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Education Information

Doctorate, Middle East Technical University, Graduate School Of Natural And Applied Sciences, Turkey 2013 - 2018

Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), Turkey 2011 - 2013

Undergraduate, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, Turkey 2007 - 2011

Foreign Languages

English, C1 Advanced

Dissertations

Postgraduate, A fully-integrated and battery-free interface electronics for low voltage vibration-based electromagnetic energy harvesters, Middle East Technical University, Graduate School of Natural and Applied Sciences, Elektrik Ve Elektronik Mühendisliği (YI) (Tezli), 2013

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2024 - Continues

Research Assistant, Middle East Technical University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, 2011 - 2019

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **A 4096 channel event-based multielectrode array with asynchronous outputs compatible with neuromorphic processors**
Cartiglia M., Costa F., Narayanan S., Bui C. H., Uluşan H., Risi N., Haessig G., Hierlemann A., Cardes F., Indiveri G.
NATURE COMMUNICATIONS, vol.15, no.1, 2024 (SCI-Expanded)
- II. **A CMOS-based highly scalable flexible neural electrode interface**

Zhao E. T., Hull J. M., Hemed N. M., Uluşan H., Bartram J., Zhang A., Wang P., Pham A., Ronchi S., Huguenard J. R., et al. SCIENCE ADVANCES, vol.9, no.23, 2023 (SCI-Expanded)

- III. **Repeated and On-Demand Intracellular Recordings of Cardiomyocytes Derived from Human-Induced Pluripotent Stem Cells**
Lee J., Ganswein T., Uluşan H., Emmenegger V., Saguner A. M., Duru F., Hierlemann A.
ACS SENSORS, vol.7, no.10, pp.3181-3191, 2022 (SCI-Expanded)
- IV. **Single Supply PWM Fully Implantable Cochlear Implant Interface Circuit with Active Charge Balancing**
Yigit H. A., Uluşan H., Koc M., YÜKSEL M. B., Chamanian S., KÜLAH H.
IEEE Access, vol.9, pp.52642-52653, 2021 (SCI-Expanded)
- V. **Fully Implantable Cochlear Implant Interface Electronics With 51.2- μ W Front-End Circuit**
Uluşan H., Chamanian S., Ilik B., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON VERY LARGE SCALE INTEGRATION (VLSI) SYSTEMS, vol.27, no.7, pp.1504-1512, 2019 (SCI-Expanded)
- VI. **Power-Efficient Hybrid Energy Harvesting System for Harnessing Ambient Vibrations**
Chamanian S., ÇİFTÇİ B., Uluşan H., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS I-REGULAR PAPERS, vol.66, no.7, pp.2784-2793, 2019 (SCI-Expanded)
- VII. **Implementation of Energy-Neutral Operation on Vibration Energy Harvesting WSN**
Chamanian S., Baghaee S., Uluşan H., Zorlu O., UYSAL BIYIKOĞLU E., KÜLAH H.
IEEE SENSORS JOURNAL, vol.19, no.8, pp.3092-3099, 2019 (SCI-Expanded)
- VIII. **An Adaptable Interface Circuit With Multistage Energy Extraction for Low-Power Piezoelectric Energy Harvesting MEMS**
Chamanian S., Uluşan H., Koyuncuoglu A., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON POWER ELECTRONICS, vol.34, no.3, pp.2739-2747, 2019 (SCI-Expanded)
- IX. **A Sub-500 μ W Interface Electronics for Bionic Ears**
Uluşan H., Muhtaroglu A., KÜLAH H.
IEEE ACCESS, vol.7, pp.132140-132152, 2019 (SCI-Expanded)
- X. **Optimization of AA-Battery Sized Electromagnetic Energy Harvesters: Reducing the Resonance Frequency Using a Non-Magnetic Inertial Mass**
Yasar O., Uluşan H., Zorlu O., Sardan-Sukas O., KÜLAH H.
IEEE SENSORS JOURNAL, vol.18, pp.4509-4516, 2018 (SCI-Expanded)
- XI. **A triple hybrid micropower generator with simultaneous multi-mode energy harvesting**
ULUSAN H., CHAMANIAN S., PATHIRANA W. P. M. R., ZORLU O., MUHTAROGLU A., KÜLAH H.
SMART MATERIALS AND STRUCTURES, vol.27, no.1, 2018 (SCI-Expanded)
- XII. **Highly Integrated 3 V Supply Electronics for Electromagnetic Energy Harvesters With Minimum 0.4 V-peak Input**
Uluşan H., Zorlu O., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, vol.64, no.7, pp.5460-5467, 2017 (SCI-Expanded)
- XIII. **A Highly Integrated 3 V Supply Electronics for Electromagnetic Energy Harvesters with Minimum 0.4 Vpeak Input**
Uluşan H., Zorlu Ö., Muhtaroglu A., KÜLAH H.
IEEE Transactions On Industrial Electronics, vol.64, pp.5460-5467, 2017 (SCI-Expanded)
- XIV. **Wearable battery-less wireless sensor network with electromagnetic energy harvesting system**
Chamanian S., Uluşan H., Zorlu O., Baghaee S., UYSAL BIYIKOĞLU E., KÜLAH H.
SENSORS AND ACTUATORS A-PHYSICAL, vol.249, pp.77-84, 2016 (SCI-Expanded)
- XV. **A Fully Integrated and Battery-Free Interface for Low-Voltage Electromagnetic Energy Harvesters**
Uluşan H., Gharehbaghi K., Zorlu O., Muhtaroglu A., KÜLAH H.
IEEE TRANSACTIONS ON POWER ELECTRONICS, vol.30, no.7, pp.3712-3719, 2015 (SCI-Expanded)
- XVI. **Powering-up Wireless Sensor Nodes Utilizing Rechargeable Batteries and an Electromagnetic Vibration Energy Harvesting System**

