RESEARCH CONNECTS

ABSTRACT BOOK

SENSORS2025

GLOBAL SUMMIT ON SENSORS AND SENSING TECHNOLOGIES

August 04-06, 2025 | Frankfurt, Germany

https://sensors.researchconnects.org/ sensors@researchconnects.org

FOREWORD

Dear Colleagues,

Research Connects invites all the participants from all over the world to attend **Global Summit on Sensors and Sensing Technologies** during **August 04-06, 2025** at **Frankfurt, Germany**.

SENSORS2025 promises to be a landmark event, uniting foremost researchers, scientists, engineers, and industry luminaries from across the globe. Our summit endeavors to foster insightful discussions, exchange cutting-edge ideas, and explore the myriad challenges and opportunities in the ever-evolving landscape of Sensors and Sensing Technologies.

This summit will feature keynote presentations, oral talks, poster presentations, and exhibitions, providing a platform for researchers to connect, exchange ideas, and forge new collaborations.

Join us at Frankfurt, Germany for a truly unforgettable experience!

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Powering Sensors: How to Power Thin and Flexible Sensors

Martin Krebs
Independent Battery Consultant, Germany

Abstract:

Printed Electronics PE in the last decades have gained more and more importance. Applications in important fields are possible which before were equipped with State-of-the-Art SoA devices having a hard case housing and a rigid printed circuit board. Insofar PE devices are much more environmentally friendly than SoA devices.

In total small electronic devices show an increasing demand because more and more things must be controlled. That concerns especially:

- Logistics, RFID
- Smard Card for financial applications and others
- Transportation trackers, like T-Logger for documenting the cooling chain
- Health monitoring in the hospitals as well as for hobby sports
- Internet-of-Things IoT

These devices are equipped with conducting path, antenna, printed transistors OTFT, OLED and OPV. Todo almost all applications are passive. The µChips on it can only operate if an energy source like Radio-Frequency RF field or a light source is close to it. For an extended operation the PE device needs an energy source, like Printed Batteries PB or Printed Supercapacitors PSc. Preferably these energy sources are also printed.

The development of PB was done, among others, at VARTA. They developed a PB using the electrochemical system Zinc-Manganese Dioxide-Chloride Electrolyte ZnC. This system is

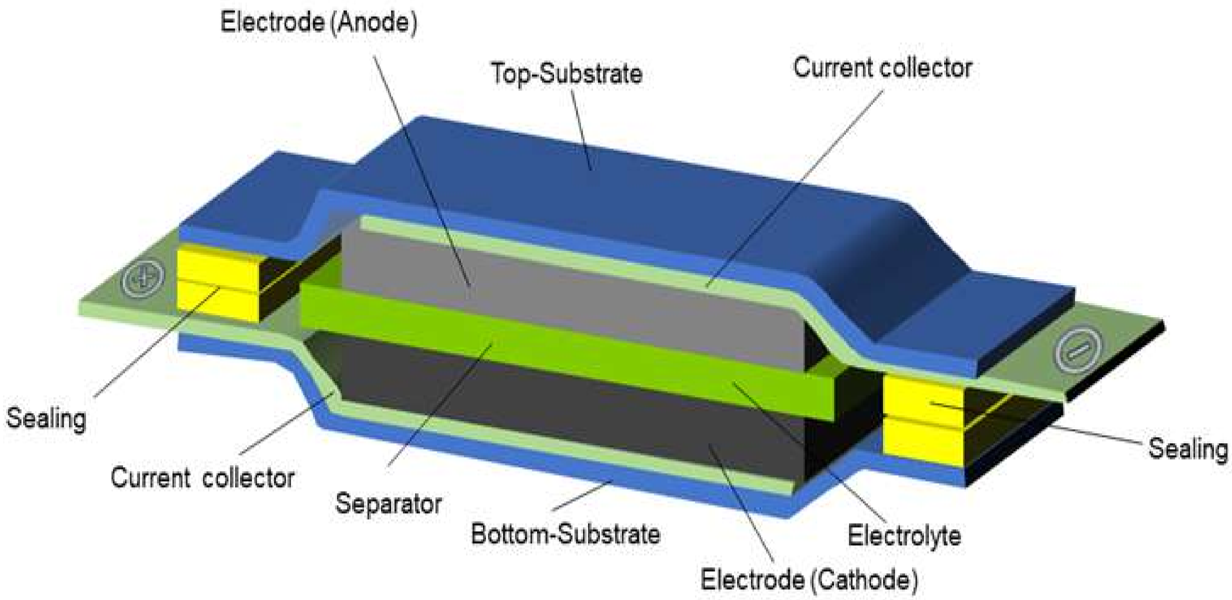
easy to be printed – this will be explained more in detail in the talk. But also, PSc have a serious chance because they are > 1000x rechargeable.

