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, 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.

Education

2014–Present **PhD in Electrical Engineering** , *The University of Texas at Dallas*, Richardson, United States.
Advisor: Nicholas Gans.

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.

Experience

Research Experience

Spring - Summer '16 **Mechatronics Intern, Amazon Robotics LLC**, *North Reading*, MA. USA, .
Host: ***Andy Stubbs***
Job Description: Work as part of an interdisciplinary team to design and analyze mechanisms, modules or systems · Model and detail solutions in hand sketches and SolidWorks · Design and code firmware architecture for prototype development · Define requirements for, specify and find components for prototype parts · Lead design reviews · Build models and prototypes · Conduct testing · Support staff writing specifications and plans.

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.

Awards and honors

- **Ericsson Graduate Fellowships**, 2015 - Present.
- **Jonsson Scholarship**, 2014 - 2015.
- **Petroleum Technology Development Fund**, ∼1.7% acceptance, 2011 - 2012.
- **Federal Government (of Nigeria) Scholarship**, ∼3.6% acceptance, 2002.
- **Ondo State (Nigeria) Scholarship**, ∼10% acceptance, 2004.

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, Deutscheland.
Selected by Cassidian (an EADS company) for the *Aerospace Systems Engineering* workshop based on a competitive admission process.

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