

# Alex Robert Omondi Makalliwa

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## PERSONAL STATEMENT

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Nascent engineer and attentive learner, passionate about using engineering and public policy as a tool for social, economic and environmental development – especially in Africa. Seeking experience in academia, start-ups and social impact assessment.

## KEY ACHIEVEMENTS

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- Led the design and development of a first iteration prototype of an electric tuk-tuk with the aim of pioneering Kenya's revolution towards wholly sustainable transport. Consequently, awarded a grand by the Tony Elumelu Foundation in 2014, shortlisted as a finalist for the Echoing Green Climate Fellowship in 2015 and shortlisted for the Royal Academy of Engineering Innovation in 2016 – as part of this programme, Kuza Automotive Limited came 2<sup>nd</sup> during Pitch at the Palace Africa.
- Served as one of two Project Managers, serving a group of twenty-five students in designing a fully electric regional airliner.
- Appointed to a Taskforce in June 2020, by the Cabinet Secretary, Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works constituted a taskforce to advise and oversee the implementation of measures aimed at mitigating the spread of COVID-19 in markets and maintaining hygiene of the food supply chain.

## EDUCATION

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### MSc Aerospace Vehicle Design: Cranfield University, United Kingdom

(March 2018 - January 2019)

- **Modules:** Aeroelasticity, Aircraft Performance, Aircraft Aerodynamics, Aircraft Stability and Control, Computer Aided Design, Design and Analysis of Composite Structures, Design for Manufacture and Operation, Design of Airframe Systems, Detail Stressing, Fatigue, Fracture Mechanics and Damage Tolerance, Finite Element Analysis, Flight Experience, Initial Aircraft Design, Landing Gear Design, Loading Actions, Reliability, Safety Assessment and Certification, Structural Stability, Structural Dynamics
- **Group Design Project:** Design of a Fully Electric Regional Airliner – Twenty-Five students are split across Structures, Systems and Avionics Design Groups. Each Student is responsible for the design and development of a component or a system. Personally, responsible for the design of the Inner Wing.
- **Individual Thesis:** Conceptual Design of a tilt-wing rotor Unmanned Aerial Vehicle for Wildlife Conservation

### MSc Advanced Computational Methods for Aeronautics, Flow Management and Fluid Structure Interaction: Imperial College London, United Kingdom.

(October 2014 – September 2016)

- **Modules:** Advanced Mechanics of Flight, Aircraft Performance and Flight Mechanics, Analysis of Laminated Composites, Compressible Flow, Computational Fluid Dynamics, Control Theory, Fundamentals of Fluid Mechanics, High Performance Computing, Introduction to Flow Control, Linear Algebra, Separated Flows and Fluid Structure Interaction
- **Individual Thesis:** Idealisation of the Laryngotracheal Airway Geometry

### BSc (Hons) Aerospace Engineering (1:1): Kingston University London, United Kingdom

(October 2012 - June 2014)

- **Modules:** Aerospace Engineering, Aerospace Design Methods & Materials, Project Engineering & Management, Analytical Techniques, Electronics and Control, Individual Project (IEng), Group Project, Aircraft Systems, Air Transport Economics.
- **Individual Research Project:** Design, Analysis and Testing of a Front Wing Based on the 2014 Formula One FIA Technical Regulations.
- **Group Research Project:** Design, Manufacture and Demonstration of an F1A Model Glider.

## CAREER HISTORY

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### **Taskforce Member – “Keep Our Markets Open” Taskforce – Nairobi, Kenya – (June 2020 – Present)**

The Government of Kenya, through the Cabinet Secretary, Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works constituted a taskforce to advise and oversee the implementation of measures aimed at mitigating the spread of COVID-19 in markets and maintaining hygiene of the food supply chain. As per Gazette Notice: 5891

- Led the initial stakeholder engagement with a select group of hawkers within Nairobi.
- Presently drafting the taskforce's interim report due for presentation to the Cabinet Secretary, Ministry of Transport, Infrastructure, Housing, Urban Development and Public Works and ultimately, the President of Kenya.