In the talk it will be shown which properties the PB and PSc should have and how they can be integrated. Furthermore, it will be shown how the energy sources can be perfectly adapted to the application. This is important to:

• Save materials, costs
• Make them more environmentally friendly
• Make them smaller, thinner, more flexible

Finally, it will be described how important a worldwide cooperation is in this field. There is expertise from many disciplines requested, along the value chain from materials, processes to the end-users.

Examples of applications for active PE were given.



Krebs M., Huebner G.
"Cell and Battery Design – Cells | Printed"
Chapter 8 in "Electrochemical Power Sources: Batteries, Fuel Cells, and Supercapacitors" edited by Jürgen Garche et al., Elsevier,2025, ISBN 978-0-323-95822-6, P. 557, Fig. 2

Biography:

M. Krebs has studied physics at the TU Clausthal where he continued with the PhD in electro-chemistry. From 1989 he lead the department of research of the battery manufacturer VARTA Microbattery. There he also developed Printed Batteries with partners. After he left VARTA in 2022 for retirement he continued as Independet Battery Consultant in the field of Printed Powr sources.

Colloidal Quantum Dots-based Gas Sensors

Huan Liu
Huazhong University of Science and Technology, China

Abstract:

Semiconductor gas sensors are undergoing rapid advancements in sensitivity, power efficiency, and integration. Colloidal quantum dots (CQDs)—nanoscale semiconductor particles with stable dispersibility in solution—exhibit unique quantum effects and exceptional solution-processability, positioning them as a promising next-generation sensing material for high-performance gas sensors. By exploiting the dynamic exchange of surface ligands on CQDs, we employed atomic-scale ligand engineering to synergistically optimize gas-sensing activity and material stability, ultimately fabricating quantum dot-based sensing films with pronounced room-temperature gas response and robust chemical stability.

To overcome the challenge of weak resistive signals caused by the inherently low conductivity of quantum dot films, we integrated high-mobility two-dimensional (2D) layered semiconductors into a thin-film transistor (TFT) architecture, enabling on-chip signal amplification. Furthermore, we introduced the concepts of receptor and transducer functional factors to elucidate the underlying electron transfer mechanisms in gas sensing. By incorporating an interfacial dielectric layer, we mitigated defect formation at the quantum dot/2D material heterojunction, significantly enhancing both gas-to-electrical signal conversion efficiency and long-term device stability. This work provides a foundational framework for the co-design and process optimization of semiconductor gas sensor chips, paving the way for future innovations in miniaturized and highly sensitive gas detection systems.

Biography:

HuanLiu is a professor at Huazhong University of Science and Technology (HUST), China. She obtained her master's and doctorate degrees from HUST in 2004 and 2008, respectively. She conducted postdoctoral research in colloidal quantum dot optoelectronic devices at the

University of Toronto, Canada from 2009 to 2011.Her research primarily focuses on intelligent gas sensors. Huan Liu has authored 133SCI papers with over 7,600 SCI citations. In 2023 and 2024, she has been honored among top 2% of scientists in the world by a Stanford University study that looks at the impact of scientists worldwide. In the past five years, she has made 22 invited presentations at academic conferences including the International Meeting on Chemical Sensors and the World Sensors summit. In recognition of her contributions, she was honored with the Young Scientist Award at Asian Conference on Chemical Sensor (ACCS 2017). Her achievements have been acknowledged with the first prize of Science and Technology Progress of the Chinese Society of Electronics, the first prize of Technological Invention of Hubei Province, and the first prize of Natural Science of Hubei Province.

