

# 4<sup>th</sup> TYAN International Thematic Workshop and 1<sup>st</sup> African Symposium

**"Big Data, Analytics and Machine Intelligence for Financial, Health and Environmental Inclusion in Developing Countries"**

June 10 - 14, 2019

Federal University of Technology, Akure, Ondo State, Nigeria

**WITHIN THE FRAMEWORK OF THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS IN TERMS OF "NO POVERTY", "GOOD HEALTH AND WELL-BEING", "AFFORDABLE ENERGY", "ECONOMIC GROWTH", "INDUSTRY, INNOVATION AND INFRASTRUCTURE" AND "PARTNERSHIPS FOR THE GOALS", THE TWAS YOUNG AFFILIATES NETWORK (TYAN) ORGANIZES THE 4TH TYAN INTERNATIONAL THEMATIC WORKSHOP AND 1ST AFRICAN SYMPOSIUM ON "BIG DATA, ANALYTICS AND MACHINE INTELLIGENCE FOR FINANCIAL, HEALTH AND ENVIRONMENTAL INCLUSION IN DEVELOPING COUNTRIES" TO BE HOSTED BY THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE, NIGERIA IN PARTNERSHIP WITH TWAS SUB-SAHARAN AFRICA REGIONAL PARTNER (TWAS-SAREP), THE NIGERIA COMPUTER SOCIETY (NCS) ONDO STATE CHAPTER AND NIGERIAN YOUNG ACADEMY (NYA)**

## ORGANIZING COMMITTEE:

### **Dr. Bolanle Ojokoh**

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### **Dr. Emile Chimusa**

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## GOALS:

The symposium and workshop are aimed at providing a platform to increase knowledge in Big Data, Analytics and Machine Intelligence, and exploring how these techniques could be utilized to provide solutions and build multidisciplinary and international collaborations. The main goals of the events are to:

- provide a platform for interactions and exchange ideas among young scientists.
- gain knowledge of the current status of research and build capacity for researchers in Big Data, Analytics and Machine Intelligence for Financial, Health and Environmental Inclusion
- identify niche areas of Big Data, Analytics and Machine Intelligence research that could result in cross-border scientific collaborations.
- initiate collaborations to address financial, health and environmental inclusion in the developing world vis-a-vis the United Nations Sustainable Development Goals.

## SUB-THEMES:

- Sustainable Development Goals (SDGs) and the impact of Data Analytics on Sustainable Development
- Mathematical and Statistical Foundations of Big Data Analytics
- Advances in Machine Learning and their applications for financial inclusion
- Bioinformatics and Genome Sequencing for Health Related Applications
- Big Data Analytics for prediction and applications in Medicine, Environmental Modelling, E-Commerce applications, E-Governance and Smart Energy.
- Deep Learning Techniques for Information Filtering and Extraction

## IMPORTANT DATES:

- Abstract/Full Paper Submission Opens – **February 15, 2019**
- Application for Symposium/Workshop Opens – **February 15, 2019**
- Application Submission Deadline – **March 30, 2019**
- Acceptance Notification– **April 15, 2019**
- Final Manuscript Submission due– **May 10, 2019**
- Symposium– **June 10 - 11, 2019**
- Workshop– **June 12 - 14, 2019**

## PARTICIPANTS:

The symposium scheduled for June 10-11 is open to Senior and Young scientists from TYAN, Nigeria, and the African region. Also, international experts will be invited to present specific aspects of their work according to the thematic areas. It will include Keynote, Plenary, Oral presentations, Posters, and Exhibitions. It will also include a panel discussion of selected speakers and invited exhibition companies.

The workshop scheduled for June 12-15 June is open to PhD students and Postdocs, as well as early career researchers from public institutions and private sectors with evidence of research experience on the workshop theme.

Partial funding will be available to the workshop participants who will also be required to attend the Symposium and share their research results.

For more information and application visit <http://tyan.twas.org/event/currentevent>

## Ross King:



Dr. **Ross D. King** received his Ph.D. from the Turing Institute, UK. He is currently Professor of Machine Intelligence at the University of Manchester, UK. He is one of the most experienced researchers in AI in the UK, having spent over 30 years in the field. His most important research achievement is that of originating the idea of a “Robot Scientist”: using laboratory robotics to physically implement a closed-loop scientific discovery system. His Robot Scientist “Adam” was the first machine to discover novel scientific knowledge. His robot “Eve” is searching for drugs against neglected tropical diseases, and cancer. He is the only computer scientist with first author papers in both Nature and Science, and one of few PIs in a Computer Science Department anywhere in the world with a “wet lab”. His research won the British Computer Society, Machine Intelligence Prize, 2007; He was nominated for the World Technology Award (software) in 2004 and 2006; and his research was named the 4th most significant scientific advance of 2009 by Time magazine.

