BVRIT HYDERABAD College of Engineering for Women
(UGC Autonomous Institution | Approved by AICTE | Affiliated to JNTUH)
(NAAC Accredited – A Grade | NBA Accredited B. Tech. (EEE, ECE, CSE and IT))
Bachupally, Hyderabad -500 090

Event Report

Title of the Event: Online Distinguished Lecturer (DL) Talk on "Reimagining Health Monitoring using Applied Electromagnetics"

Organized by IEEE BVRIT HYDERABAD Student Branch
in association with **IEEE BVRIT HYDERABAD Sensors Council**

Date: 30th January 2026
Time: 5:30 PM IST
Mode of Conduct: Online Mode – Google Meet: https://meet.google.com/xuh-ctgd-tmx

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Resource Person

Dr. Geroge Shanker, SMIEEE
Department of Electrical and Computer Engineering
University of Waterloo, Waterloo, Ontario, Canada

Number of Participants

A total of **95 participants** attended the session, comprising:

- Undergraduate students
- Postgraduate students
- Research scholars
- Faculty members

The participants belonged to the domains of **Electronics and Communication Engineering, Sensors, Biomedical Engineering, and allied interdisciplinary areas**.

Faculty Coordinator

- **Prof. Saikumar Tara**
  Department of ECE
  IEEE BVRIT HYDERABAD Student Branch Counselor

Student Coordinators

- IEEE BVRIT HYDERABAD Student Branch Executive Committee Members
- IEEE Sensors Council Student Volunteers

Objective of the Event

The primary objective of organizing the Distinguished Lecturer Talk was to:

- Provide insights into **advanced applications of applied electromagnetics in healthcare**
- Familiarize students with **emerging research trends in health monitoring systems**

- Encourage interdisciplinary research combining **electromagnetics, sensors, and biomedical applications**
- Expose participants to **international research perspectives and innovations**

Brief Description of the Event

IEEE BVRIT Hyderabad Student Branch, in collaboration with the IEEE BVRIT HYDERABAD Sensors Council, successfully organized an **Online Distinguished Lecturer (DL) Talk** on **30th January 2026**. The event featured an eminent academician and researcher, **Dr. Geroge Shanker**, from the University of Waterloo, Canada.
The session aimed to highlight the evolving role of **applied electromagnetic techniques** in the field of **health monitoring and biomedical sensing**, addressing both theoretical foundations and practical implementations.

Details of the Talk

Dr. Geroge Shanker delivered a comprehensive and technically enriching lecture on **"Reimagining Health Monitoring using Applied Electromagnetics."** The talk began with an overview of traditional health monitoring techniques and gradually transitioned into modern electromagnetic-based solutions.
The speaker elaborated on:

- Fundamentals of electromagnetic theory relevant to biomedical applications
- Role of electromagnetics in **non-invasive health monitoring systems**
- Use of electromagnetic waves in **wearable and implantable medical devices**
- Sensor design considerations for healthcare applications
- Case studies and ongoing research work in electromagnetic health monitoring

Dr. Shanker emphasized how applied electromagnetics is transforming healthcare by enabling **continuous, real-time, and patient-friendly monitoring systems**.

Interaction and Q&A Session

The lecture was followed by an interactive **Question and Answer session**, during which participants actively engaged with the speaker. Questions were raised on:

- Practical challenges in implementing electromagnetic-based health monitoring systems
- Research opportunities for undergraduate and postgraduate students
- Interdisciplinary collaboration between electronics and biomedical domains

Dr. Shanker patiently addressed all queries, providing valuable guidance and encouraging students to explore research in this emerging area.

Outcome of the Event

- Participants gained in-depth knowledge of **applied electromagnetics in healthcare applications**
- Students developed an understanding of **research challenges and future scope** in biomedical sensing
- The event motivated students to pursue **higher studies and research** in interdisciplinary domains
- Strengthened technical activities under IEEE Student Branch and Sensors Council

Feedback from Participants

The session received **positive feedback** from participants, who appreciated the clarity of explanation, real-world examples, and the relevance of the topic to current research and industry trends.