Unmanned Platform Navigation Technology from the Perspective of Cross-domain Integration: Multi-sensor Cooperative Navigation and Positioning Methods

Liu Songlin
Information Engineering University, China

Abstract:

Unmanned systems have been widely applied in various fields, yet their positioning technologies are confronted with challenges, such as GNSS failure in denied environments, poor compatibility between indoor and outdoor positioning, and insufficient robustness of multi-sensor fusion. We have conducted studies focusing on multi-source sensor collaborative navigation and positioning, with the following achievements:
The core technical solutions are as follows:

Firstly, in terms of multi-source fusion and switching algorithms. A GNSS/INS/UWB dynamic-static error state Kalman filtering algorithm is proposed to address the defects of federated filtering. A cost function and SVM fusion algorithm are designed to enhance the system's robustness and parameter adaptability.

Then, in terms of UAV cluster positioning model. A UWB/IMU collaborative model is constructed. The improved CKF algorithm is employed to improve the positioning accuracy of a single UAV, and a multi-UAV collaborative network and improved algorithms are designed to enhance stability in occluded environments.

Furthermore, in the aspect of staged positioning for air-ground systems. In the remote guidance phase, vision and GNSS are used for mutual assistance; in the proximal accompanying phase, positioning is achieved through sensor data interaction; in the terminal landing phase, a multi-source relative positioning model is established, and an SVR-assisted method is proposed to cope with non-Gaussian noise.

Finally, with regard to UWB signal recognition. A CNN-BiLSTM + TL scheme is proposed, which achieves an F1-score of nearly 99% in small-sample scenarios, reduces training time by 68%, and improves adaptability to new environments.

The main experimental conclusions are as follows:

Firstly, regarding the positioning accuracy of fusion algorithms. On the one hand, EKF-PF fusion algorithm: The positioning error is significantly lower than that of pure IMU navigation and the single PF algorithm. Both the maximum error and average error are better than those of EKF, and it is not affected by the number of particles, effectively alleviating the particle degradation problem. On the other hand, for the WLS-EKF and DA-EKF adaptive switching algorithm: In scenarios with 3 LOS UWB base stations, the average error is 0.12 meters, and the maximum error is less than 0.5 meters; with 4 base stations, the average error is reduced to 0.09 meters; with a single base station, switching to DA-EKF results in an average error of less than 0.3 meters, which is far superior to the positioning accuracy of IMU/geomagnetism alone. Secondly, regarding cluster and dynamic positioning performance. The improved UWB/IMU collaborative model can achieve high-precision relative ranging between UAVs in complex indoor environments, and the cluster stability is improved; in the terminal landing phase of the air-ground system, the multi-source information fusion-based relative positioning model maintains centimeter-level accuracy even under non-Gaussian noise.

Thirdly, regarding signal recognition efficiency. In unmeasured environments, the CNN-BiLSTM+TL scheme achieves an NLOS signal identification accuracy close to that of the model trained with full data, while significantly reducing the costs of data collection and model training in new environments.

Above all, this research breaks through the limitations of traditional positioning, realizes seamless indoor-outdoor positioning, high-precision collaboration of UAV clusters, and dynamic positioning of air-ground systems, providing core support for the large-scale application of unmanned systems. It effectively solves key problems such as GNSS signal failure in complex environments, incompatibility between indoor and outdoor positioning, and insufficient robustness of multi-sensor fusion, and has important value for promoting the upgrading of the location service industry and ensuring safety.

Biography:

Liu Songlin is an associate professor at Information Engineering University, mainly engaged in teaching and research work on Beidou applications in location services, unmanned systems and intelligentization.

