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# OGECHUKWU NKECHINYELU ILOANUSI, Ph.D.

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Enugu State, Nigeria.  
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## EDUCATIONAL INSTITUTIONS ATTENDED

- University of Nigeria, Nsukka 2007 – 2011  
Ph.D. Eng. Electronic Engineering (Obtained February 2011)  
Field of Study: Digital Electronics and Computer  
Area of specialization: Fingerprint Biometrics
- University of Nigeria, Nsukka 2001 – 2003  
M. Eng. Electronic Engineering (Obtained October 2003)  
Graduated First Class Honours  
Field of Study: Digital Electronics and Computer
- University of Nigeria, Nsukka 1994 – 1999  
B. Eng. Electronic Engineering (Obtained December 1999)  
Graduated Second Class Honours (Upper Division)

## DESIGNATION

Department of Electronic Engineering, Faculty of Engineering, University of Nigeria Nsukka.

<b>Current Appointment:</b>	Senior Lecturer	October 2012 – present
<b>Previous Appointments:</b>	Lecturer I	October 2008 – September 2012
	Lecturer II	October 2005 – September 2008

## CURRENT RESPONSIBILITIES:

1. Lecturer to undergraduate and postgraduate students of the Department of Electronic Engineering.
2. Research
3. Supervisor of undergraduate projects for nine years
4. Supervisor of postgraduate research for four years

## COURSES CURRENTLY TEACHING

### First Semester

Digital Systems Design – ECE620 (2011- date) [Graduate course]  
Physical Electronics – ECE321 (2006 – 2009, 2011 - date) [Undergraduate course]

### Second Semester

Advanced Signal Processing – ECE716 (2015 – date) [Graduate course]  
Digital Signal Processing – ECE626 (2011 - date) [Graduate course]  
Biometrics and Image Processing – ECE628 (2015 – date) [Graduate course]  
Digital Signal Processing – ECE574 (2011 - date) [Undergraduate course]  
Solid State Electronics - ECE522 (2006 – 2009, 2011, 2015 - date) [Undergraduate course]  
Applied Electronics I – ECE322 (2006 - 2008, 2011 - date) [Undergraduate course]

## **COURSES TAUGHT PREVIOUSLY**

### **First Semester**

Advanced Circuit Techniques – ECE521 (2011– 2014)

Digital Logic Theory – ECE472 (2005 – 2012)

### **Second Semester**

Industrial Electronics – ECE523 (2007 – 2008, 2011)

Engineering Computer Programming – ECE271 (2005 – 2009)

## **SERVICES CURRENTLY PROVIDED IN MY DEPARTMENT**

1. Academic Adviser to 100 level undergraduate students (2007 – date)
2. Postgraduate Seminar Coordinator/Representative for the Department (2015 – date)
3. Member - Postgraduate Committee (2012 – date)
4. Member, Curriculum Committee (2015 – date)
5. Member, Research Grant Committee (2015 – date)

## **OTHER SERVICES PROVIDED IN MY HOME INSTITUTION**

6. Member, Committee of the UNN-TUDELFT Educational Linkage Programme in the University (2012 – date)
7. Member, Strategic Planning Committee (2009 – date)

## **PROFESSIONAL EXPERIENCE AND ACADEMIC POSITIONS HELD**

- A. Exam/Results Officer for the department of Electronic Engineering from May 2012 to December 2014.
- B. Lectures/Exam Timetable Coordinator for the department of Electronic Engineering (2008-09, 2011 – 2012)
- C. Adviser to the Association of Professional Women Engineers of Nigeria, University of Nigeria Students' Branch (2006 – 2011)
- D. Final Year Project Coordinator for the department of Electronic Engineering (2008 – 2009)
- E. Adviser to the Students' Executives in the department of Electronic Engineering (2007 – 2009)
- F. Associate Editor, Nigerian Journal of Technology (NIJOTECH) (2011 – 2014)

