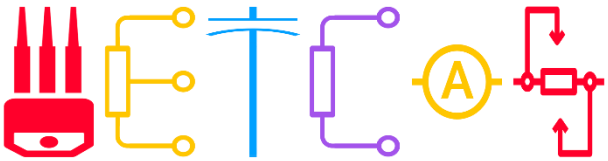
IEEE CAS

Outreach Initiative

2017

A Report on
IEEE CASS Outreach Initiative 2017
1st African Workshop on
Emerging Trends in Circuit and Systems (WETCaS)



Date

13th – 14th November 2017

at

Kwame Nkrumah University of Science and Technology,
Kumasi, Ghana

General Co-Chairs

Selasi Agbemenu and Nathan Amanquah

Sponsored by

IEEE CAS Outreach Initiative

Texas Instruments Inc

Kwame Nkrumah University of Science and Technology

Texas A&M University, College Station

IEEE CAS Outreach Initiative 2017 - Report

1. Title: 1st African Workshop on Emerging Trends in Circuits and Systems (WETCaS) 2017

2. Local Organizers:

- Selasi Agbemenu
  Lecturer, Department of Computer Engineering, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana
- Nathan Amanquah
  Lecturer, Department of Engineering & Computer Science, Ashesi University College, Brekuso, Ghana

3. International Organizers:

- Judy Amanor-Boadu
  Department of ECE
  Texas A&M University
- Alex Titriku
  Texas Instruments
  Dallas, Texas
- Jose Silva-Martinez
  Professor, Department of ECE
  Texas A&M University

4. Date: November 13 to 14, 2017

5. Venue: Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

5. Participants: 142 participants (compromising mostly students, student researchers and faculty members)

6. Brief description of the activity:

The first ever African Workshop on Emerging Trends in Circuits and Systems was held at the Institute of Distance Learning conference center at the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana from November 13 to 14. The workshop was organized with the goal of providing a platform for collaboration between researchers, professionals in the industry and distinguished international speakers to explore new frontiers in research. It was also aimed at strengthening the quality of research being

done in the field of electronic circuits and systems design in Ghana and sub-Saharan Africa.

In preparation for the event, a workshop website (wetcas.knust.edu.gh) was created to enable participants to register and access workshop program and other related information. Publicity materials such as posters, banners and invitation letters were produced and distributed to colleges in the country. The reach was extended by sending out emails to a number of mailing lists.

The workshop technical program was carefully drawn to cover important topics in circuits and systems. It comprised one keynote speech and 5 workshop sessions which were delivered by distinguished IEEE speakers and industry professionals.

The workshop kicked off on Monday, 13th November in the morning with the keynote session which was delivered by Dr. Darnell Moore, Director of the Perception & Analytics Laboratory at Texas Instruments. The title of his presentation was “Highly Automated Vehicles and Machines.” He discussed some of the current research powering the work in autonomous vehicles. He also outlined opportunities that are available for researchers in Ghana and Africa to participate in this active field.

Dr. Ahmed Nader Mohieldin Rizk, wsa for more than 5 years with Texas Instruments at Dallas Texas and currently an Associate Professor at the Electronics and Communications Engineering Department, Cairo University, Egypt, gave the first workshop session. The focus of his talk was on “Fundamentals of Baseband Circuits.” He talked on different basic building blocks for baseband circuits.

The last workshop on the first day was addressed by Dr. Randall Lee Geiger, the Tunc and Lale Doluca Professor at Iowa State University, USA. The title of his talk was “Testing and Calibration of Integrated Circuits.” He covered fundamental aspects of testing and calibration of integrated circuits with a dominant emphasis on analog and mixed-signal components. He also taught on the distinctions between bench test, probe test, and production test.

The second and final day of the event started with a plenary talk delivered by Dr. Jusung Kim. Dr. Kim was with Qualcomm Corporation at San Diego California for more than 4 years and currently is an assistant professor with the Department of Electronics and Control Engineering at the Hanbat National University, Daejeon, South Korea. He reviewed the fundamentals of RF IC design.