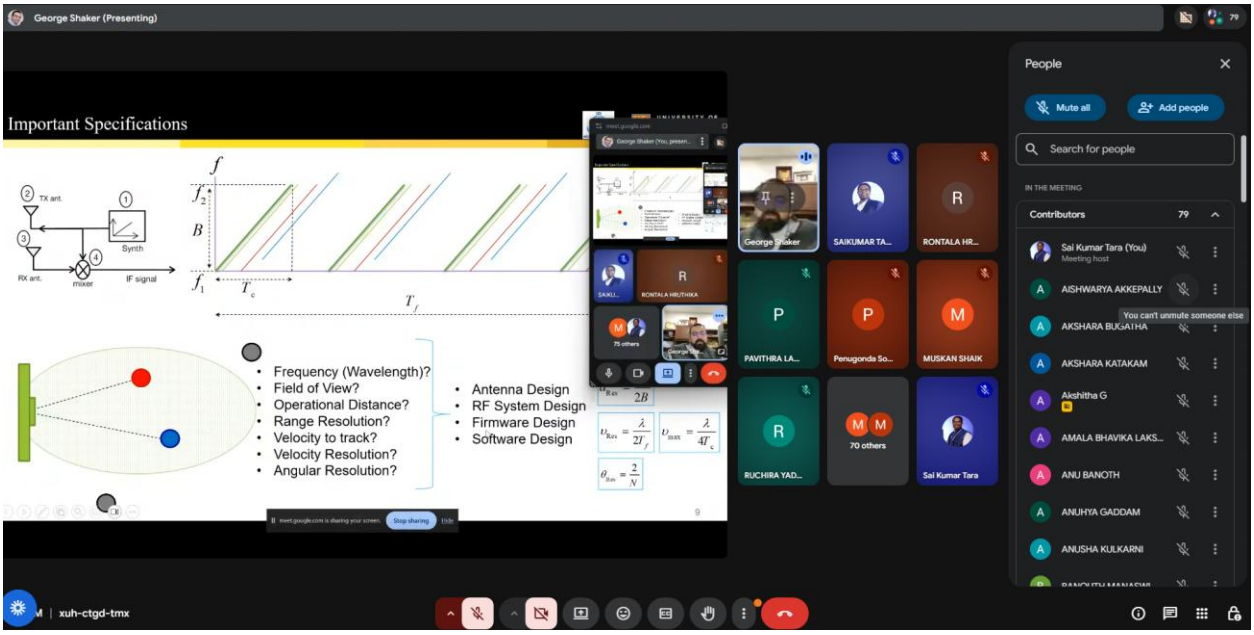
Conclusion

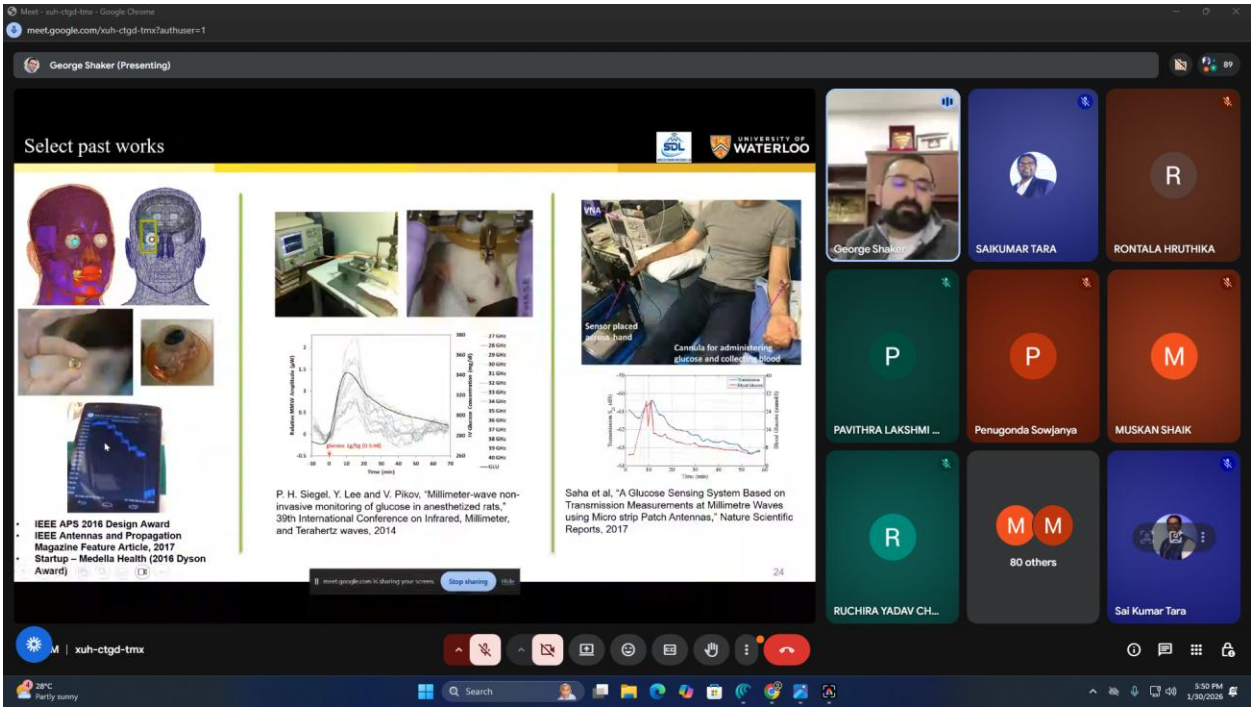
The Distinguished Lecturer Talk was a **great success**, achieving its intended objectives. The session significantly enhanced participants' understanding of **health monitoring technologies using applied electromagnetics** and inspired them to explore innovative research directions. The event also reinforced IEEE's mission of **advancing technology for humanity**.

Vote of Thanks

The organizers express their sincere gratitude to **Dr. Geroge Shanker** for delivering an insightful and engaging lecture. Heartfelt thanks are also extended to the management, faculty coordinators, IEEE volunteers, and all participants for their continuous support and active involvement in making the event successful.