**G. Establishment:** General Data Engineering Services Nig. Ltd (SKANNET) Ibadan, Oyo State. Nigeria

**Post:** Web Designer/Manager **Date:** March 2005 – September 2005

**Responsibilities:**

1. Registered, Designed and updated websites and databases for clients.
2. Conducted trainings in web design and other applications

**H. Establishment:** Educational Cooperative Society (ECS)/Women's Board. Ibadan, Oyo State

**Post:** Computer Engineer **Date:** November 2003 to February 2005

**Responsibilities:**

Maintained and installed Operating Systems and Applications in the computers in the computing sections.

**I. Establishment:** Computer Communication Center, University of Nigeria Nsukka Enugu State.

**Post:** Computer Course facilitator **Date:** July 2001 – May 2003

**Responsibilities:**

Implemented computer training course for second year Engineering students

## **MEMBERSHIP AND ACTIVITIES IN PROFESSIONAL AND CULTURAL ASSOCIATIONS**

Member, Institute of Electrical and Electronic Engineers (IEEE) 1999 – date

Women in Engineering (WIE) 2007 - date

Commonwealth Fellow 2012 – date

Adviser to Women in Engineering (WIE)-UNN Faculty of Engineering, University of Nigeria. 2012 to date

## CURRENT RESEARCH INTERESTS

### **Biometrics (applications, algorithm development, recognition accuracy, societal impact)**

- Face Biometrics
- Fingerprint recognition
- Multi-biometrics and multi-modal biometrics
- Biometrics in Electronic Health Care

## REVIEWER IN JOURNALS

- A.** IEEE Transactions on Information Forensics & Security (2015 - date)
- B.** IEEE Transactions on Systems, Man and Cybernetics: Systems (2016 - date)
- C.** Biometrics IET (2016 - date)
- D.** International Journal of Electronics (2011)
- E.** Nigerian Journal of Technology (2011 – date)

## GRANTS/SPONSORSHIPS/AWARDS RECEIVED

	<b>Granting Body</b>	<b>Award details</b>	<b>Date</b>	<b>Purpose</b>
1	Massachusetts Institute of Technology (MIT) International Science and Technology Initiatives / TOTAL Nigeria	Teaching Fellowship Award at the MIT in the Fall Semester	September 3 – December 16, 2013	Collaboration with the Faculty at the MIT in the development of new curriculum and teaching methods that may be adapted to my home university.
2	Commonwealth Scholarship Commission in the UK	Commonwealth Award for three months Academic fellowship in the UK.	September 3 to December 2, 2012	Post-doctoral fellowship in Biometrics at the School of Electronics and Computer Science, University of Southampton, Highfield, Southampton, SO17 1BJ, UK
3	Educational Trust Fund (ETF) through University of Nigeria, Nsukka.	Award of ₦ 1,542,141.00 = 10,246.79 USD. <i>and</i> ₦ 400,000.00 = 2,600.00 USD.	April 19 – October 19, 2010 <i>and</i> August 27 – November 20, 2009	Pre-doctoral research at Lane Department of Computer Science and Electrical Engineering, West Virginia University.
4	The African Network of Scientific and Technological Institutions (ANSTI) - UNESCO	(ANSTI) - UNESCO Conference Travel grant of 2,200.00 USD  Award date: March 25, 2009	April 22 – 24, 2009	Travel grant to attend and present a paper in the “V International Conference on Multimedia and ICT in Education” Lisbon, Portugal.

## **INTERNATIONAL AFFILIATION (FELLOWSHIP)**

### **Teaching Fellowship**

**Institution:** Massachusetts Institute of Technology (MIT)

**Position:** Visiting Fellow (Teaching Fellowship for Nigerian University Professors)

**Purpose:** Collaboration with the Faculty at the MIT in the development of new curriculum and teaching methods that may be adapted to my home university.

