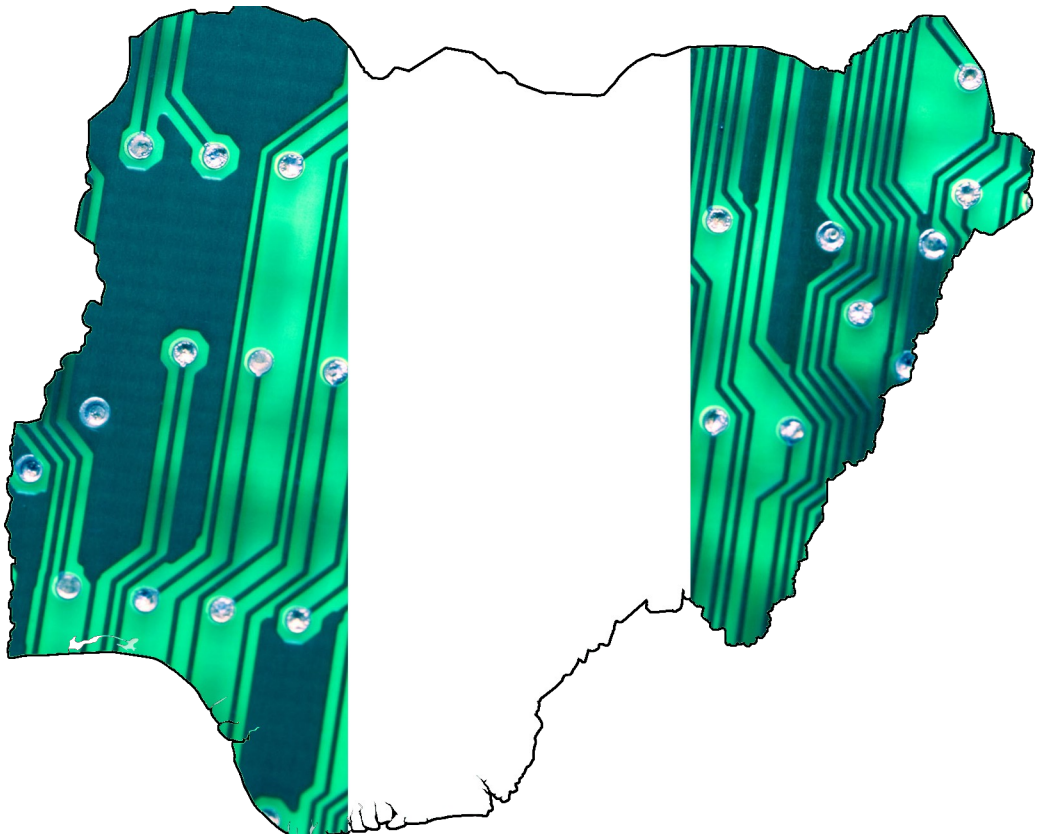

SCUTTLE Robotics Nigeria

Empowering African Innovation in Mobile Robotics

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Overview

SCUTTLE Robotics, LLC seeks to develop an Autonomous Mobile Robotics (AMR) laboratory and curriculum at the Covenant University in Ogun State, Nigeria. This initial proposal seeks to establish a strategic partnership between Microsoft's Africa Transformation Office[1] (ATO); SCUTTLE Robotics; Ph.D. Candidate Olalekan Olowo, and Covenant University.[2]

SCUTTLE Robotics respectfully requests this partnership to establish a mobile robotics laboratory at the Covenant in Ogun State, Nigeria including educational autonomous mobile robotics kits; faculty; and curricula. This effort directly supports the United Nations' Sustainable Development Goal 4: Quality Education.[3] This proposal further supports four of the five ATO focus areas:

- Infrastructure Expansion
- Skilling for Jobs
- Small-to Medium size Enterprises (SME)
- Strategic Partnership

At this time, SCUTTLE Robotics is seeking collaborative support and funding through the Africa Transformation Office towards *Empowering African Innovation in Mobile Robotics*.

Background

SCUTTLE is an open source mobile robotics platform that was developed at Texas A&M for the Mobile Robotics Course[4] (MXET 300). SCUTTLE provides hands-on experience and educational tools in mobile robotics which are geared for Industry 4.0. Each year, more than 40 students at Texas A&M develop SCUTTLE projects as part of their undergraduate and graduate curriculum, including development of capstone projects. CEO David Malawey serves as Laboratory Coordinator at Texas A&M.

SCUTTLE Robots enable agile prototyping. Our 40-kg standard-equipped payload capacity is built to build on. Our fully-extensible robots are able to incorporate a gamut of architectures ranging from Raspberry Pi to Edge AI capabilities with Intel's CAPA55R and Texas Instruments' TDA4VM. Through our existing partnership with Viam, SCUTTLE Robotics is helping transform Autonomous Mobile Robotics education through our mission of Democratizing Robotics Education And Makership. SCUTTLE Robotics dares to DREAM in Sustainable Development Goals.

SCUTTLE robots already being readily developed into a number of industrial projects to help support a just industrial transition.[5] [6] [7] SCUTTLE Robotics began collaborating with Intel Malaysia and the Malaysian government in 2020.[8] Through this effort, a nonprofit

entity, SCUTTLE Robotics Asia, PLT, was established in Johor, Malaysia. With ongoing support from Intel, this effort now supports 14 different universities[6] Worldwide while creating new opportunities in Autonomous Mobile Robotics (AMR).