Signature of Coordinator:
Saikummar Tara


George Shaker (Presenting)
Important Specifications
Frequency (Wavelength)?
Field of View?
Operational Distance?
Range Resolution?
Velocity to track?
Velocity Resolution?
Angular Resolution?
Antenna Design
RF System Design
Firmware Design
Software Design
People
Mute all
Add people
Search for people
IN THE MEETING
Contributors 79
Sai Kumar Tara (You)
Meeting host
AISHWARYA AKKEPALLY
AKSHARA BUGATHA
AKSHARA KATAKAM
Akshitha G
AMALA BHAVIKA LAKS...
ANU BANOTH
ANUHYA GADDAM
ANUSHA KULKARNI
You can't unmute someone else
xuh-ctgd-tmx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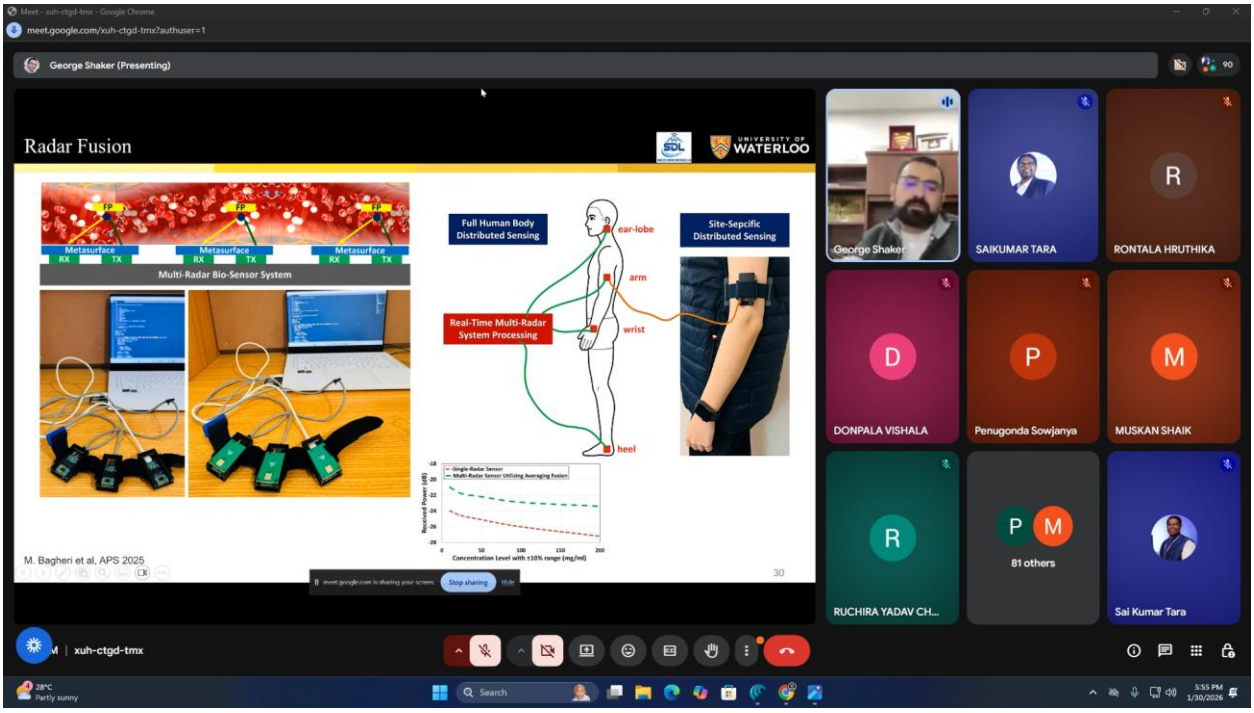
George Shaker (Presenting)
Select past works
UNIVERSITY OF WATERLOO
IEEE APS 2016 Design Award
IEEE Antennas and Propagation Magazine Feature Article, 2017
Startup – Medella Health (2016 Dyson Award)
P. H. Siegel, Y. Lee and V. Pikov, "Millimeter-wave non-invasive monitoring of glucose in anesthetized rats," 39th International Conference on Infrared, Millimeter, and Terahertz waves, 2014