### **Tutorial Fellow – Technical University of Kenya – Nairobi, Kenya – (April 2020 – Present)**

The Technical University of Kenya aims to offer practical high education and research into technology, delivering education for the real world.

- Presently reviewing the Automotive Engineering syllabi, offered at various institutions, at BTech, Diploma, Degree and Masters levels. The objective is to internally develop a syllabus to be executed in the next academic year.

### **Director – Edu-Cater Global Limited – Nairobi, Kenya – (March 2019 – Present)**

Edu-Cater is a social enterprise aimed at encouraging students to take up careers in Science, Technology, Engineering and Mathematics. The organisation held its first event on the 28<sup>th</sup> of September 2019 at iHub in Nairobi, Kenya. The event had 100 attendees, comprising, schools, start-ups and corporate companies.

- Presently leading the organisation's operations in Nairobi and developing a Challenge Based Learning and Work Experience Program, aimed for launch in 2021.

### **General Manager - Solar E-Cycles Kenya Limited – Nairobi, Kenya – (May 2019 – Present)**

Solar E-Cycles Kenya designs and assembles light electric solar-powered tricycles. These tricycles will be used in predominantly rural areas, providing access to mobility and electricity. Through 2019, the organisation tested six prototypes within Nairobi, covering twelve thousand kilometres. This year, SEC-K redesigned the tricycle, developing a beta version that's presently undergoing lab and field testing. SEC-K is raising finance to expand its operations – seeking a pilot with 200 participants.

- Responsible for the company's general management – leading strategy on product development and market entry while forging partnerships with organisations that complement our ethos.

### **Lecturer (Part time) – Kenyatta University – Nairobi, Kenya – (May 2019 – September 2019)**

Kenyatta University is an established institution of Higher Education. It aims to provide quality education and training, promote scholarship service, innovation and creativity and inculcate moral values for sustainable individual and societal development.

- Served within the university's Department of Mechanical Engineering
- Taught two units across the BEng Aeronautical Engineering program; Modelling and Simulation to 4<sup>th</sup> Year students and Aircraft & Spacecraft Maintenance to 5<sup>th</sup> Year students.

### **Graduate Assistant, Technical University of Kenya, Nairobi, Kenya (September 2016 – March 2018)**

The Technical University of Kenya aims to offer practical high education and research into technology, delivering education for the real world.

- Delivered several modules across the BEng Aeronautical Engineering programme – Aerodynamics to 2<sup>nd</sup> Years, Aerodynamics Lab Practice and Numerical Methods to 3<sup>rd</sup> Years, Computational Fluid Dynamics to 4<sup>th</sup> and 5<sup>th</sup> Years.
- Led the Department's Examination Office – this role involved the managing, setting, moderation and disbursement of examinations as well as the processing of examination results and presentation to the School, Faculty and Senate for awarding.

### **Lecturer, University Centre Farnborough, Farnborough, United Kingdom (March 2015 – July 2016)**

University Centre Farnborough is a Higher Education Institution offering a range of further and higher education programmes.

- Delivered several modules across the BEng Aeronautical Engineering Programme; Introduction to Aircraft for 1<sup>st</sup> Years, Aerodynamics to 2<sup>nd</sup> Years and Aircraft Performance to 3<sup>rd</sup> Years as well as Theory of Flight to British Airways apprentices.

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

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- **Languages:** Fluent English, Swahili, Luo and Elementary Proficiency in French
- **IT Skills:** Confident IT user – Microsoft Office Packages – Word, Excel, Project PowerPoint as well as specialist engineering software - CATIA V5, SolidWorks, Rhino, Ansys Fluent, StarCCM+, MATLAB and Programming Languages - Python and Fortran.
- **Individual Interests:** Languages, Charity & Social Impact, Aspirational Classic Car Collector, Keen Aircraft Spotter, Enthusiastic Motorsports and Tennis Fan, Beginner Guitar Player.
- **Memberships:** Royal Aeronautical Society, Institute of Mechanical Engineers, Institution of Engineering and Technology.