**Supervisor:** Professor Akintunde Tayo Akinwande

Professor of Electrical Engineering

Massachusetts Institute of Technology, 77 Massachusetts Avenue

Cambridge MA 02139-4307, USA

Email: [akinwand@mtl.mit.edu](mailto:akinwand@mtl.mit.edu)

**Sponsors:** MIT International Science and Technology Initiatives / TOTAL Nigeria

**Date:** September 3, 2013 to December 16, 2013

### **Post-doctoral Fellowship**

**Institution:** University of Southampton, Highfield, Southampton, SO17 1BJ

**Position:** Visiting Fellow

**Purpose:** Commonwealth Academic Fellowship

**Field of study:** Biometrics

**Supervisor:** Professor Mark Nixon

School of Electronics and Computer Science

University of Southampton, Highfield, Southampton, SO17 1BJ, UK

Email: [msn@ecs.soton.ac.uk](mailto:msn@ecs.soton.ac.uk)

**Sponsors:** Commonwealth Scholarship Commission in the UK

**Date:** September 3, 2012 to December 2, 2012

### **Pre-doctoral Fellowship (two terms)**

**Institution:** Lane Department of Computer Science and Electrical Engineering

College of Engineering and Mineral Resources

West Virginia University, Morgantown, WV 26506-6109, USA

**Position:** Visiting Scholar

**Purpose:** Pre-doctoral Fellowship

**Field of study:** Fingerprint Biometrics

**Supervisor:** Professor Arun Ross

Robert C Byrd Associate Professor, West Virginia University

*Currently affiliated to:*

Michigan State University

428 South Shaw Lane

3142 Engineering Building

Department of Computer Science and Engineering

East Lansing, MI 48824 USA

Email address: [rossarun@cse.msu.edu](mailto:rossarun@cse.msu.edu)

**Dates:** April 19, 2010 to October 19, 2010

August 27, 2009 to November 20, 2009

## **PUBLICATIONS**

### ***Book***

Ogechukwu N. Iloanusi, Charles C. Osuagwu and Ezeukwu E. Osuagwu. *Fundamentals of Biometrics*. 1<sup>st</sup> Ed. University of Nigeria Press Ltd. Nsukka. Enugu State. Nigeria. 2016

