

Olalekan Ogunmolu

Robotics | Control Systems | AI

Rerum Cognoscere Causas: To know the causes of things.

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Education

- 2014–Present **PhD in Electrical Engineering**, *University of Texas at Dallas*, Richardson, United States.
Advisor: Prof. Nick Gans. Design and prototype of a medical soft robot for automated patient positioning during cancer radiotherapy.
- 2011–2012 **Master of Science in Engineering in Control Systems**, *The University of Sheffield*, Sheffield, United Kingdom.
Advisor: Prof. Tony J. Dodd. Thesis: “[Autonomous Navigation of a Rotorcraft Unmanned Aerial Vehicle using Machine Vision](#).” | Committee Members: Drs. George Panoutsos and Robin Pursehouse. | Dissertation reviewed by Prof. Mahdi Mahfouf.
- 2000–2005 **Bachelor Of Science in Physics & Electronics**, *Adekunle Ajasin University*, Akungba, Nigeria.
[Senior thesis](#) advised by Prof. Ademola Amusa (MS, Columbia University, PhD UIUC). | Dissertation Grade: 85% \equiv A+ | Graduated Magna Cum Laude.

Experience

Research

- Summer '17 **Research Assistant**, Dr. Tyler Summers, Mechanical Engineering, UT Dallas.
Dynamic Programming, Machine and Reinforcement Learning.
- Fall '14 - Present **Research Assistant**, Dr. Nick Gans, Electrical Engineering, University of Texas at Dallas.
Control Systems, Systems Identification, State Estimation and Computer Vision.
- Summer '16 **Hardware Integration Intern**, Amazon Robotics LLC. Dr. Tye Brady (CTO).
SLAM, Software and Hardware Integration.
- Spring '16 **Hardware Integration Intern**, Advanced Robotics Lab, Amazon Robotics LLC. Dr. Andy Stubbs (Sr. Systems Manager).
Computer Vision, Hardware Integration.

Teaching

- Fall '14 - '16 **Teaching Assistant, Introduction to Robotics**, *University of Texas at Dallas*.
Guided students during laboratories in programming the Robai Cyton 300R2 Robot and graded homeworks.
- Spring '15 **Teaching Assistant, Linear Systems (M.S. Class)**, *University of Texas at Dallas*.
Responsible for helping Masters students with linear control theory applications; graded homeworks and midterms.
- Spring '14 **Instructor, Analysis and Design of Digital Systems**, *Adekunle Ajasin University*.
Developed course modules, sole instructor for sophomore students, graded homeworks, designed and graded exams.
- Summer '14 **Instructor, Digital Logic Design**, *Adekunle Ajasin University*.
Co-developed course modules, joint-instructor for junior students, graded homeworks, designed and graded exams.

Miscellaneous

- 2009–2011 **Warehouse Manager, Apapa Plant**, *Coca-Cola Hellenic Bottling Company Plc*, Lagos.
- 2007–2008 **Banking Assistant**, *First Bank of Nigeria Plc*, Lagos.
- 2005–2007 **System Engineer**, *DMT Technologies Limited*, KD, Nigeria.

Publications

Peer-Reviewed

Olalekan Ogunmolu, Adwait Kulkarn, Yonas Tadesse, Xuejun Gu, Steve Jiang, and Nick Gans. [A 3-DOF Neuro-Adaptive Pose Correction System For Frameless and Maskless Cancer Radiotherapy](#). *IEEE/RSJ International Conference on Robots and Systems (IROS 2017)*, Vancouver, BC, Canada. September 2017.

Olalekan Ogunmolu, Xuejun Gu, Steve Jiang, and Nick Gans. [Vision-based control of a soft-robot for Maskless Cancer Radiotherapy](#). *IEEE Conference on Automation Science and Engineering (CASE)*, Fort-Worth, Texas, August 2016. DOI: 10.1109/CoASE.2016.7743378

Olalekan Ogunmolu, Xuejun Gu, Steve Jiang, and Nick Gans. [A Real-Time Soft-Robotic Patient Positioning System for Maskless Head-and-Neck Cancer Radiotherapy](#). *IEEE Conference on Automation Science and Engineering (CASE)*, Gothenburg, Sweden, August 2015. DOI: 10.1109/CoASE.2015.7294318

Olalekan Ogunmolu, Nick Gans, Steve Jiang, Xuejun Gu. [An Image-Guided Soft Robotic Patient Positioning System for Maskless Head-And-Neck Cancer Radiotherapy: A Proof-of-Concept Study](#). *American Association of Physicists in Medicine (AAPM) Annual Meeting*, July 2015.

Olalekan Ogunmolu, [Autonomous Navigation of a Rotor-craft unmanned aerial vehicle using machine vision](#). .

MS Thesis, August. 2011. Advisor: Tony J. Dodd, University of Sheffield, England.

Olalekan Ogunmolu, [Single Fractional Parentage Coefficients in the sd-Shell Nuclei](#) .

BS Thesis, Nov. 2004. Advisor: Ademola Amusa, Adekunle Ajasin University, Nigeria.

Tech Reports

Olalekan Ogunmolu, Xuejun Gu, Steve Jiang, Nicholas Gans. [Nonlinear Systems Identification Using Deep Dynamic Neural Networks](#)". *arxiv PrePrints*, *arxiv ID:1610.01439*, Oct 2016.