Towards Sustainable Electroanalysis: The Role of Emerging Electrode Materials

Lubomir Svorc
Slovak University of Technology, Slovakia

Abstract:

The growing demand for cost-effective, rapid, and environmentally friendly analytical techniques has positioned electroanalysis as a key methodology in modern sensor development. However, the sustainability of conventional electrode materials, such as noble metals and traditional carbon-based materials, is increasingly questioned due to their environmental impact, limited availability, and energy-intensive processing. In response, a new generation of electrode materials is emerging, offering significant advantages in terms of ecological footprint, affordability, and functional versatility. This contributions explores the recent advancements in effective, biocompatible and sustainable electrode materials and their integration into electrochemical sensing platforms. Emphasis is placed on sensors derived from novel and perspective carbonaceous materials such as boron-doped diamond and biochar. These materials are not only compatible with modern additive manufacturing and microfabrication techniques but also enable scalable, decentralized sensor production. Case studies will be presented to illustrate how emerging materials have been successfully applied to the electrochemical detection of selected pharmaceuticals. Particular attention will be given to the role of material design, such as porosity and surface functionalization in enhancing sensor performance evaluation, including sensitivity, selectivity, and reproducibility.

This work has been supported by Grant Agency of the Slovak Republic (VEGA No. 1/0036/24) and the Slovak Research and Development Agency under the Contract No. SK-PL-23-0013 and APVV-23-0066.

Biography:

Lubomir Svorc, D.Sc., aged 42, is the author and co-author of 170 scientific publications (3300 independent citations, H-index 36). At the Institute of Analytical Chemistry, Faculty of Chemical and Food Technology, Slovak University of Technology (STU) in Bratislava, his research is focused on the development of novel electroanalytical methods for the determination of trace levels of pharmaceuticals, food additives, and environmental species using progressive electrochemical sensors. Prof. Švorc serves as a principal investigator on multiple research projects and is actively involved in bilateral international collaborations. He currently holds several prominent positions, including President of the Slovak Chemical Society (2023–2026), Member of the Slovak National Committee of IUPAC, Delegate to the Division of Analytical Chemistry of EuChemS (DAC-EuChemS), National representative in IUPAC Division VII – Chemistry and Human Health. His work has been recognized with multiple awards, including Scientist of the Year of Slovakia 2014, Prize for Science and Technology 2024, ESET Science Award 2023 finalist, STU Teacher of the Year 2022, Best Publication of STU 2016, Metrohm Award Czech Republic for best publication by a young electroanalytical chemist (2013) and Laureate of the Element Europium in the IUPAC Periodic Table of Younger Chemists (Paris, 2019).

Three-dimensional Integrated Stretchable Devices for Human Machine Interface

Zhenlong Huang
University of Electronic Science and Technology of China, China

Abstract:

Stretchable devices have shown great potential in diverse fields such as healthcare, human-machine interaction, and bioinspired robotics due to their unique mechanical properties. However, most existing stretchable devices adopt a single-layer design with large physical dimensions and relatively low functional integration density, making it challenging to meet the growing demands for multi-sensing, real-time data processing, and other parallel tasks in complex application scenarios. Therefore, the development of three-dimensional integration strategies is urgently needed to enable multilayer stacking of stretchable devices and enhance their functional density. This presentation introduces a three-dimensional integration technique based on laser-selective etching, which enables multilayer stacking of stretchable devices with significantly improved integration density, demonstrating its potential in wearable health monitoring and human-machine interface applications.

Subsequently, a novel integration method for stretchable pressure sensor arrays with improved resistance to strain-induced interference is proposed. This approach enables the fabrication of high-density pressure sensor arrays while preserving functional stability under mechanical deformation. The resulting sensor arrays demonstrate great potential for applications in robotic bioinspired electronic skin systems.

Biography:

Zhenlong Huang is currently an Associate Professor at the School of Materials and Energy, University of Electronic Science and Technology of China (UESTC). He received both his Bachelor's (2012) and Ph.D. (2017) degrees from UESTC. From 2015 to 2017, he conducted academic research as a visiting scholar at the University of California, San Diego, focusing on stretchable electronics. In 2018, he joined Huawei Technologies Co., Ltd. as a senior engineer, where he worked on wearable sensor for blood pressure measurement. He returned to UESTC in 2022 to pursue academic research and teaching. His research interests include the three-dimensional integration of stretchable electronics, fabrication strategies for flexible sensors, and the development of wearable systems for health monitoring. He has published multiple research papers as the first author or corresponding author in prestigious journals such as Nature Electronics, Advanced Materials, ACS Nano, and others.