### ***Journals and Conference Proceedings***

1. Iloanusi, Ogechukwu, (2016) An Effective Statistical-based and Dynamic Fingerprint Preprocessing Technique, IET Biometrics, 2016 (Accepted for publication)
2. Martin C. Eze, Ogechukwu N. Iloanusi, Charles C. Osuagwu, (2015) Mean of Median Absolute Derivation Technique for Speckle Noise Variance Estimation in Computerized Tomography Images, Nigerian Journal of Technology (NIJOTECH), 34(2): 368-374
3. Ogechukwu N. Iloanusi, (2014) Fusion of finger types for fingerprint indexing using minutiae quadruplets, Elsevier, Pattern Recognition Letters 38:8–14
4. Martin C. Eze, Ogechukwu N. Iloanusi, Uche A. Nnolim, Charles C. Osuagwu, (2014) Homomorphic Filtering of Speckle Noise from Computerized Tomography (CT) Images Using Adaptive Centre-Pixel-Weighed Exponential Filter, International Journal of Image Processing (IJIP) 8(6): 455-467
5. Nwabunwanne Solumtochukwu, Iloanusi Ogechukwu, Osuagwu Charles, Algorithm Development for Fingerprint Image Enhancement Using Wavelet Processing, (2014) International Journal of Scientific & Engineering Research, 5(1): 1983 -1990
6. Iloanusi, O.N. and Osuagwu C.C. (2013), Fingerprint Indexing based on Minutiae-Dependent Statistical Codes, Taylors and Francis, International Journal of Electronics, 100(6): 1–13.
7. Iloanusi, O. N. and Okeke, I. O., (2013), “Prospects for Deployment of Renewable and Sustainable Energy Sources in Nigeria”, Conference (ES4PG-2013), pp. 53 –59.
8. Mosanya, C O., Mbunwe, J.O., Okeke, I. O., Edeagu, S.O., Iloanusi, O.N., (2013), Centralized Smart Card-Based Access Control System, International Journal on Communications Antenna and Propagation.
9. Edeagu, S. O., Okeke, I. O., Iloanusi, O. N., (2013), An Embedded Biometric Attendance Management System, International Journal of Management – Theory and Applications.
10. Okeke, I. O. and Iloanusi, O. N., (2013), “Towards Sustainable Energy Development in Nigeria: The Smart Grid Option”, Conference (ES4PG-2013), pp. 190 –197.
11. Iloanusi, O.N. and Osuagwu C.C. (2012), Framework for a Dynamic Fingerprint Indexing Biometric-based Voter Enrolment, Verification and Voting System. African Journal of Computing & ICTs. 5(4-2): 55–65.
12. Iloanusi, O.N. and Osuagwu C.C. (2012), ICT Diffusion and Uptake in Nigerian Tertiary Educational Institutions: Trends, Perspectives and Possibilities. African Journal of Computing & ICTs. 5(4-2): 77–84.
13. Iloanusi, O., Gyaourova, A., Ross, A. (2011). "Indexing Fingerprints Using Minutiae Quadruplets," Presented in the 2011 IEEE Computer Society Conference / Computer Vision and Pattern Recognition Workshop in Colorado, USA.
14. Iloanusi, O.N., Osuagwu C.C. (2011). Clustering: Applied to Data Structuring and Retrieval, International Journal of Advanced Computer Science and Applications (IJASCA), 2(11): 100 – 105.
15. Osuagwu C.C., Iloanusi, O.N. (2011). Performance Evaluation of Feature Sets of Minutiae Quadruplets, Nigerian Journal of Technology (NIJOTECH) 30(3): 21-28.
16. Iloanusi, O.N. (2011). Comparison of the Minutiae Quadruplets and Minutiae Triplets Techniques, Nigerian Journal of Technology (NIJOTECH), 30(3): 1 - 6.
17. Iloanusi, O.N., Osuagwu C.C. (2010). Image Processing and Features Extraction of Fingerprint Images, Nigerian Journal of Technology (NIJOTECH), 29(2): 21-31.
18. Uzoegwu, P.N., Iloanusi, O.N. (2010). “Social and Economic Challenges to Lifelong Learning in Nigeria” Presented in the V International Conference of MIT LINC (Learning International Networks Consortium) on Technology Enabled Education, in MIT Cambridge, MA, USA.

19. Iloanusi, O.N. (2010). Fingerprint Matching using Minutiae Quadruplets, Nigerian Journal of Technology (NIJOTECH), 29(1): 86--93
20. Iloanusi O.N., Osuagwu C.C. (2009). "ICT in Education: Achievements so far in Nigeria" In Research, Reflections and Innovations in Integrating ICT in Education. Eds. A. M. Vilas, A. S. Martín, J. M. González, J. A. González. 3: 1331—1335.
21. Iloanusi, O.N., Osuagwu C.C. (2008). Biometric Recognition Technologies: Overview and Applications, Nigerian Journal of Technology (NIJOTECH) 27(2): 36-45
22. Iloanusi O.N. (2007). "Blended Learning in High Schools and Tertiary Institutions" Presented in IV LINC (Learning International Networks Consortium) 2007 Conference in Dead Sea, Jordan. October 27<sup>th</sup> to 30<sup>th</sup>, 2007. Proceedings of the 2007 MIT LINC, pp. 157—166.
23. Iloanusi, O.N. (2007). E-Learning: Its Implementation in Higher Institutions in Nigeria, Nigerian Journal of Technology (NIJOTECH) 26(1): 47—58

### **ABSTRACT PRESENTATION**

1. I. O. Okeke and O. N. Iloanusi, "Application of Nanotechnology for Improving Energy Security", African International Conference. Nanotechnology Application in Energy, Environment & Health. March 24-28, 2014.

