

Olalekan Ogunmolu

Control Systems | Robotics | Machine Learning

Rerum Cognoscere Causas: To know the causes of things.

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Research Thrusts

Robots design and control, visual-servoing control, system identification, hardware verification. My research focuses on designing control algorithms and vision sensing systems for biomedical robots. My focus borrows applications from control/estimation theory and machine learning/deep learning.

Education

- 2014–Present **PhD in Electrical Engineering**, *The University of Texas at Dallas*, Richardson, United States.
Advisor: Nicholas Gans. Designed and prototyped 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: Tony J. Dodd. Thesis: “Autonomous Navigation of a Rotorcraft Unmanned Aerial Vehicle using Machine Vision.”
- 2000–2005 **Bachelor Of Science in Physics & Electronics**, *Adekunle Ajasin University*, Akungba, Nigeria.
Senior thesis advised by Ademola Amusa.

Publications

Olalekan Ogunmolu, Xuejun Gu, Steve Jiang, and Nicholas 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.

Olalekan Ogunmolu, Nicholas 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.

Invited Talks

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

Awards and honors

- **Ericsson Graduate Fellowships**, 2015 - Present.
Merit-based graduate fellowship based on proven track record of academic excellence as evidenced by research, GPA and courses completed.
- **Jonsson Scholarship**, 2014 - 2015.
Competitive, merit-based scholarships awarded to new graduate students with proven published research, excellent GPA and GRE scores.
- **Petroleum Technology Development Fund**, ~1.7% acceptance, 2011 - 2012.
Competitive, merit-based scholarships awarded to best 5 students from each state in the country. Emerged second in state-wide tests.
- **Federal Government (of Nigeria) Scholarship**, ~3.6% acceptance, 2002.

Competitive, merit-based scholarships awarded to best Nigerian students based on performance in questions relating to science and engineering.

- **Ondo State (Nigeria) Scholarship**, ~10% acceptance, 2004.

Experience

Research Experience

- Fall '14 - Spring '15 **Research Assistant, Sensing, Robotics, Vision, Control, and Estimation (SeRViCE) Lab, University of Texas at Dallas.**
Evaluation and determination of overall system requirements for proof-of-concept design of soft-robot system to be used in **intensity modulated radiotherapy (IMRT)**. Procured and integrated mechanical hardware, vision components and software design for controlling patient head motion during IMRT simulation.
- Summer '15 **Research Assistant, Sensing, Robotics, Vision, Control, and Estimation (SeRViCE) Lab, University of Texas at Dallas.**
Refinement of soft-robot IMRT vision sensing system to sub-millimeter accuracy, optimization and parallelization of patient real-time pose estimate scheme in CUDA/C++ and LabVIEW; implemented optimal regulator in LabVIEW and generated better results at head motion control in clinical radiotherapy.
- Fall '15 **Research Assistant, Sensing, Robotics, Vision, Control, and Estimation (SeRViCE) Lab, University of Texas at Dallas.**
Refinement of soft-robot model, adaptation of Vicon motion capture in sensing system for control loop feedback for optimal head motion control. Currently exploring best predictive and adaptive control laws to best give clinically possible real-time control for head motion in IMRTs.

Miscellaneous

- 2005–2007 **System Engineer, DMT Technologies Limited, KD, Nigeria.**
Managed E-1 Links for Mobile TelCo Customers; Installed RF communication stations, Deployed and configured networking devices.

Computing

- Skills** Active programmer with experience in **C++**, **Python**, **MATLAB** and **LabVIEW** among others. See my github profile (github.com/lakehanne) for details.
- Linux** Active user of Linux distros such as OpenSuse, Ubuntu and other debian distros.
- ROS** Active user of ROS distros including ROS Hydro, ROS Indigo, and ROS Jade for control, vision and manipulation tasks.
- Web** Blogs with **Jekyll** and very conversant with **Markdown**. Familiar with **HTML** and **Ruby**.
- SciPy** Familiar with SciPy tools such as **matplotlib**, **numpy**, and the **pandas** library.
- Et cetera.** MS DOS, Win ME, Win XP, 7, & 8. I have made contributions to ROS and vision projects such as **iai_kinect2** and **Openkinect's libfreenect2**. Convolutional and deepnets aficionado. User of Theano and TensorFlow libraries.

Selected service and leadership

- 2015 – Present **Science instructor, IEEE Dallas Shoulder of Giants Workshops, Dallas, TX.**
Regular participant in IEEE Dallas Young Professionals community outreaches in promoting STEM education and awareness in the Dallas/Fort-Wort 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.
- 2011 - 2013 **Team Lead, Engineers Without Borders, University of Sheffield Chapter, Sheffield.**
Co-designed the 'Sustrans trailer', and helped in the modeling of system components and generation of optimal parameters used to maximize power output from the Haley farm wind turbine.
- Fall 2012 **Workshop participant, ILA Berlin Airshow, Berlin, Berlin, Deutschland.**
Selected by Cassidian (an EADS company) for the *Aerospace Systems Engineering* workshop based on a competitive admission process.

Summer 2012 **Workshop participant**, *Farnborough International Airshow*, NE Hampshire, England.
Selected by Airbus among participants at the *UAV and Fighter Aircraft* workshop.