Novel Flexible Electrochemical Sensors for Visualized Clinics

Jia Zhu

University of Electronic Science and Technology of China, China

Abstract:

Real-time, non-invasive, and continuous monitoring of physiological parameters has great clinical implications in both health management and disease treatment. A plausible way towards this goal is to leverage the state-of-the-art flexible electronics technology that combines excellent mechanical pliability and electronic functionalities. Despite tremendous advances in flexible electronics technology, non-invasive and continuous monitoring of the trace amount of biomarkers in various biofluids remains a formidable challenge. In this talk, I will introduce strategies for designing sensitive flexible electrochemical sensors for real-time biomarker detection, including leveraging highly reactive porous materials or metal oxide thin films. In this regard, novel laser fabrication and large-scale transfer printing were adopted for the scalable production of flexible electrochemical sensors. Furthermore, field effect-based sensing and amplification mechanisms were incorporated into electrochemical sensors to push their detection limit from μM to nM. Collectively, our research aims to advance flexible electrochemical sensors for visualized clinical care, including early diagnosis and management of diseases, by leveraging the cutting-edge and interdisciplinary knowledge of materials science and biomedical engineering.

Biography:

Jia Zhu is an Assistant Professor in the School of Material and Energy Engineering at the University of Electronic Science and Technology, China. He received his Ph.D. degree in Engineering Science and Mechanics from Penn State University in 2020, and his Master's and Bachelor's degrees from Sun Yat-sen University in 2015 and 2012, respectively. From 2020 to 2021, he was a postdoctoral fellow at the Department of Engineering Science and Mechanics at Penn State University. He has published several papers in high-impact journals, including

Progress in Materials Science, Advanced Materials, Advanced Functional Materials, Small, Materials Today, ACS Nano, ACS Applied Materials & Interfaces, Nano Energy, Biosensors & Bioelectronics, Bioactive Materials, Nano-Micro Letters, etc. His research group currently focuses on the materials design and scalable fabrication of highly sensitive, self-powering, skin-interfaced biosensors based on novel porous or metal oxide thin films for the exploration of new pathogenesis and the development of visualized clinics.

Building Bridges Between Sensors, Systems, and Care: An IoT Perspective on Medical Devices

Unnikuttan Vijayan Velamkudy
Indian Institute of Technology, India

Abstract:

Modern healthcare is changing as a result of the integration of Internet of Things (IoT) technologies with medical devices, which make proactive patient management, data-driven insights, and continuous monitoring possible. Building Bridges Between Sensors, Systems, and Care: An IoT Perspective on Medical Devices is a presentation that examines how sophisticated biosensors and networked systems can change the way care is delivered from sporadic interventions to smooth, real-time health management.

We outline the major problems in healthcare, from fragmentation of disparate devices to ageing populations and clinician data overload, and show how IoT-enabled solutions can help. Our strategy lowers hospital readmissions and healthcare expenses while promoting early detection, managing chronic diseases, and individualised care pathways through the use of multi-signal biosensors and GDPR/MDR-compliant platforms.

We provide case studies of IoT-powered multi-parameter biosensors that offer thorough insights into cardiac and general health monitoring, based on real-world design principles and clinical validation. Reductions in emergency visits, preventive screenings, and quantifiable increases in patient satisfaction are among the results. Aggregated sensor data supports public health initiatives and predictive modelling by producing insightful information at the population level in addition to individual care.

In the end, this work demonstrates how integrating sensors, systems, and care via IoT can improve patient empowerment, quality of life, and the development of a sustainable healthcare future.

Biography:

Unnikuttan Vijayan Velamkudy is a biomedical engineer and medical software professional with over nine years of experience in regulated medical technology. He currently leads data and verification at Diametos GmbH in Germany, where he focuses on AI-driven diagnostics, MLOps infrastructure, and compliant software development. His work spans risk management, agile leadership, and standards such as IEC 62304 and ISO 14971. He holds an M.Tech in Biomedical Engineering from the Indian Institute of Technology (IIT) Hyderabad.

