so we're working with them. We don't have a big portfolio with different clients, but we still have a few businesses that are working with us and basically it's more close, but yeah.

Sue Nelson
Did you always want to be an entrepreneur?

Charlette N'Guessan
Yes. I started thinking about being a tech entrepreneur after my third year at university where I was feeling that I knew a lot about technology and I was really excited about the journey and the process of products. And I was like, "Okay, I want to be able also to have my start-up to be productive, and to be part of this journey". And so far, it has been a great journey and it's something that is my passion, and my feelings, so I'm happy to be an entrepreneur to work with local people to solve key challenges and yeah, to be part of those innovators in Africa.

Sue Nelson
Now, you studied computer science and software engineering at university while you were living in the Ivory Coast. What was the attitude like there growing up towards studying those subjects?

Charlette N'Guessan
I guess it was challenging. But I remember that when I moved from high school to university basically, in my first year, I noticed that you're not, in terms of the number of women, we had a lot of men in the class, I noticed that was obvious. But I was really not focused on that, maybe it was based on choices, but it was not. Later I noticed that it's just a huge problem. I mean, a lot of women don't get that option to access education from a basic age. And also when they're asked in high school in terms of choices, STEM, nobody can advise them to choose that career. So, in terms of courses, it was not really hard, in my personal experience because I was part of the best, but I was feeling that just about learning. The more you're learning, the more you know more you're able to be part of the best, alright. It's about skills. It's not about its hard for female or male, its the same content they're providing to everyone in the classes, alright, to both male and female. So just be able to study, to learn, and apply this in your daily lifestyle.

Sue Nelson

As a child, when did you first come into contact with computers? Or was there a moment where you suddenly thought this is what I want to do?

Charlette N'Guessan
To be honest, when I was young, I didn't have a lot of information about tech, computers, science, alright. I was just good in math because my father is a mathematical teacher. And I was like, "I like numbers. I like geometry, I was good at science, right. And after high school, I was looking for universities and most of the good universities were actually based outside of countries and were expensive. So I was like "okay lets me choose computer science". I was happy at the same time because it was something new for me. I went to do some research about it and it was so cool, it's still maths, it still numbers. It looks cool, let me go and explore. I was like "wow, I like it" because I've got my first computer, then I was good in what we were doing, I was able to understand things easy. It was much easier work than I was expecting, I thought it was going to be hard, like really challenging, but it was flowing so I was able to have a good mark, and yeah. I started to do more sessions and see what I can do next, and yeah, I think that's when my passion started, I like what I'm doing, but before that I didn't know much about technology or STEM.

Sue Nelson
And is Ghana a good place to study and do all your business with software engineering. Has got a very positive attitude there?

Charlette N'Guessan
Yes, Ghana is a good place, first of all, because it's an African country so there's a lot of opportunities compared to Francophone countries. And second, it's close to Nigeria, you know, Nigeria has a big market, and Ghana still has as a good market, because there's a lot of software products that local people use. I like the way the market behaves, the entrepreneurs behave, so it's more active, I mean, every day we work, so I can see progress.

Sue Nelson
Is it fair to say that there is a sort of digital technology boom going on in the whole of Africa right now?

Charlette N'Guessan
Yes, actually there is a lot of boom, I mean, even recently, we had a lot of calls, you see a lot of Nigerian start-ups move to the next stage and increase their value. That's amazing because it means that people are working and people can see us working, we have a lot of investors coming from outside, they are actually showing interest in what we do. I think that Africa is, we are right now in a stage now where we understand things, we have local people, young people who have the skills and the want to be part of a change. So, they're doing their best to find challenges and to solve that challenge or look at how to prove technologies. So I'm really confident for the next step for what is going to appear in the next five to ten years, it's going to be amazing.

Sue Nelson
And what made you apply for the Royal Academy of Engineering's Africa Prize?

Charlette N'Guessan
The first time I heard about this, I was in Rwanda for a programme for women in engineering and actually we were talking about how the Africa Prize is an internationally good programme, you can learn a lot and get access to partnership and support, just check. And at the same time, I remember that the previous cohort was in Rwanda for the final pitch and I got the opportunity to talk to some of them and get some feedback about how the programme was really excellent for them, like all the support in the process. And I heard a lot of good feedback and even when they heard about what I do they said "you need to apply because your product looks

amazing and you can even get far". I was like "okay" so I came back in Ghana, I talked to my team and decided to apply. The process was long but it was so good, we learned a lot during that eight months and in terms of visibility we got a lot of visibility as well. So, it was amazing to be a part of that programme. We also get financial support to help us to maintain our costs. That's nice from the Royal Academy.

Sue Nelson
That eight months of training and mentoring has really helped?