Saha et al, "A Glucose Sensing System Based on Transmission Measurements at Millimetre Waves using Micro strip Patch Antennas," Nature Scientific Reports, 2017
SAIKUMAR TARA
RONTALA HRUTHIKA
PAVITHRA LAKSHMI ...
Penugonda Sowjanya
MUSKAN SHAIK
RUCHIRA YADAV CH...
80 others
Sai Kumar Tara
xuh-ctgd-tmx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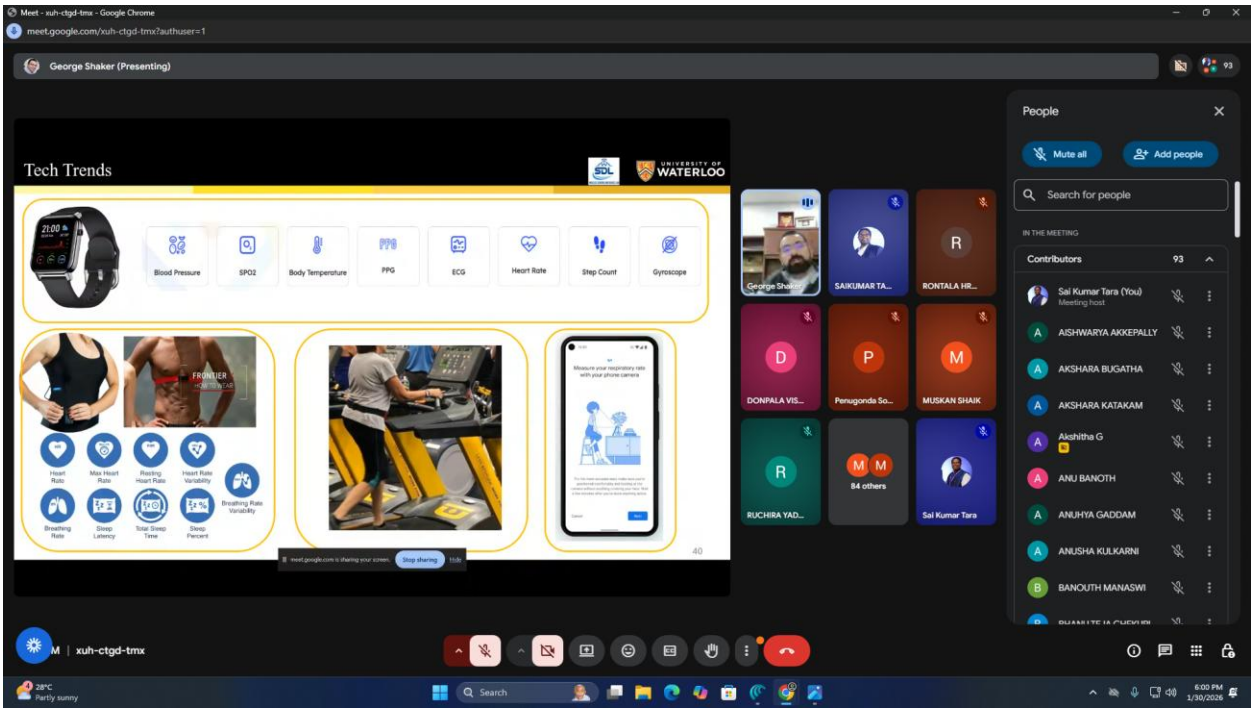
George Shaker (Presenting)
Radar Fusion
UNIVERSITY OF WATERLOO
Metasurface
RX
TX
Multi-Radar Bio-Sensor System
Full Human Body Distributed Sensing
Site-Sepcific Distributed Sensing
ear-lobe
arm
wrist
heel
Real-Time Multi-Radar System Processing
Concentration Level with ±10% range (mg/ml)
M. Bagheri et al, APS 2025
30
George Shaker
SAIKUMAR TARA
RONTALA HRUTHIKA
DONPALA VISHALA
Penugonda Sowjanya
MUSKAN SHAIK
RUCHIRA YADAV CH...
81 others
Sai Kumar Tara
xuh-ctgd-tmx
28°C
Partly sunny
Search
5:55 PM
1/30/2026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George Shaker (Presenting)
Tech Trends
UNIVERSITY OF WATERLOO
Blood Pressure
SPO2
Body Temperature
PPG
ECG
Heart Rate
Step Count
Gyroscope
FRONTIER