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## Matt Grasser:



Dr. **Matt Grasser** is the Director of Inclusive Fintech at BFA Globals, and similarly a seasoned Technologist and Entrepreneur in the US startup scene. He founded and served in leadership roles in several NYC-based startups and more recently turned his attention to the developing world and is passionate about more pressing technology and data challenges in the financial and social inclusion space. Matt holds a BSc in Aerospace Engineering from the University of Wisconsin, and was pursuing a PhD in Physics when he withdrew to focus efforts on his growing startups: Bytemark, an international mobile payments and ticketing platform and LDLN, a post-disaster-oriented Locally Distributed Logistics Network that empowers “dark” communities without requiring an external power grid or internet/cellular infrastructure.

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## Ming Zhang:



Dr. **Ming Zhang** received her Bachelor, master and PhD degrees in Computer Science from Peking University respectively. She has been a full professor at the School of Electronics Engineering and Computer Science, Peking University since 2005. Prof. Zhang is an Advisory Committee member of Ministry of Education in China, the vice director of CCF Educational Committee, a member of ACM Education Advisory Committee (formerly Ed Council) and the Chair of ACM SIGCSE China. She is one of the five Executive Committee Members of ACM/IEEE IT2017 and a member of the ACM/IEEE CC2020 steering group. She has published more 200 research papers on Text Mining and Social Computing in the top journals and conferences, such as ICML, KDD, AAAI, ACL, WWW and TKDE. She won the best paper of ICML 2014 and best paper nominee of WWW 2016. Prof. Zhang is the leading author of several textbooks on Data Structures and Algorithms in Chinese, and the corresponding course is awarded as the National Elaborate Course by MOE China.

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## Guanglin Li:



Dr. **Guanglin Li** received his Ph.D. degree in biomedical engineering from Zhejiang University, China, in 1997. From 1999–2002, he worked as a Postdoctoral Research Associate in the Department of bioengineering, the University of Illinois at Chicago, U.S.A, on the studies of electrocardiography and electroencephalography inverse problems and cardiac electrophysiology. From 2002 to 2006, he was a senior Research Scientist at BioTechPlex Corporation in the U.S., and he worked on researches associated with the development of biomedical and biological products. From 2006 to 2009, he was with the Rehabilitation Institute of Chicago (the best rehabilitation hospital in America for 19 consecutive years), where he was a Senior Research Scientist in the Neural Engineering Center for Artificial Limbs and with Northwestern University, where he was an Assistant Professor of Physical Medicine and Rehabilitation, Chicago. Since 2009, he has been with Shenzhen Institutes of Advanced Technology (SIAT), Chinese Academy of Sciences, where he is currently a Professor and Director in the Research Center for Neural Engineering at Institute of Biomedical and Health Engineering.

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## Romain Lucas Glele Kakai:



Dr. **Romain Glele Kakai** is a Professor of Biostatistics and Forest Modeling, Head of Biomathematics and Forest Estimations Laboratory ([www.labef-uac.org](http://www.labef-uac.org)), and Coordinator of the doctoral training in Biometry at the Faculty of Agronomic Sciences, University of Abomey-Calavi, Republic of Benin. He obtained his Engineer degree in Forestry in 2000 and MSc and PhD in Applied statistics at the Gembloux agricultural university (Belgium) in 2001 and 2005 respectively. He served as a young affiliate of TWAS between 2011 and 2015, young scientist of the World Economic Forum in 2012, and member of the Advisory committee of African-German Network of Excellence in Science. He is a visiting Professor in Applied Statistics at the KNUST, Ghana; University of Lomé, University of Kara, Togo; Abdou Moumouni University, Niger, Felix HounphouetBoigny University, Cote d'Ivoire; University of Masuku, Gabon; and several more. His current research interests include Linear and generalized linear mixed models, Non-linear modeling, and Analysis of Multiblock data in forest dynamics; and he has published more than 200 scientific papers in international journals, 4 books and many edited communications.

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## Lei Wang:



Dr. **Lei Wang** received B.Eng in Information and Control Engineering, M.S., and Ph.D in Biomedical Engineering from Xi'an Jiaotong University, China in 1995 and 2000, respectively. He worked as Research Engineer in University of Glasgow from 2001 to 2005; and as Research Associate in Imperial College London, from 2005 to 2008. Currently, he is a Full Professor, Deputy Director at Institutes of Biomedical and Health Engineering, and Director of Centre for Medical Robotics and Minimally Invasive Surgical Devices, at Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China. Dr. Wang's research focuses on Wearable Body Sensor Networks, Intelligent Systems, Surgical Robotics and Control. He has presided over and participated in major scientific research projects including the key National Natural Science Foundation of China, and National 863 Program Project. He has authored/co-authored over 250 scientific papers and 10 monographs. He served as the session chair at the 2017 IEEE EMBC, and part of the technical program committee for 2016 BioCAS. He is now working on light-weighted interventional robot as a pioneer study towards minimally invasive cardiovascular surgery.