Olalekan Ogunmolu. [Review of "Continuous Finite-Time Stabilization of Translational and Rotational Double Integrators"](#). *arxiv PrePrints*, *arxiv ID: 1612.01607v2*, May 2015.

Invited Talks

UTSW, Dallas, TX **A 3-DOF Neuro-Adaptive Patient Pose Correcting System For Frameless and Maskless Cancer Radiotherapy**, *Physics Research Seminar Series, Radiation Oncology Department, UT Southwestern Medical Center*, Dallas, TX, USA. March 2017.

IEEE Arlington, TX **Towards automated accurate patient positioning in maskless cancer radiotherapy**. *IEEE Computational Intelligence Society*, UT Arlington, TX, USA. December 2015.

Poster Presentations

Texas Systems Day **A 3-DOF Neuro-Adaptive Pose Correction System For Frameless and Maskless Cancer Radiotherapy**, *Texas Systems Day, Texas A & M University*, College Station, TX, USA. March 2017.

Mentoring

Undergraduate mentoring

Summer 2017 Rachael Thompson. MIT Freshman (Starting in Fall 2017); Sleiman Safaoui. UTD Senior.

2016 - Now Alex Tomkovich. Computer Engineering Junior.

Spring 2015 Grant Carr. Computer Engineering Junior.

Masters Mentoring

2016 – 2017 Adwait Kulkarn. Mechanical Engineering Masters student (Currently at Drov Technologies).

2015 Ajith Venkateswaran. Computer Engineering Masters student (Currently at Samsung Research, America).

Languages

English Can read, write and speak fluently.
Yoruba Proficient

*Lived in Nigeria, United Kingdom and United States.
Native Nigerian Language. Spoken at home.*

Awards and honors

- President's **Teaching Excellence Award** for Teaching Assistants (UTD) Nom. Feb. 2017
- **Golden Key International Honour Society** Inducted Dec. 2016
- **IEEE RAS Travel Award** August 2016
- **Ericsson Graduate Fellowship** 2015 - 2016
- **Jonsson Scholarship** 2014 - 2015
- **Achievement Award, University of Florida** (*Declined*) Fall 2014
- **PTDF Overseas Scholarship Award** (~1.7% acceptance) 2011
- **Federal Government (of Nigeria) Scholarship** (~3.6% acceptance) 2002
- **Ondo State (Nigeria) Scholarship** (~10% acceptance) 2004

Select services and leadership

- Jan. 2017 **Reviewer**, *IFAC*, International Federation of Automatic Control World Congress.
- March. 2017 **Open Reviewer**, *ICML*, [OptNet: Differentiable Optimization as a Layer in Neural Networks](#).
- Fall 2012 **Workshop participant**, *ILA Berlin Airshow*, Berlin, Germany.
Selected by Cassidian (an EADS company) for the *Aerospace Systems Engineering* workshop.
- Summer 2012 **Workshop participant**, *Farnborough International Airshow*, NE Hampshire, England.
Selected by Airbus (an EADS company) among participants at the *UAV and Fighter Aircraft* workshop.
- 2016–present **Member**, *IEEE Boston*, Greater Boston, USA.
- 2015 – 2016 **Science instructor**, *IEEE Dallas Shoulder of Giants Workshops*, Dallas, TX.
Participant at IEEE Dallas Young Professionals community outreaches in promoting STEM education and awareness in the Dallas/Fort-Worth Metroplex.
- Summer 2015 **Summer Science Program**, *University of Texas at Dallas*, Richardson, TX.
Trained high-school kids in basic robots control and programming with the Berkeley Snap! kit and arduino.

Computing

- Programming** C++, Python, Lua, MATLAB/LabVIEW
- Frameworks** Point Cloud Library, OpenCV, Torch7, PyTorch, Numpy, SciPy, Scikit-Learn, C++11/14 standards.
- OS** Ubuntu, Debian, Windows.
- OSRF** ROS hydro, indigo, jade, kinetic. Xacro, URDFs, PR2 packages, gazebo, urdfdom-py, roscpp, tf, tf2, geometry-msgs, sensor-msgs, hector-quadrator, kdl, slam-gmapping, rviz, rqt, amcl, orocos, controller-manager.
- Web** HTML, Markdown, socket.io, node.js, and express.js.

Select OpenSource Projects

- Savgol** C++ Implementation of Savitzky-Golay Differentiation Coefficients and Filters. (Available at <https://github.com/lakehanne/savitzky-golay>)
- GPS** Catkinized version of Levine et. al's guided policy search algorithm in ROS Indigo (Available at <https://github.com/lakehanne/gps>). Dockerized version available at [gps-docker](#).
- Keyence** Minimal source code for retrieving profile map from the keyence LJV-7000 series line scanners. (Available at <https://github.com/lakehanne/keyence>)
- RBN** Recurrent Batch Normalization of Neural Networks in Torch7. (Available at <https://github.com/element-research/rnn>)

DICE Sørensen-Dice coefficients in Torch7. (Available at <https://github.com/lakehanne/nn>).

FARNNs Training of multilayer networks, simple recurrent neural networks, long short-term memory cells (with peep-hole connections), fast LSTMS, and recurrent batch normalized FastLSTMs to model the relationship between Borel measurable sets. (Available at <https://github.com/lakehanne/FARNN>)