### **CONFERENCES, SEMINARS AND WORKSHOPS ATTENDED**

1. 7<sup>th</sup> IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS), Arlington, Virginia, USA, September 8 – 11, 2015.
2. 5<sup>th</sup> Workshop on Entrepreneurship for Physicists and Engineers from Developing Countries. The Abdus Salam International Center for Theoretical Physics, Strada Costiera 11, 34014 Trieste – Italy. 31 March - 4 April 2014
3. African International Conference/Workshop. Nanotechnology Application in Energy, Environment and Health: African Scenario. Nsukka, Enugu State. Nigeria. March 24-28, 2014. (*Two abstract presentations*)
4. Three (3) months course on Teaching and Learning Laboratory (Teaching College – Level Science and Engineering) at the Massachusetts Institute of Technology, USA. Sept 10 to Dec 2, 2013
5. Teaching Workshop for International Faculty Fellows at the Sloan School of Management, in Massachusetts Institute of Technology, USA. Friday, Oct 4 – Oct 6, 2013
6. Empowering the Teachers (ETT) Seminars at the MIT International Science and Technology Initiative building E40, at the Massachusetts Institute of Technology. Fridays in the Fall Semester, Sept 6 to Dec 13, 2013
7. The 4<sup>th</sup> National Engineering Conference "Energy Sources for Power Generation" held at the Department of Electrical Engineering, University of Nigeria, Nsukka, Enugu State, Nigeria (ES4PG-2013), July 21 – 23, 2013. (*Two papers presented*)
8. The 2<sup>nd</sup> Workshop on Open Source and the Internet for Building Scientific Global Communities, The Abdus Salam International Center for Theoretical Physics, Strada Costiera 11, 34014 Trieste – Italy. November 28 to December 16, 2011. (*Oral presentation*)
9. The IEEE Computer Society Workshop on Biometrics at the Computer Vision and Pattern Recognition (CVPR) Conference, (Colorado Springs, USA), June 20-25, 2011. (*Paper presented*)
10. The V International Conference of MIT LINC (Learning International Networks Consortium) 2010 on Technology Enabled Education, in MIT Cambridge, MA, USA, May 23<sup>rd</sup> to 26<sup>th</sup> 2010. (*Paper presented*)
11. The 6<sup>th</sup> International Summer School on Biometrics for Secure Authentication: Multimodal Systems and Identity Management. Hotel Capo Caccia, 07041, Alghero, Sardinia, Italy. 8 – 12 June 2009.
12. The V International Conference on Multimedia and ICT in Education. Lisbon, Portugal. 22<sup>nd</sup> to 24<sup>th</sup> April 2009. (*Paper presented*)
13. Autodesk Training in AutoCAD and Autodesk Inventor 2008. Organized by Autodesk Authorized Training Centre (ATC) network. University of Nigeria, Nsukka. 24<sup>th</sup> – 29<sup>th</sup> March 2008.

14. The Fourth Annual Conference of Learning International Networks consortium (MIT LINC 2007) in Dead Sea, Jordan. October 27<sup>th</sup> to 31<sup>st</sup>, 2007. (*Paper presented*)
15. Biometric Consortium Conference 2007 in Baltimore Convention Center, Baltimore, MD, USA. September 11<sup>th</sup> to 13<sup>th</sup>, 2007. (*Registered and attended*)
16. Train-the-Trainer Workshop on E-Learning. Computer Communications Center, University of Nigeria, Nsukka. July 31 – August 4, 2006.

