

Africa Storytelling Challenge— Notable Submissions: In Gracious Fanuel's Words

Committed to championing scientific innovations and advancements, Fanuel is affecting change in his community and throughout Africa—and this year's judges of the Africa Storytelling Challenge lauded these impressive efforts. Recognized as a runner-up in this year's contest, Fanuel shares his essay submission below.

My Name is Gracious Fanuel, a young technological innovator from Tanzania, aging 20yrs, currently a high school graduate, since my child hood I have been very interested in Technology specifically on robotics and I have been passionate to alleviate problems facing my community through innovative ideas are solutions to different problems, despite of the many challenges I have been facing that are despair worth I have kept strong efforts showing great commitment to bring my ideas to implementation and I have managed to have a big step in my innovations such a digital robotic arm, humanoid robot, air defense radar system and many more that I have filmed their videos in my you tube channel ROBOTICS FROM SCRATCH, despite being a high school and having such great milestones.

After my ordinary level I was selected to a government school that also admits disabled students, ILBORU SECONDARY School. And due to the school theme of brotherhood we students had to take the responsibility of assisting the disabled students to be able to do all that was needed to be done such as driving them on wheelchairs to classrooms, dormitories ,washrooms etc. and I had a best friend of mine named David and had a missing arm, and he could not make it in many things and had lots of trouble in accomplishing day to day activities and one day I just came with the idea that why should I use creatively the knowledge I had acquired to come up with an artificial robotic arm to help David and other disabled people perform their activities more easily just as other normal human beings.

Since then its eleven month now I have been working to come up with a perfect prototype of an artificial robotic arm that uses simple controls such as speech/voice commands, gestures and the like that will be enable a disabled or paralyzed person to perform work normally and handle day to day activities just as other normal human beings, also a powerful arm can be embedded in thebe installed in the disabled chair and enable to perform more heavy/tough jobs. This project is helpful because it provides solutions to those with disabilities bringing them to employment opportunities and help them join constructively in raising the economy, and it brings them hope from a discouraged way of living fully dependent. Also, it simplifies work for those taking care of disabled people making the job less cumbersome; this will help to

potentially solve many problems facing disabled people. There are hundreds of road accidents each year in our country causing different negative impacts on the victims such permanent disabilities, but through this technology they will be able to continue with their normal lives.

At the beginning of the implementation last year 2017 I started by designing in a diagram a sketch of the physical part and then the electronic part and I successful came out with the first version of the advanced robotic arm (where I named it RFS robotic arm, RFS is an abbreviation of my YouTube channel robotics from scratch) that could reach an object at any position within its vicinity and grab/tilt/compress or transport the object from one place to another but most of the electronic system were analogy, so I had to undertake a deep research especially through the internet such as tutorials videos and the like so as to fully digitalize the robotic arm. I then managed to come with the second version that had digital control via Bluetooth but the arm was a bit slower and I came with the third generation that had advanced controls such as speech that will help the disabled to easily control and stronger, currently it can carry up to 2 kg ,and I am still working to have a perfect version that is smaller lighter and uses a fast charging mechanism to reduce time for batteries to charge.

I have been inspired in robotics field mostly by outstanding robots and robotic innovations from Boston Dynamics where it's an American engineering and robotics design company founded in 1992 as a spin-off from the Massachusetts Institute of Technology, Boston Dynamics is best known for the development of Big Dog, a quadruped robot designed for the U.S. military, software for realistic human simulation and many others. The company is a pioneer in the field of robotics, and it is one of the most advanced in its domain.

Despite that as a student I had many challenges such as academic pressure where studies are much tougher, and lack of materials to work on my innovations, robotics in our country has less advancement and its materials are very rare, also lack of capital as a student I had no any source of funding.

It's important to communicate what I have been working on because it raises awareness to the society, people to recognize, understand and appreciate innovative ideas that eradicate problems and they can join efforts in eradicating challenges facing our community.

The content and views presented here are those of the individual Challenge participant.

About the Africa Storytelling Challenge

The inaugural [Champions of Science—Africa Storytelling Challenge](#) took place between May and August 2018. Open to all scientists doing innovative work in Africa, the contest drew more than 100 submissions. An independent selection committee of scientists, policymakers and science journalists reviewed the applications and selected the winners. Each winner will be awarded \$5,000 and will have the opportunity

to share their stories at the 2019 American Association for the Advancement of Science (AAAS) annual meeting in Washington, D.C.