Choose the scholarship(s) for which you are applying. Additional requirements are listed under each scholarship name. You must have completed nine (9) graduate semester credit hours at UT Dallas to be eligible for these fellowships.Select the Fellowship(s) for which you are applying:

Please list any academic/research publications or presentation at conferences and workshop.

O. Ogunmolu, X. Gu, S. Jiang, N. Gans. A Real-Time Soft-Robotic Patient Positioning System for Maskless Head-and-Neck Cancer Radiotherapy. IEEE Conference on Automation Science and Engineering. Gothenburg, Sweden, August 2015

O.Ogunmolu, N. Gans, S. Jiang, X Gu, An Image-Guided Soft Robotic Patient Positioning Sysrem for MAskless Head-And-Neck Cancer Radiotherapy: A Proof-of-Concept Study, AAPM Annual Meeting, 2015.

Olalekan P. Ogunmolu. Autonomous Navigation of a Rotor-craft Unmanned Aerial Vehicle Using Machine Vision. MS Thesis, Department of Automatic Control and Systems Engineering, University of Sheffield, Sheffield, United Kingdom.

Please list any honors, prizes, and awards for scholastic and/or creative achievement.

Jonsson School $1000 Graduate Study Scholarships 2014 - Present
Petroleum Technology Development Fund (Acceptance Rate ~1.7%) 2011 - 2012
Federal Government (of Nigeria) Scholarship (Acceptance Rate ~3.6%) 2002 Ondo State (Nigeria) Scholarship (Acceptance Rate ~ 10%) 2004

Please list any membership(s) in any university or civic groups and professional societies. Include any elected position or office held in the organization and the year(s) of involvement.

Administrative Officer - Nigerian Society of America, University of Texas at Dallas Chapter March 2015 - Present

Engineers without Borders Society 2011 - 2013
Co-Organizer, Pedalling Power Machines Group: Helped design the „Sustrans trailer", a shopping bicycle trailer, targeted for use in developing countries.

Member, Wind Power Project: Modelling of system components and calculation of optimal parameters necessary to maximize power output from the proposed electric
generator (which we produced by melting scrap metals and resins to form the plates that house the inductive coils and magnets)

In your particular field of study, briefly discuss (in less than 500 words):1. What you consider to be the most important advance in the past 10 years.2. What you speculate might be the most important advance in the next 20 years.3. How you fit in with this trajectory of progress.

Robots perception and control has been making steady progress in the past decade, more so because advanced machine learning transitioned from a mere scientific pursuit to one with industrial importance. Through miniaturization of transistors and multiplication of cores on a single processing hardware (GPUs), we now have more processing power to perform tasks that were otherwise impossible twenty years ago. This has spurned mainstream breakthroughs in the areas of face and speech recognition but autonomous machines and robots have not fully harnessed these advances in artificial neural networks (ANNs) and artificial intelligence (AI) – a mimic of the neural processing power of the human brain.
Robots perception and control is still far from human-cognition levels today especially because we still spend a lot of hardware and software resources in harnessing intelligence out of man-built ro-

bots and we often rely on technology that does not scale well to human-cognition levels. Through the promise of deep neural networks and hybrid control switching technology, I believe we can bring the state-of-the-art in vision, AI and nonlinear control to robotic perception and control making robots truly intelligently autonomous.

As we plan and act –training perceptrons, recurrent and deep neural networks, and designing more efficient control algorithms to make machines see better, hear better, know better, and make decisions better – tasks that have been traditionally undertaken by humans with much effort and energy can become strictly robotic domains effectively executed in style.

Currently, I am working on a soft-robotic application that will autonomously compensate patient positioning in cancer radiotherapy (RT) treatment rooms Current treatment systems are not optimal being time-consuming and causing a lot of patient discomfort. Our first initial evaluation of this technology was accepted at the IEEE conference on automation science and engineering in Gothenburg, Sweden. I am moving on to prototyping and designing a multi-axes patient positioning soft robot that makes radiosurgery easy on the part of the patient and reduces the setup time on the part of medical physicists. This will eliminate the current bottleneck such as the attenuation of x-rays, overdose of cancer RT treatment and exposure of benign organs/tissues to unnecessary irradiation in stereo-tactic radiosurgery applications.

In the future, I imagine most of the challenges medical doctors, traffic law enforcers and complex-related tasks in society would become bygone when the power of deep learning and artificial intelligence is fully realized. I get fulfilment from my research and I know I am part of a great idea that is in motion which will one day fundamentally change our way of life for good in this new century as cars become truly autonomous, humanoid robots help in assistive living for humans and AI enables better governance by reducing bureaucratic burden and societal crime. Also, medicine and surgery will become more affordable for individuals and hospitals alike as we imbibe new robotic technologies such as my Kappa Soft Robot for cancer radiotherapy.

Two letters of recommendation from faculty must be submitted by the deadline. At least one letter must be from a UT Dallas faculty member. E-mail must be sent to ECSFellowships@utdallas.edu with your full name as the subject line directly from the faculty member. Physical letters must be sealed with the faculty signature on the seal and delivered to the drop box in ECSN 3.700 by the deadline.