Heart Rate
Max Heart Rate
Resting Heart Rate
Heart Rate Variability
Breathing Rate
Sleep Latency
Total Sleep Time
Sleep Percent
Breathing Rate Variability
40
People
Mute all
Add people
Search for people
IN THE MEETING
Contributors
93
Sai Kumar Tara (You)
Meeting host
AISHWARYA AKKEPALLY
AKSHARA BUGATHA
AKSHARA KATAKAM
Akshitha G
ANU BANOTH
ANUHYA GADDAM
ANUSHA KULKARNI
BANOUTH MANASWI
84 others
xuh-ctgd-tmx
28°C
Partly sunny
Search
6:00 PM
1/30/2026

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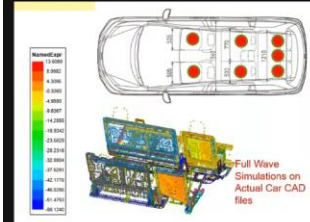
George Shaker (Presenting)

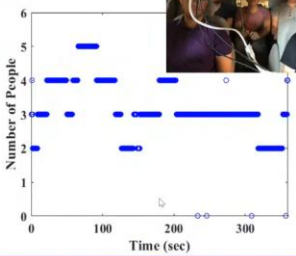
By-product Applications: Sensing Inside a 7-Seat Car



Full Wave Simulations on Actual Car CAD files

$N_{Tx}=2, N_{Rx}=4,\ d=\lambda/2$

Angular Resolution~14°



Given nearly the same range and doppler, to distinguish two targets from each other in the third row, they should be around 40 cm (~160sin(14°)) far away from each other.

meet.google.com is sharing your screen. Stop sharing Hide

68

George Shaker

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