Unmanned Platform Navigation Technology from the Perspective of Cross-Domain Integration: Multi-Sensor Cooperative Navigation and Positioning Methods

Chenshaojie
Information Engineering University, China

Abstract:

Technologies such as unmanned aerial vehicles (UAVs), robotics, and autonomous driving have experienced rapid development. Diversified forms and multi-scenario applications have become the main characteristics of industrial applications.Facing increasingly complex application scenarios, continuous, reliable, and seamless high-precision positioning services have become an urgent requirement for tasks such as satellite launches, precise orbit determination, time synchronization, constellation networking, real-time navigation, and attitude control. Navigation, positioning, and environmental perception are the core technologies for the autonomous operation of deep-space unmanned probes. In the context of vehicle-integrated navigation using GNSS/SINS, substantial misalignment angle errors can result in slow convergence and challenges in achieving optimal precision when employing the traditional Extended Kalman Filter (EKF) method, particularly in complex environments. In the event of a GNSS satellite signal loss, the commonly employed vehicle-mounted augmentation algorithm Non holonomic constraint (NHC) also faces challenges in maintaining effective functionality. The paper redefines the error state model by incorporating attitude, velocity, and position into the Lie group space. Subsequently, a tightly-coupled filtering algorithm based on Left Invariant Kalman Filter (LInEKF) for NHC-assisted GNSS/SINS integration is devised. The proposed method undergoes validation through comparative analysis in both complex urban and open suburban environments using both loosely coupled and tightly coupled integration modes to demonstrate its superiority. The experimental results illustrate that the proposed method achieves rapid convergence and high precision in attitude estimation, even in the presence of significant heading misalignment angle errors. In complex scenarios, the heading accuracy

converges to below 0.5° within 50 seconds, while in open environments it reaches approximately 0.1°. This obviates the need for intricate and time-consuming attitude alignment steps and enables reliable and efficient positioning even under abnormal GNSS signal conditions, thereby demonstrating its practical value.

Biography:

Chen Shaojie is a lecturer at Information Engineering University. He obtained his doctoral degree in astrometry and celestial mechanics from the University of Chinese Academy of Sciences in 2022, and is engaged in work related to astronomical measurement and navigation, as well as multi-source sensor integrated navigation involving astronomy, inertia and GNSS.

Zero Trust Architecture for ERP Systems in Sensor-driven Industrial Environments

Abdulaziz A. Dandachi
C&S Wholesale Grocers

Abstract:

As enterprises transition into Industry 4.0, ERP systems are no longer separated back-office platforms; they are becoming intelligent, cloud-connected, and deeply integrated with sensor-rich IoT infrastructures. However, this transformation has also dramatically expanded the cyber attack surface. Legacy, perimeter-based security models fall short in protecting the dynamic, distributed, and data- intensive nature of modern ERP ecosystems.

In this keynote, I will share a strategic perspective on embedding Zero Trust principles into ERP systems, with a focus on real-world implementations in sensor-driven industrial environments. By rethinking trust boundaries, enforcing identity-driven policies, and leveraging telemetry from IoT devices, organizations can build ERP architectures that are resilient by design. I will walk through a practical Zero Trust blueprint tailored for ERP deployments, highlight lessons learned from the field, and discuss how these strategies align with evolving compliance landscapes and operational demands.

This session aims to bridge the gap between cyber security theory and enterprise IT reality, providing stake holders with a vision for how Zero Trust can empower secure digital transformation across various industries. Attendees will gain actionable insights on protecting ERP systems in the age of IoT, cloud, and intelligent automation.

Biography:

Abdulaziz A. Dandachi is a Senior Oracle Apps Developer and Technical Consultant based in Houston, TX. With over a decade of experience, he specializes in delivering scalable, enterprise-grade solutions for Fortune 500 companies and government sectors. Known for aligning technical execution with business strategy, Abdulaziz is a certified expert in Oracle applications and a trusted advisor in modernizing complex systems.