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## Mustafa Özuysal:



Dr. **Mustafa Özuysal** received his Masters degrees from the METU Vision Laboratory at the Middle East Technical University, Ankara, Turkey in the Department of Electrical and Electronics Engineering and his Ph.D. degree from the Computer Vision Laboratory at the Ecole Polytechnique Fédérale de Lausanne, Switzerland in Computer Communication, and Information Sciences. His Ph.D. focused on object tracking-by-detection, camera egomotion estimation and augmented reality, specifically learning features from image and video sequences for fast and reliable object detection. He is currently an assistant professor. He has co-founded two techno-park companies funded by the Ministry of Science, Industry, and Technology of Turkey. He has been a full-time faculty at the Department of Computer Engineering of the Izmir Institute of Technology since 2013. He is a reviewer for all major Computer Vision conferences and journal including CVPR, ICCV, ECCV, PAMI, CVIU and TIP.

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## Emile Chimusa:



Dr. **Emile Chimusa** received Ph.D. from the prestigious University of Cape Town, South Africa. He has extensive experience in designing and applying statistical methods and machine intelligence algorithms to large multi-omics data sets for genome-wide association studies, ancestry inference, admixture mapping, mapping complex diseases and population structure. He is leading computational population genetics and genetics Epidemiology (CPGEG) with more than 20 postgraduate students at UCT. He is program convener of (1) Honours in Human Genetics, (2) Honours in Statistics coordinating and leading the education platform, “UCT Applied Genomics” and research in computational and Statistical methodologies for human and environmental health prediction” at the High Performance Computing (CHPC), Cape Town. He led various projects that yield to the development of critical genomic machine learning software tools (<http://www.uct.ac.za/~emile/index.html>). He is an active Member of both TYAN and TWAS-SAREP region.

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## Selma Tekir:



Dr. Selma Tekir received B.S. in Computer Engineering at Ege University. She received her M.S. in Computer Engineering from Izmir Institute of Technology. In 2009, she worked as a visiting researcher at Faculty of Computer Science Chair for Databases, Data Analysis and Visualization at University of Konstanz-Germany. Dr. Tekir received a PhD in computer engineering from Ege University in 2010. Her research interests include text mining, news analysis, semantics, natural language processing, and information warfare. Currently, she is working as an assistant professor at Izmir Institute of Technology Department of Computer Engineering.

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## Bolanle Ojokoh:



Dr. Bolanle Ojokoh has Bachelor, Masters and PhD degrees in Computer Science. She is currently an Associate Professor in the department of Information Systems of the Federal University of Technology, Akure, Nigeria. Dr. Ojokoh was the Scientific Committee Chair of the Local Organizing Committee, 2nd OWSD International Conference in 2015. She was a Program Committee Member of the ACM/IEEE-CS Joint Conference of Digital Libraries (JCDL) in 2016 and 2017. She was elected as a TWAS Young Affiliate in 2013, and is currently serving as Executive Board Member of the TWAS Young Affiliates Network (TYAN). She was a PI for the TWAS-COMSTECHE Research Grant for “Extracting high quality question and answer pairs from online forums”. She has attended several international conferences and workshops. She is interested in Intelligent Information filtering, retrieval and extraction and the applications of these to Web Mining in Recommender Systems and Question Answering. She has over sixty publications to her credit.

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# Tentative Schedule

	Sunday	Monday Symposium (Day 1)	Tuesday Symposium (Day 2)	Wednesday Workshop (Day 1)	Thursday Workshop (Day 2)	Friday Workshop (Day 3)	Saturday	
8:30 - 9:00	TYAN meetings with Partners	Opening Session and introduction of the activities of Symposium/Workshop	Oral presentations	Presentation of TWAS/TYAN and other partners	Recap of Day 1 Plans for Day2	Recap of Day 3 Plans for Day4		
9:00 - 10:00				Introduction to the activities of the Workshop and SDGs				
10:00 - 10:30				Course Lecture 1 The Use of Machine Learning in Drug Design	Course Lecture 3 Knowledge Graph/Representative Learning	Hands on Training on Supervised Machine Intelligence for mapping Genetics Diseases		
10:30 - 11:30		Break						
11:30 - 13:00		Opening Keynote Speech	Oral presentations	Course Lecture 2 Automatic News Extraction and Summarization	Workshop 3 Knowledge Graph/Representative Learning	Workshop 5: Classification of Agricultural Images		
13:00 - 14:00		Plenary Sessions I & II		Workshop 1 The Use of Machine Learning in Drug Design	Course Lecture 4 Decision Tree Analysis: Principles and Applications in Biological Sciences	Workshop 6: International grant calls: identifying and niche areas of strengths and working together to address common challenges		
14:00 - 15:00		Lunch						
15:00 - 16:45		Arrival of participants Registration and posters to be put up	Plenary Session III	Oral Presentations	Hands on Training on Google Cloud Platform	Hands on Training on Data Analytics – R, Spark, Python, Hadoop		Networking Session: to establish new collaborative links aiming at taking forward projects in which data analytics will impact on sustainability
16:45 - 17:15			Panel Discussions	General Plenary Session	Hands on Training on Google Cloud Platform			Laboratory Visit
17:15 - 18:30			Panel Discussions	Closing Keynote Speech	Workshop 2 Automatic News Extraction and Summarization	Workshop 4 Supervised Machine Intelligence In Human Variation: Population Structure and Mapping Genetics Diseases		Laboratory Visit
18:30 - 20:00	Dinner							
20:00 - 21:30	Discussions							

Departure of participants