

## IEEE SMCS Summer School 2026 (MOUUAU) Technical Report

### Event Overview

The IEEE Systems, Man, and Cybernetics Society (SMCS) Summer School 2026 was held from 22–27 June 2026 at Michael Okpara University of Agriculture, Umudike (MOUUAU), Nigeria, under the theme "Leveraging Cybernetics and AI for Sustainable Cyber-Physical Solutions in Emerging Economies." This marked the first IEEE SMCS Summer School ever hosted in Nigeria and the first IEEE event ever hosted in the host institution.

### Participation

The programme drew 55 registered participants (40 male, 15 female), supported by 10 local volunteers (7 male, 3 female) and 7 expert facilitators (6 male, 1 female) from academia and industry. Activities included keynote lectures, technical sessions, three hands-on practical laboratory sessions, and five multidisciplinary group projects.

### Programme Content

The curriculum combined theoretical instruction with practical application, covering: keynote presentations, technical lectures, Q&A sessions, laboratory exercises, team innovation projects, networking, and mentorship. Core topics included fundamentals of cybernetics, AI/machine learning, cyber-physical systems design, intelligent control systems, human-machine interaction, sustainable engineering, cybersecurity, digital transformation in emerging economies, and IEEE SMCS research opportunities.

### Group Projects

Five collaborative, Arduino-based IoT projects were designed and deployed:

- **Group A** – IoT-Enabled Remote monitoring/control of ambient light using LDR sensors
- **Group B** – IoT-Based Ultrasonic theft detection with real-time alerts
- **Group C** – IoT Based Intelligent lighting/appliance control for classroom energy optimization
- **Group D** – IoT-Based Home security and intruder detection using PIR sensors
- **Group A1** – IoT-Based Autonomous robotic vehicle for emergency/disaster response

### Impact

The Summer School delivered strong outcomes: participants gained practical skills in AI, cybernetics, and CPS; new research partnerships and mentor relationships formed; and IEEE SMCS visibility in Nigeria increased significantly. Notably, at least 14 students and 2 academic staff have expressed interest in forming an IEEE Student Branch at MOUUAU by September 2026, with a subsequent IEEE SMCS Student Branch Chapter planned. Participants also reported gains in confidence, leadership aspiration, and motivation to apply technology to societal challenges.

### Challenges

Key operational constraints included limited funding restricting participant numbers, heavy logistical demands on volunteers for accommodation and transport, time limitations reducing depth of practical sessions, and demand exceeding available resources. These were managed through strong planning and volunteer commitment.

### Recommendations

The report proposes: increased sponsorship from industry, government, and development partners; expanded participant capacity; a longer programme duration for deeper practical engagement; and establishment of an IEEE SMCS student ambassador programme across Nigerian universities.

### Sustainability Strategy

To maintain momentum, the report recommends ongoing engagement via webinars/virtual seminars, encouraging IEEE/SMCS membership, promoting community-based application projects, and institutionalizing the Summer School as an annual flagship IEEE SMCS Nigeria programme.

### Justification for Continuation

The report argues strongly for continuing the programme, citing: growing regional demand for AI/cybernetics/CPS expertise, its role in translating research into societal impact, strengthened academia-industry-IEEE collaboration, development of a skilled innovator pipeline, increased IEEE SMCS membership and engagement, and Nigeria's increasing role within the global IEEE SMCS community.

### Conclusion

The Summer School is deemed a resounding success, credited to facilitators, volunteers, the host institution, and IEEE SMCS leadership (including the Cyber-Physical Systems Technical Committee). MOUUAU's Vice-Chancellor, Prof. Ursula Ngozi Akanwa, thanked IEEE SMCS for selecting the university as host, welcomed the donated Arduino kits for the to-be formed Student Branch, and called for deeper collaboration between MOUUAU and IEEE and IEEE SMCS. The report concludes that sustained annual editions would advance technological capacity-building and position Nigeria as a regional hub for intelligent systems research within the global IEEE SMCS community.