Wireless Recharging to Enhance Lifetime in Heterogeneous Networks

Nelofar Aslam

Dalian University of Technology, China

Abstract:

The advancement of wireless sensor networks (WSNs) has been facilitated by the Internet of Things (IoT), which enables the acquisition of data and tracking from remote locations. However, the sensor node's limited battery life presents a challenge concerning the scaling and sustainability of the network in the long term. The application of wireless power transfer technology has the advantage of allowing a wireless portable charging device (WPCD) to recharge energy-depleted nodes. While this approach helps in prolonging the lifetime of the sensor nodes as well as new challenges arise in the form of bottleneck nodes. The paper proposes a solution to this problem by formulating an optimization problem that uses ant colony optimization to determine the best travel route for the WPCD, focusing on conserving energy and increasing the stability of the network, which we term WPCD-ACO. As a result, an objective function is formulated with a time-varying z phase, which is designed to resolve the bottleneck nodes by means of linear programming. Correspondingly, a gateway node also updates the residual energy of all nodes in the network and sends this data to the IoT cloud. According to our results, the outage-optimal distance reached by WPCD-ACO is 6092 m, which is an improvement from 7225 m for the shortest path and 6142 m using Dijkstra's algorithm.In addition, the WPCD-ACO method decreases energy consumption more efficiently, bringing it down to 1.543 KJ. Monte Carlo simulations represent a clear superiority of WPCD-ACOover the existing methods concerning the network lifetime, stability, sensor nodes, survival rate, and energy consumption.

Biography:

Nelofar Aslam is a Post-Doctoral Researcher at Dalian University of Technology, China, specializing in Internet of Things (IoT)-integrated wireless sensor networks, energy-efficient routing protocols, 5G/6G communication systems, and Flying-Adhoc Networks. With a PhD in Electronics Science and Technology from Hebei University of Technology (China) and over a decade of experience in academia and research, Dr. Aslam has established herself as a leading contributor to advancements in renewable energy-powered sensor networks and intelligent data transmission systems. Her research focuses on optimizing energy consumption in dynamic wireless environments, particularly through machine learning-driven approaches.

Deep Convolutional Neural Network (CNN) for Three Dimensional (3-D) Objects Classification using Phase-only Digital Holographic Information

Uma Mahesh R N
ATME College of Engineering, India

Abstract:

A deep CNN-based binary classification of three-dimensional (3-D) objects for phase-only digital holographic information has been presented. The 3-D objects considered for the binary classification task are ‘triangle-square’, ‘circle-square’, ‘square-triangle’, and ‘triangle-circle’. The 3-D object ‘triangle-square’ is considered for the TRUE class and the remaining 3-D objects ‘circle-square’, ‘square-circle’, and ‘triangle-circle’ are considered for the FALSE class. The 3-D object volume ‘triangle-square’ was constructed in such a way that the feature triangle was considered in the first plane and the feature square was considered in the second plane. Each plane is separated by various distances d_1, and d_2 respectively. The remaining three 3-D objects were constructed similarly except that the different features were considered in the first and second planes respectively. The digital holograms of 3-D objects have been formed using the two-step phase-shifting digital holography (PSDH) technique and computationally post-processed to obtain phase-only digital holographic data. The phase-only image dataset was prepared by performing a rotation of 0.5° on each phase image. Then the training of the deep CNN was performed on a phase-only image dataset consisting of 2880 images to produce the results. The results such as the loss and accuracy curves, confusion matrix, Receiver Operating Characteristic (ROC), and precision-recall characteristic are shown for the confirmation of the work. The classification of phase images implies the classification of 3-D objects using deep CNN.

Biography:

Uma Mahesh R N is an Assoc.Prof at ATME College of Engineering, Mysore, Karnataka, India. He has served as an Asst. Prof, Guest Lecturer, and lecturer for eight and half years. He has pursued his research in Vellore Institute of Technology (VIT) Chennai and also qualified UGC-NET Exam in Dec 2019. He obtained his master's degree in VLSI Design and Embedded Systems in 2012 and bachelor's degree, B E in Electronics and Communication Engineering from Visveswaraya Technological University (VTU), Karnataka, India in 2009. His current research interests are in the areas of digital holography, artificial intelligence, and machine learning.)