### **POST GRADUATE AND UNDERGRADUATE PROJECT SUPERVISION**

#### **List of On-going Supervision and Supervised Postgraduate Thesis (2012 - date)**

2015

1. Authenticated Access of National Electronic Health Care Records (EHCR) using Biometrics
2. Assisted Biometric-based Patient Identification and Master Patient Index System
3. A Model for Biometric Identity Cards for Identification in Bank Transactions
4. Application of Artificial Neural Network (Ann) for Corrosion Prediction and Cathodic Protection of Offshore Structures
5. A model for Biometric-based Online Voter Registration and Voting System
6. Facial Recognition system for curbing Exam Malpractice in JAMB Computer-Based Examination
7. Remote Data logger for Agricultural Physical Parameter Monitoring
8. Adaptive Maximum Power Point Tracking (MPPT) for Photovoltaic cells

2014

9. Techniques for Securing Biometric templates
10. Comparative Review of Techniques for Detecting the Orientation Map of Exemplar fingerprints
11. Analysis of Clustering Techniques for Efficient Electrical Load Profiling

2013

12. An improved Gaussian kernel technique for biomedical image processing: an early lung cancer detection technique
13. Design and implementation of web plugin for accessing android phone data from internet
14. UML Design of an Automated Teller Machine (ATM)
15. Development of a software package for verifying biometric based university certificates
16. Lossless image decomposition for web application
17. Internet Network Security
18. E-Cash: An Electronic Payment System for the New Cashless Society
19. TV White spaces technology: a study of its viability for the provision of internet access in Nigeria

2012

20. Fingerprint Image Enhancement using Wavelet Processing
21. Automated National Health Insurance Scheme for Hospitals

#### **List of supervised undergraduate projects (2006 – date)**

2014

1. Design of a High Blood Pressure Monitor integrated in a phone.
2. Design of a Voice Recognition System for Access Control
3. Features for Face recognition using Gabor based features and Neural Networks
4. Design and implementation of a Hospital Appointment Booking system
5. Design and implementation of a wireless headphone and speaker set
6. Design and implementation of a software based voice dictionary

2013

7. Development of a Web-based Application for Examination and Lecture Time Table Scheduling
8. Home Automation Systems
9. Embedded Fingerprint Verification System for Access Control

2012

10. Remote Monitoring and Control of Devices over the Ethernet
11. Design and Implementation of a Wireless Sensor Network to Monitor Pollution of Crude Oil in Sea/River
12. Production of Smart Card; employing the use of a Webcam and Surveillance Camera for Library Use
13. Fingerprint based time and attendance system
14. Design of a 1KVA Inverter with microcontroller-based monitoring system
15. Serial LCD-Based Thermometer External EEPROM Memory
16. Intelligent Traffic Control System
17. Water Level Monitoring System with Display

2011

18. Design and Implementation of a Home Automation System
19. Design and Implementation of a Microcontroller-based Office time Scheduler and Temperature controller.
20. Design and Construction of a Microcontroller-based Security Door
21. Design and Implementation of a 3KVA Inverter System with Digital Display
22. Design and Implementation of an Audio Power Amplifier

2009

23. Development and Deployment of a Web Portal for Time-table Scheduling, incorporating Content Management System (CMS) for Faculty of Engineering, UNN
24. DC-AC Inverter Rated 12V, 1000W with special features
25. Design and Construction of Real Time Calendar
26. Design, Construction and Testing of an Audio Surveillance Monitor
27. Design and Construction of High Fidelity Audio Power Amplified with DB Meter.
28. Design, Construction and Testing of a Top-Notch Digital Automatic 5KVA Power Inverter
29. Design and Construction of a Microcontroller-based Digital Security System.

2008

30. Design of an Interactive Virtual Learning Environment for Digital Logic Theory I
31. An electronic Device for Checking Speed Limit of Cars on highways
32. Algorithm for Enrollment, Fusing and Matching of Five Fingerprints
33. Design and Implementation of a Web site for the Department of Electronic Engineering, UNN

2007

34. Design of a Fingerprint-based Class Management System
35. Design of a Microcontroller-based House Lighting System

2006

36. Design of a Power Selector for Alternate Sources of Electrical Power