Dr. Jose Silva-Martinez, a Texas Instruments Professor with the Department of ECE of the Texas A&M University, at College Station, Texas gave the next workshop entitled “Fundamentals of Power Management Circuits and Systems with emphasis for portable devices.” He gave foundations as well as analysis and design of key power electronic building blocks, namely: Feedback theory, stability, and design aspects of DC to DC converters.

During the last keynote session, the Texas Instruments Ghana Design Contest was launched by Alex Titriku, a representative from Texas Instruments. At the end of the workshop, appreciation awards were awarded to all the invited speakers.

Over 158 registrations were received for the event. There were approximately 142 attendees, including undergraduate and graduate students, faculty members, and engineers from industry. Students from a total of 4 Ghanaian Colleges (Kwame Nkrumah University of Science and Technology, Ashesi University College, University of Energy and Natural Resources, Takoradi Technical University) in Ghana attended.

A feedback survey at the end of the event revealed that participants enjoyed the workshop and learnt a lot of new and exciting topics described in the workshop. Certificates were presented to all participants after the workshop.

Future goals (when given the opportunity) will be to expand the workshop and invite papers from local participants. The objective will be to develop this into a conference for the sub-Saharan African region.

The workshop was sponsored by the IEEE Circuits and Systems Society through the IEEE CASS Outreach Funds, Texas Instruments Incorporated, Texas A&M University and the Kwame Nkrumah University of Science and Technology.

The figure below is one of two workshop promotional materials used to advertise the workshop. They were crafted as posters and flyers.

Figure 1: Workshop promotional flyer

7. Program

Monday, November 13, 2017

Time	Activity	Speaker
9 am	Registration and check-in	WETCAS 2017
10 am	Keynote: Highly Automated Vehicles and Machines	Darnell Moore
12 noon	Lunch	
1 pm	Workshop 1: Fundamentals of Baseband Circuits	Ahmed Mohieldin
3 pm	Break	
4 pm	Workshop 2: Testing and Calibration of Integration Circuits	Randy Geiger
6pm-7pm	Networking event with invited speakers and teaching assistants	

Figure 2: Registration tables

Figure 3:Queue for attendees to register

Figure 4:Invited speakers, attendees, faculty and volunteers

Figure 5: Organizing committee, faculty, and invited speakers

Figure 6:Keynote session: Dr. Darnell Moore, Texas Instruments

Tuesday, November 14, 2017

Time	Activity	Speaker
9 am	Registration and check-in	WETCAS 2017
10 am	Workshop 3: Fundamentals on RF IC design	Jusung Kim
12 noon	Lunch	
1 pm	Workshop 4: Fundamentals on Power Management Circuits and Systems with emphasis for portable devices	Jose Silva-Martinez
3 pm	Break	
4 pm	Workshop 5	Darnell Moore
7pm-9pm	Dinner with Faculty and invited speakers	

Figure 7:Invited speaker, Dr. Randall Geiger, receiving award from Dean of Electrical Engineering, KNUST, Dr. K.O. Boateng

Figure 8: Invited speaker, Dr. Jusung Kim, receiving award from Dean of Electrical Engineering, KNUST, Dr. K.O. Boateng

Figure 9:Invited speaker, Dr. Ahmed Rizk, receiving award from Dean of Electrical Engineering, KNUST, Dr. K.O. Boateng

Figure 10:Invited speaker, Dr. Jose Silva-Martinez, receiving award from Dean of Electrical Engineering, KNUST, Dr. K.O. Boateng

Figure 11:Invited speakers and organizing committee

Figure 12:Promotional materials

Figure 13: Dinner with faculty

8. Financial Report

Most of the income was received from the IEEE CAS Outreach Initiative and Texas Instruments. The expenses paid for were to support the travel and lodging of invited speakers, transportation, workshop materials, lunch for all participants, dinner for speakers and committee/faculty and for promotional/publicity services.

