

Olalekan Ogunmolu

Robotics | Control Systems | ML

Rerum Cognoscere Causas: To know the causes of things.

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📧 omitted intentionally

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<http://lakehanne.github.io>

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.

Publications

Peer-Reviewed

Olalekan Ogunmolu, Adwait Kulkarni, Yonas Tadesse, Xuejun Gu, Steve Jiang, and Nick Gans. [Soft-NeuroAdapt: A 3-DOF Neuro-Adaptive Pose Correction System For Frameless and Maskless Cancer Radiotherapy](#). *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 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 Rotorcraft 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, Nicholas Gans, Tyler Summers. [Robust Zero-Sum Deep Reinforcement Learning](#).

Tyler Summers, **Olalekan Ogunmolu**, Nicholas Gans. [Robust Guided Policy Search for Deep Reinforcement Learning](#)". *IROS 2017 Abstract Only Track*, Vancouver, BC, September 2017.

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

Presentations

EFSC'17, Soft Robotic Modules as Position Correcting Mechanisms in Cancer RT.
Vancouver *3rd Entrepreneurship Forum & Start-up Competition, EFSC'17*, Vancouver, BC, Canada. September 2017.

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

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

Poster Presentations

IROS '17 **Robustness Margins and Robust Guided Policy Search for Deep Reinforcement Learning**,
International Conference on Intelligent Robots and Systems Vancouver, BC, Canada. September 2017.

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

Experience

Research

Summer '17 **Research Assistant**, Dr. Tyler Summers, Mechanical Engineering, UT Dallas.
Dynamic Programming, Decision Theoretic Control, Machine/Reinforcement Learning.

Fall '14 - **Research Assistant**, Dr. Nick Gans, Electrical Engineering, University of Texas at Dallas.
Present 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.

Awards and honors

- Finalist at the [3rd Entrepreneurship Forum and Startup Competition](#) August 2017
Sponsored by IEEE Robotics and Automation Society, KUKA AG, and Univ. Hamburg
- **NSF Doctoral Consortium Travel Award** (IROS 2017) August 2017
- **Mary and Richard Templeton Graduate Fellowship** (UTD) August 2017
- **ROSCon Scholarship** (Open Software for Robotics Foundation) July 2017
- President's **Teaching Excellence Award** for Teaching Assistants (UTD) Nom. Feb. 2017
- **Golden Key International Honour Society** Inducted Dec. 2016
- **IEEE RAS/ISAM Travel Award** (to CASE 2016) 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

Mentoring

Undergraduate mentoring

Summer 2017 Rachael Thompson. MIT Freshman.
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, MN).
2015 Ajith Venkateswaran. Computer Engineering Masters student (Currently at Samsung Research, America).

Languages

English **Reads, writes, speaks to the rule of three.** *Lived in Nigeria, United Kingdom and United States.*
Yoruba **Reads, writes, and ciphers to the rule of three.** *Native Nigerian Language. Spoken at home.*

Select services and leadership

Dec. 2017 **Presenting my work: [Robust Deep Reinforcement Learning at the Black in AI Workshop](#)**, *NIPS 2017*, Long Beach, CA, U.S.A.
Nov. 2017 **Attending the Nvidia GPU Technology Conference**, Washington, D.C., U.S.A.
June 17–Now **Member, IEEE Robotics and Automation Society**, [Member ID: 92127153].
June 2017 **Invited Contributor, IEEE/RSJ IROS Conference Abstract Only Track**, Vancouver, BC.
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](#)**.
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.
- 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.

Computing

- Programming** C++, Python, Lua, MATLAB, LabVIEW.
- Libraries** Point Cloud Library, OpenCV, Torch7, Eigen, Docker, Google Cloud Compute, AWS S3, AWS EC2, PyTorch, OpenAI Gym, MuJoCo, Numpy, SciPy, Scikit-Learn, C++11/14 standards.
- OS** Ubuntu, Debian, Windows.
- OSRF** ROS hydro, indigo, jade, and kinetic distros. Xacro, urdfs, pr2 robot packages, gazebo, urdfdom-py, ros-control, message filters, eigen, tf, tf2, hector-quadrator, kdl, slam-gmapping, rviz, rqt, amcl, orocos, controller-manager, geometry-msgs, rosaria, ros-arnl, sensor-msgs, nav stack. Familiar with Staubli TX-90 and ur10 robot packages.
- 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>)