In 2023, SCUTTLE Robotics hosted the first Robothon / ROBOFUN Hackathon to solve critical Challenge Areas facing Malaysian industries ranging from warehousing to retail. The goal of this work is to build robust robotics industry with 195 robots for every 10,000 Malaysian workers including industry expertise to develop, build, and maintain the robots. Over 20k Ringgit ($4.3k) in prizes, commercialization assistance, and job placement were disbursed to winners, obtaining Minimum Viable Products (MVP's) in each Challenge Area. SCUTTLE Robotics stands poised to apply our learning and development model to other countries seeking to develop an Industry 4.0 workforce.

SCUTTLE Robotics respectfully requests a Strategic Partnership and collaboration with Microsoft and the Africa Transformation Office to recreate this success in Africa: helping to establish opportunities to fulfill the ATO's mission of accelerating growth of 10,000 African startups and fast-tracking investment in Africa's vibrant ecosystem.[9] We aim to enable Africa's digital transformation for Africa by Africans.

"Investments into Africa's startup ecosystem are growing at an exciting pace. According to the Organisation for Economic Co-operation and Development (OECD), there are more than 640 active tech hubs across Africa, accelerating innovation and creating employment, particularly among the youth," says Wael Elkabbany, Managing Director, Microsoft Africa Transformation Office.[1]

Through the establishment of SCUTTLE Robotics Nigeria and Strategic Partnership with Microsoft and the Africa Transformation Office, we will directly provide the necessary tools, curricula, and infrastructure which are essential for startups to transform Africa into an even more vibrant economy with Industry 4.0 capabilities.

Ph.D. Candidate Olalekan Olowo's commercialization expertise in Nigeria includes 3 years of experience working with and managing a team of about 60 Nigerians working to develop the Nigerian robotics market. The SCUTTLE Robotics team held initial meetings with Engineer Olowo in November 2023, who laid out a blueprint for how to integrate novel modalities into the Nigerian ecosystem at the federal level. The current goal of this work is to establish a robotics lab at Covenant University, which will then matriculate to other universities and organizations once a successful model has been demonstrated.

Market research indicates that while some robotics kits are available in Nigeria including Lego MINDSTORMS (TechieGeeks)[11]; low-cost drones (RAIN)[12]; and Suckerbot (AFRON)[13]: a critical need for Industrial and Autonomous Mobile Robotics still exists in Nigeria. SCUTTLE

Robotics aims to bridge the gap with our mobile robotics kits, curriculum, and tools to *Empower African Innovation in Mobile Robotics* with support from Microsoft.

Goals

1. Provide additional details to the Africa Transformation Office regarding our progress and collaboration with Intel Malaysia
2. Provide additional background and technical details regarding SCUTTLE Robotics
3. Obtain a Letter of Collaboration from the Africa Transformation Office
4. Establish a preliminary budget and availability of funds
5. Profile the robotics industry and education in Nigeria
6. Profile (robotics) education-focused Non-Government Organizations in Nigeria
7. Profile government support in Nigeria
8. Formalize terms of collaboration with the Covenant University

Specifications

The Africa Transformation Office; SCUTTLE Robotics, LLC; Engineer Olowo and the Covenant University will collaborate to establish a SCUTTLE Robotics Laboratory at the Covenant University in Ogun State, Nigeria.

SCUTTLE Robotics anticipates an investment of USD$100,000 from Microsoft and the Africa Transformation Office will be necessary. Funds will be used to develop a SCUTTLE robotics laboratory in Nigeria; provide educational robotics supplies and equipment; pay faculty and staff; and develop a curriculum for Nigeria. A preliminary budget is provided in a later section of this initial proposal. A bill of materials for SCUTTLE Robotics kit is provided.

Specific terms and roles may evolve during collaborative development including hiring additional talent and integration of additional resources.

Microsoft Africa Transformation Office

The Africa Transformation Office will provide an investment of USD$100,000 to establish a mobile robotics lab at Covenant University in Nigeria; acquire mobile robotics kits (SCUTTLE robots); pay for faculty and staff salary; and pay for curricular development for this program. Additional support including Azure credits is desirable.

SCUTTLE Robotics, LLC

SCUTTLE Robotics, LLC will assist in securing funds, writing proposals, and provide curriculum for mobile robotics education to Covenant University.

This will include writing of proposals, scheduling and attending meetings, conducting market research, and providing collaborative support with project backers.

Engineer Olalekan Olowo

Will provide support in securing agreements with the Covenant University; Non-Government Organizations (where applicable); and the Nigerian government (where applicable).

This will include guaranteeing the support of Covenant University including availability of classrooms, faculty, *et cetera*. This may further include writing of proposals, scheduling and attending meetings, conducting market research, and providing collaborative support with project backers as necessary.

Timeline

I. **December 2023**

Initial SCUTTLE Nigeria team is formed. Engineer Olalekan Olowo provides a letter of collaboration on behalf of the Covenant University.

II. **January 2024**

Initial contact with Microsoft Africa Transformation Office established. Proposal submitted. Letter of collaboration from ATO obtained.

III. **Spring & Summer 2024**

SCUTTLE Robotics and Dr. Olowo will work to develop a curriculum for Covenant. Nigerian NGO partnerships established. Covenant agreements formalized.

IV. **Fall 2024**

First students begin coursework for SCUTTLE Robotics Nigeria at Covenant Univeristy.

Budget

The following preliminary budget of USD$100,000 is proposed.

Description	Cost	Unit	Total
AMR Laboratory	USD$10,000	1	USD$10,000
SCUTTLE Kits	USD$600	20	USD$12,000
Sensors & Supplies Budget	USD$10,000	1	USD$10,000
Dr. Olalekan Olowo	USD$10,000 / yr	3	USD$30,000
Nigeria Staff	USD$5,000 / yr	3	USD$15,000
Travel	USD$15,000	1	USD$15,000
US Staff	USD$8,000	1	USD$8,000
Total			USD$100,000

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