8a. Income

Source	Amount ($)
Grant from IEEE CAS Outreach Initiative	9,900.00
Grant from Texas Instruments	3,000.00
Grant from Kwame Nkrumah University of Science and Technology	1,912.7
Sub-Total	**14,812.7**
TI covered the plane tickets of Dr. Darnell Moore and Mr. Alex Titriku	Unknown

8b. Expenses

Item	Expense (USD)
Speakers Travel	7651.4
Speakers hotel (Accra)	678.4
Speakers hotel (Kumasi)	816.8
Conference facilities	1224.2
Lunch and breaks on Day 1 and Day 2	1973.5
Awards and certificates	275.0
Registration material distributed to all participants	452.8
Publicity and promotional materials	1294.2
Dinner with Faculty and Teaching assistants	446.4
TOTAL	**14,812.7**

9. Evaluation Report

A survey was distributed to all attendees. They were to rate the overall workshop and individual workshop sessions using a scale from 1 to 5, with 1 being strongly disagree and 5 being strongly agree. There was a response rate of 62%. Below are the results from the survey.

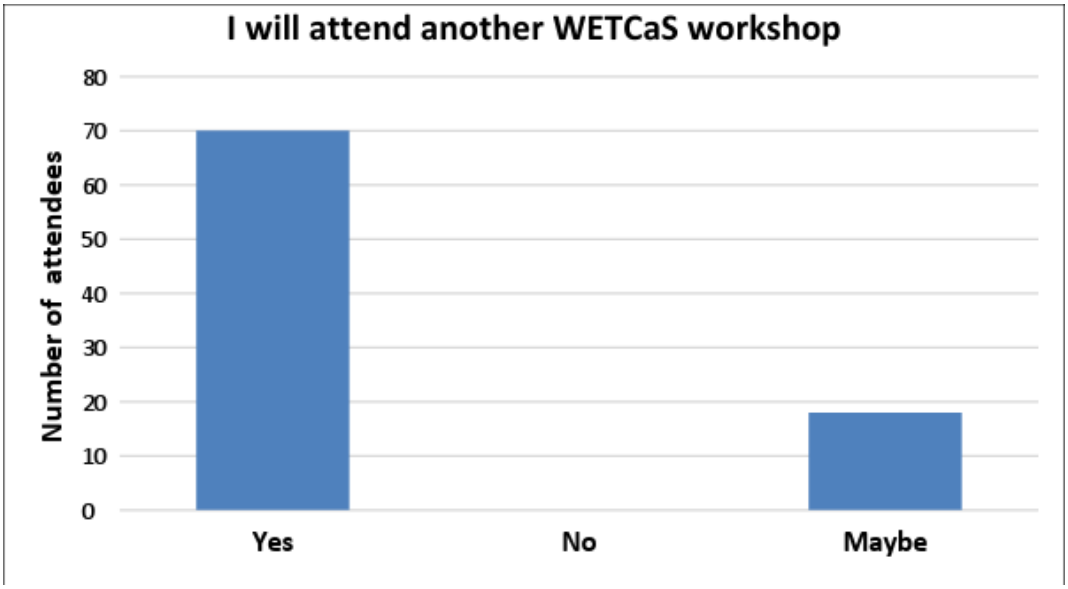


Figure 14: Evaluation on whether attendees will attend another similar workshop

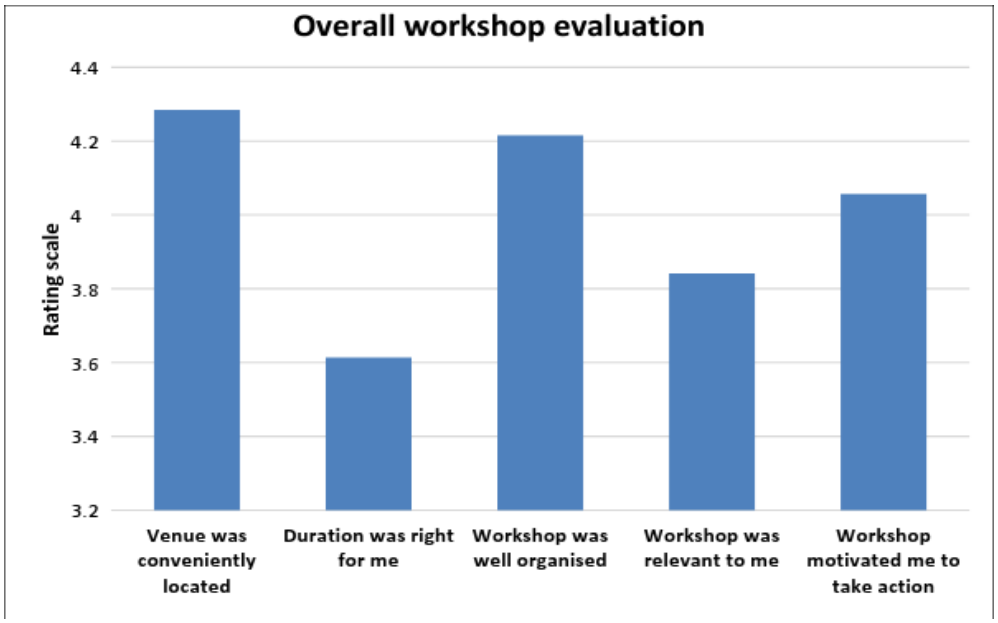


Figure 15: Overall workshop evaluation

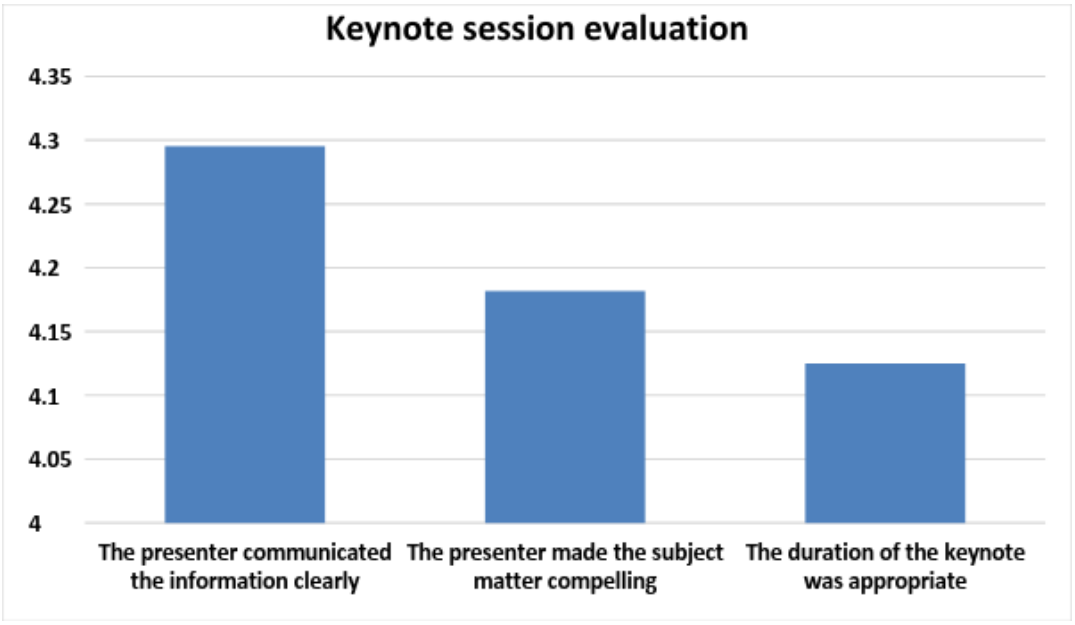


Figure 16: Keynote session evaluation

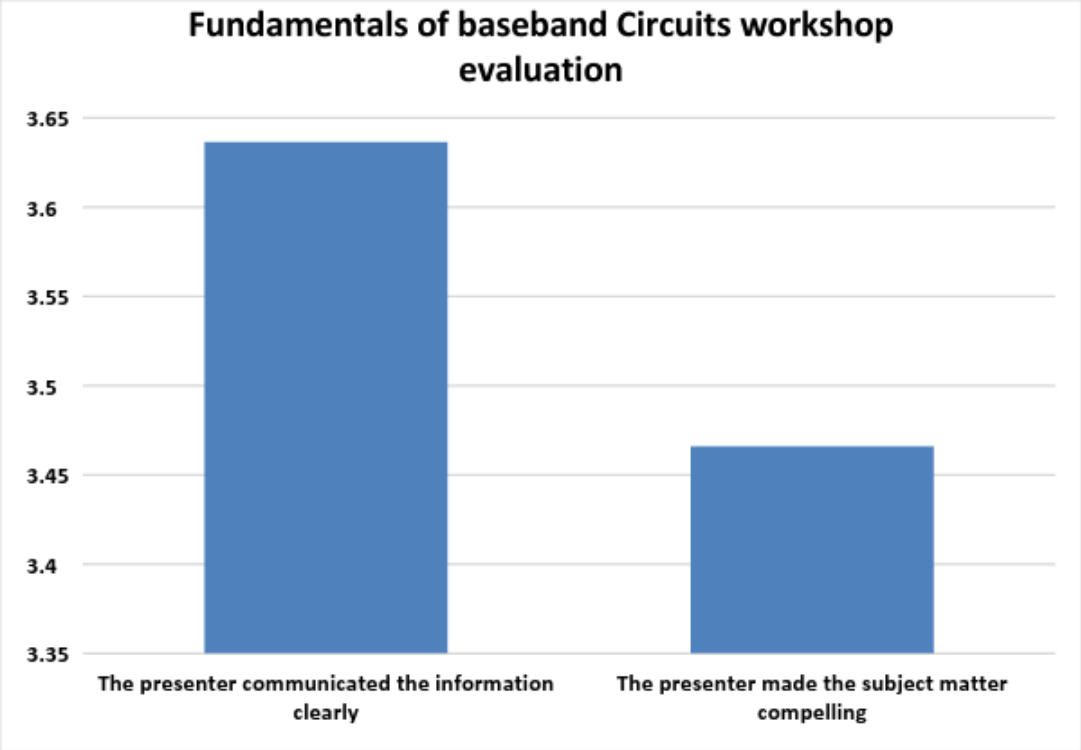


Figure 17: Workshop 1 evaluation

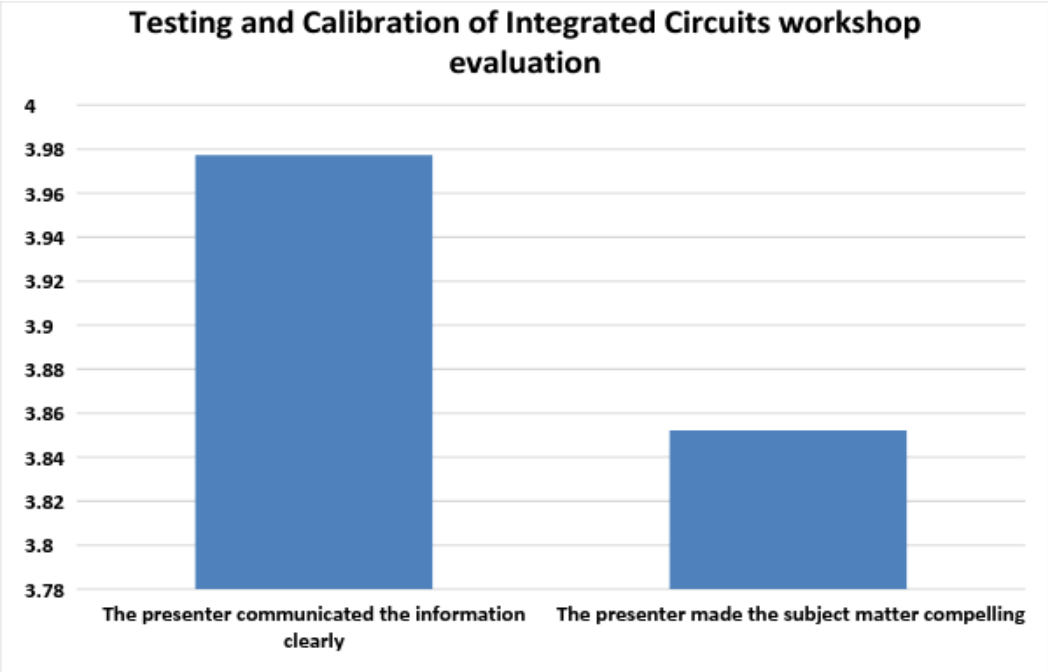


Figure 18: Workshop 2 evaluation

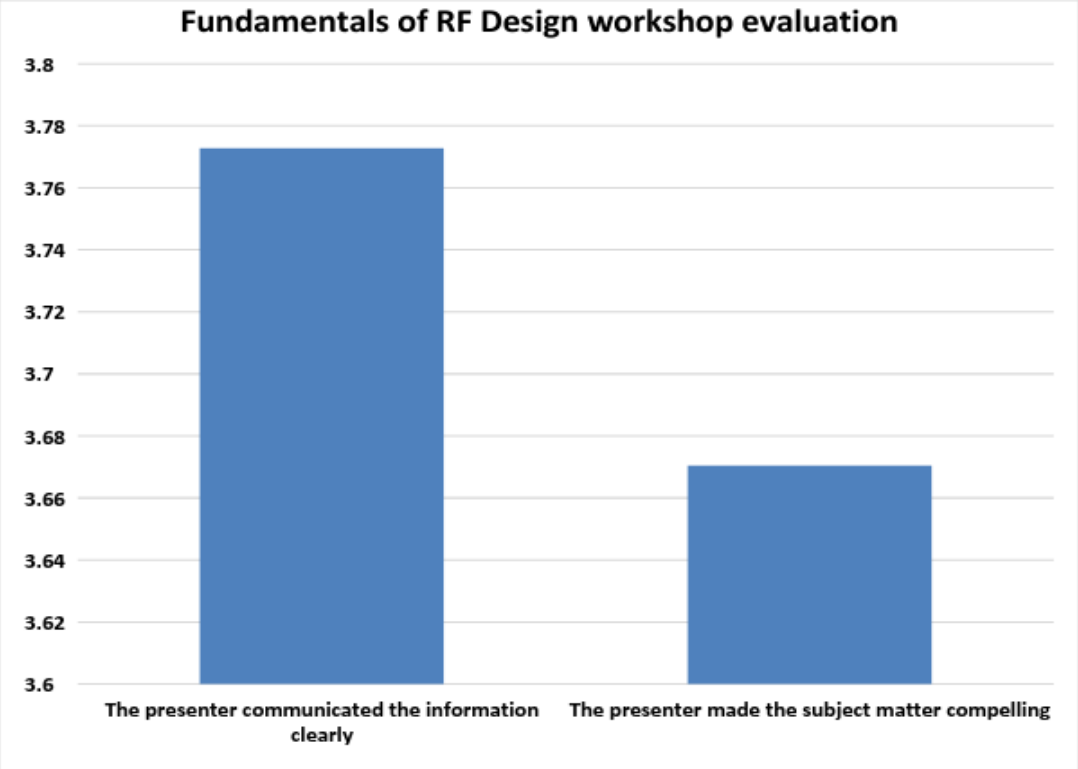


Figure 19: Workshop 3 evaluation

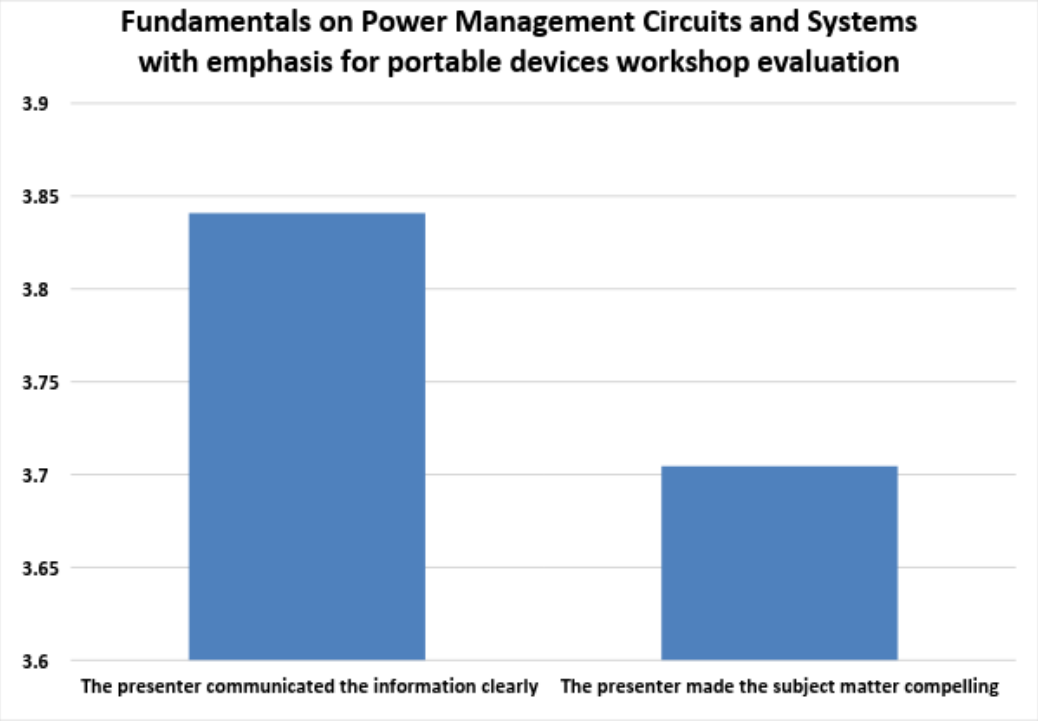


Figure 20:: Workshop 5 evaluation

Some of the comments from the survey about the workshop were as follows:

- The lecture on Filters and Amplifiers was very insightful. The whole conference stimulated by interest in Analog and Mixed signal design
- The keynote address on highly automated vehicles was enlightening.
- Exposure to the best minds in the world of circuits.