Charlette N'Guessan
Really helpful, really helpful because my team, all of us are co-founders, we have a tech background so when we started the Africa Prize, we didn't have that focus on business, we were just focussed on building products, you know on tech, tech, tech. And when we started the programme, we were able to have that structure and understand that you can actually engineer through innovation, not just *[word indistinct]*. You can do a lot of things with that. And we secured, partnerships, we got a lot of visibility, we secured our first clients. It was so amazing, so we learned a lot. And right now, we are so confident even to talk with potential clients about what we do and we can show that our product has advantages for business and that is because we are part of the Royal Academy Africa Prize programme. It was amazing for us.

Sue Nelson
And what are you doing or have done with the prize money?

Charlette N'Guessan
The prize money actually helped us to cover some set up costs in terms of product development, software engineers to work with us, and it's able to cover some salary. Even for growth, because we want to grow our business. Right now, we are targeting Africa, but we need also to go to see how markets are behaving and work with people and that money helped us go there. We went to Ivory Coast to talk to some businesses, it was a good market research there. We got an outcome that can help us to work for move to next step for us. We plan also to go to Nigeria, and yeah, so that basically is how the money is supporting us now.

Sue Nelson
And what are your plans for the future then?

Charlette N'Guessan
We plan to go deep, to keep on doing some market research, to keep pushing for that for the Africa market based on this kind of aggressive technology. AI, so yeah. So right now, we're working on other products. It's not ready yet, so we don't talk a lot about the product but it's actually in the financial space as well. And we believe it can really be helpful for financial education and for this market. And also we provide some consultant services in terms of AI for any local businesses that want to apply AI in their business, we can help them to do that. In terms of BACE API we keep improving the model, the product, and keep pushing to get people to use that product as well.

Sue Nelson
And what would you say if you were to encourage people to do what you did and study computer science and software engineering. What would you say is a good reason to venture into that area?

Charlette N'Guessan
I've been in the industry for some years right now, and there's a lot of opportunities. And I like the fact that technology is actually a tool you can work with in any type of industry, agriculture, I mean, agritech, fintech,

finance, you know, we can use technology in different ways. So, it's so amazing to have this kind of creativity and innovate in an industry. So, I think that's what I can say to people just like, if you want to, first of all you need to have that passion to work in the tech industry. And if you really want that, don't just listen to stereotypes, because there are a lot of stereotypes, basically for women. So, don't focus on that. Do your own research, know what you want to do, and just go. You need to do your own research, you need to discover this industry by yourself and talk to the right people. So don't be scared to just ask in the tech industry, because there are a lot of opportunities and you can really grow as a tech entrepreneur, even as a developer. There are so many ways to work with tech. So just find your way.

Sue Nelson
Does Ghana hold engineers in high esteem. Do you feel appreciated?

Charlette N'Guessan
Yes, because STEM is really active. We have a lot of tech events in Ghana, there are a lot of programmes related to businesses, tech, so there is a lot of conversations about that. So, you feel that people know what you do, they understand what you do. When you say "I'm a tech entrepreneur" they don't ask you what that is, they know what that is. And that is a feeling of respect, they know what you do and know how it is important. Also, a lot of corporations try to start that conversation, work with start-ups, they invite local entrepreneurs to come into the venture just to ask conversation because it can improve their work. And that's great, that's a good way to start. So I think that the market is, let's say, like, its ok, we manage. We still have challenges, but we are still trying to make some effort as well.

Sue Nelson
I mean, you're still in your 20s you've done so much. But is there anything looking back that you think, you know, if I could go back and do that again, I would do one thing maybe slightly different. What would it be that you would you'd say as a lesson learned that you can pass on as a tip to others?

Charlette N'Guessan
To be honest, I don't know, if I tried to go back some years ago I think that I would have made the same choice based on the options I had at that moment. I had few options at the moment, I would have made those same options. I don't have any regret for choosing tech because it's something I like and you know when you like something and its actually your daily work, you enjoy your work. So, it's ok. Right now even, I keep studying, it's not like I stopped, I'm trying to applying to scholarships to keep studying and at some point get a PHD. So, I don't think I have any regrets from the past in terms of choices based off tech.

Sue Nelson
That's good in itself. So, it sounds like, not only no regrets, but there are no mistakes. You feel you're doing the job you love. And it's all gone relatively well?

Charlette N'Guessan
I think that one lesson I've learned, you need to make sure that you have a good team, because it's a journey right, there are a lot of challenges that will happen at some point, so you need to have a good team that will support you at any moment and just have the strength to keep going. Solutions, ideas, you can change ideas, right. You can do a lot of stuff, but team is very important. If you don't have a good team you can go slowly and have challenges and people can start to feel like nothing's moving, so I think the lesson I've learned is also focus on team building and make sure that we all feel good about what we do.

Sue Nelson

Charlette N'Guessan, thank you for joining me on the Create the Future podcast. Find out more about the Queen Elizabeth Prize for Engineering by following @qeprize on Twitter and Instagram, or visit qeprize.org. Thanks for listening, do join me again next time.