- The content was informative and really motivated me to explore more in the area
- Speakers are experts in their various disciplines.
- Well vested Speakers availed
- Presenters profiles and depth of knowledge
- Networking with engineering professionals
- "The fact that we were motivated to venture into fields of study that were somewhat not popular in the African Region.
- We were encouraged to be pioneers"
- The fact that i was exposed to things happening around me that i didn't know off.
- The level of expertise in this conference
- Organization
- It open my mind on the intricacies of designs that are in the world and those yet to come
- The fact that various professionals and students across different fields were brought together.
- Different speakers for different topics
- it created an environment of learning and motivating me to learn more
- The lectures were very interesting. Motivational, even.
- The very informative fundamentals of circuits, IC designs and power management. The networking and the new technology innovations coming up were inspiring and highly motivating.
- The resource personnel that were brought. They really knew a lot about the topic
- The gathering was a small number which allowed interaction between the speakers and the those who attended. Also I was really impressed about the ability of the organizers to provide resource persons who are really vexed in their fields of research. The presentations showed that they actually knew what they were talking about. Also the lecture material of the speakers are made available.
- Interacting with students from other universities, other lecturers and especially, people from industry and research institutions.
- It caused me to think and develop new ideas
- i like the whole organization, i enjoyed the presentation of the resource persons and have really been inspired and the food was great by the way
- It revealed a lot ongoing in the research world
- Good organization and great speaker with in-depth knowledge in their area
- It was quite informative in the essence that it served the purpose it was meant to, which was to show how to solve recurring problems in Engineering.

- Time consciousness
- The way it was organised
- The workshop was instructive and informative with emphasis on the importance of fundamentals of design and analysis of circuits and systems in the face of new trends
- It was well organized
- the presentation on TI instruments and the innovative inventions
- The highly automated vehicles and session on electronic circuits with the Egyptian professor
- Time consciousness
- The orderly manner in which it was organized
- Meeting and interacting with colleagues in STEM and the first presentation was intriguing.
- diversity + enthusiasm
- Networking
- Content covered basic to advanced information for each of the subject areas