Articles Published in Other Journals

- I. **A full-custom fully implantable cochlear implant system validated in vivo with an animal model**
ULUŞAN H., YÜKSEL M. B., TOPÇU O., Yiğit H. A., YILMAZ A. Ö., Doğan M., Gülhan Yasar N., Kuyumcu İ., Batu A., Göksu N., et al.
Communications Engineering, vol.3, no.1, 2024 (Scopus)
- II. **Impedance Imaging of Cells and Tissues: Design and Applications**
Bounik R., Cardes F., ULUŞAN H., Modena M. M., Hierlemann A.
BME FRONTIERS, vol.2022, 2022 (ESCI)

Refereed Congress / Symposium Publications in Proceedings

- I. **Multi-Functional HD-MEA Platform for High-Resolution Impedance Imaging and Electrophysiological Recordings of Brain Slices**
Uluşan H., Diggelmann R., Bartram J., Magnan C., Kumar S., Hierlemann A.
IEEE BioSensors Conference (BioSensors), London, Canada, 30 July - 01 August 2023
- II. **An Adaptive Converter for Current Neural Stimulators Achieving up to 79% Power Dissipation Reduction**
Koc M., Chamanian S., Yigit H. A., ULUŞAN H., KÜLAH H.
IEEE International Symposium on Circuits and Systems (IEEE ISCAS), Daegu, South Korea, 22 - 28 May 2021
- III. **13.56 MHz Mixed Mode Rectifier Circuit for Implantable Medical Devices**
Engur Y., ULUŞAN H., Yigit H. A., Chamanian S., KÜLAH H.
19th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (Power MEMS), Krakow, Poland, 2 - 06 December 2019
- IV. **A Pulse-Width Modulated Cochlear Implant Interface Electronics with 513 μ W Power Consumption**
Yigit H. A., Uluşan H., YÜKSEL M. B., Chamanian S., ÇİFTÇİ B., Koyuncuoglu A., Muhtaroglu A., KÜLAH H.
2019 IEEE/ACM International Symposium on Low Power Electronics and Design, ISLPED 2019, Lausanne, Switzerland, 29 - 31 July 2019, vol.2019-July
- V. **Low-Cost Fully Autonomous Piezoelectric Energy Harvesting Interface Circuit with up to 6.14x Power Capacity Gain**
ÇİFTÇİ B., Chamanian S., Uluşan H., Yigit H. A., Koyuncuoglu A., Muhtaroglu A., KÜLAH H.
40th Annual IEEE Custom Integrated Circuits Conference (CICC), Texas, United States Of America, 14 - 17 April 2019
- VI. **Charge Balance Circuit for Constant Current Neural Stimulation with Less than 8 nC Residual Charge**
Yigit H. A., Uluşan H., Chamanian S., KÜLAH H.
IEEE International Symposium on Circuits and Systems (IEEE ISCAS), Sapporo, Japan, 26 - 29 May 2019
- VII. **A Pulse-Width Modulated Cochlear Implant Interface Electronics with 513 μ W Power Consumption**
Yigit H. A., Uluşan H., YÜKSEL M. B., Chamanian S., Ciftci B., Koyuncuoglu A., Muhtarolu A., KÜLAH H.
IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED), Lausanne, Switzerland, 29 - 31 July 2019
- VIII. **An Autonomous Interface Circuit Based on Self-Investing Synchronous Energy Extraction for Low Power Piezoelectric Energy Harvesters**
ÇİFTÇİ B., Chamanian S., Uluşan H., KÜLAH H.
18th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications, Florida, United States Of America, 4 - 07 December 2018, vol.1407
- IX. **WirelessEnergySim: A Discrete Event Simulator for an Energy-Neutral Operation of IoT Nodes**

Baghaee S., Chamanian S., Uluşan H., Zorlu O.

IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom), Batumi, Georgia, 4 - 07 June 2018, pp.122-126

- X. **Neural stimulation interface with ultra-low power signal conditioning circuit for fully-implantable cochlear implants**
Uluşan H., Chamanian S., Zorlu O., Muhtaroglu A., KÜLAH H.
2017 IEEE Biomedical Circuits and Systems Conference, BioCAS 2017, Torino, Italy, 19 - 21 October 2017, pp.1-4
- XI. **Neural Stimulation Interface with Ultra-Low Power Signal Conditioning Circuit for Fully-Implantable Cochlear Implant Applications**
ULUŞAN H., Chamanian S., Zorlu O., MUHTAROĞLU A., KÜLAH H.
BioCAS 2017, 19 - 21 October 2017
- XII. **An Adaptable Interface Circuit for Low Power MEMS Piezoelectric Energy Harvesters with Multi-Stage Energy Extraction**
Chamanian S., ULUŞAN H., Zorlu Ö., MUHTAROĞLU A., KÜLAH H.
Biomedical Circuits and Systems (BIOCAS) 2017, Torino, Italy, 19 - 21 October 2017
- XIII. **Thin Film PZT Acoustic Sensor for Fully Implantable Cochlear Implants**
İlik B., Koyuncuoğlu A., Uluşan H., Chamanian S., Işık Akçakaya D., Şardan Sukas Ö., KÜLAH H.
EuroSensors 2017, Paris, France, 3 - 06 September 2017, vol.1, no.4, pp.366
- XIV. **Bulk PZT Cantilever Based MEMS Acoustic Transducer for Cochlear Implant Applications**
Koyuncuoğlu A., İlik B., Chamanian S., Uluşan H., Ashrafi P., Işık D., KÜLAH H.
EuroSensors 2017, Paris, France, 3 - 06 September 2017
- XV. **Triple Hybrid Energy Harvesting Interface Electronics**
Uluşan H., Chamanian S., Pathirana W. M. P. R., Zorlu O., Muhtaroglu A., KÜLAH H.
16th International Conference on Micro- and Nano-Technology for Power Generation and Energy Conversion Applications (PowerMEMS), Paris, France, 6 - 09 December 2016, vol.773
- XVI. **A Self-Powered Hybrid Energy Scavenging System Utilizing RF and Vibration Based Electromagnetic Harvesters**
Uluşan H., Gharehbaghi K., Zorlu O., Muhtaroglu A., KÜLAH H.
15th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS), Massachusetts, United States Of America, 1 - 04 December 2015, vol.660
- XVII. **Optimized Electromagnetic Harvester with a Non-Magnetic Inertial Mass**
Uluşan H., Yasar O., Zorlu O., KÜLAH H.
Conference on EUROSENSORS, Freiburg, Germany, 6 - 09 September 2015, vol.120, pp.337-340
- XVIII. **Stage Optimization in Regulated Step-Up for Low Voltage Electromagnetic Energy Harvesters**
Uluşan H., Zorlu O., KÜLAH H., Muhtaroglu A.
5th International Conference on Energy Aware Computing Systems & Applications (ICEAC), Cairo, Egypt, 24 - 26 March 2015
- XIX. **A self-powered and efficient rectifier for electromagnetic energy harvesters**
ULUŞAN H., Zorlu Ö., Muhtaroglu A., KÜLAH H.
13th IEEE SENSORS Conference, SENSORS 2014, Valencia, Spain, 2 - 05 November 2014, vol.2014-December, pp.182-185
- XX. **A Self-Powered and Efficient Rectifier for Electromagnetic Energy Harvesters**
Uluşan H., Zorlu O., Muhtaroglu A., KÜLAH H.
13th IEEE Sensors Conference, Valencia, Spain, 2 - 05 November 2014
- XXI. **Demonstration of energy-neutral operation on a WSN testbed using vibration energy harvesting**
Baghaee S., Chamanian S., ULUŞAN H., Zorlu O., Uysal-Biyikoglu E., KÜLAH H.
20th European Wireless Conference, EW 2014, Barcelona, Spain, 14 - 16 May 2014, pp.47-52
- XXII. **A 180 nm Self-Powered Rectifier Circuit for Electromagnetic Energy Harvesters**
Uluşan H., Zorlu O., KÜLAH H., Muhtaroglu A.
4th Annual International Conference on Energy Aware Computing Systems and Applications (ICEAC), İstanbul, Turkey, 16 - 18 December 2013, pp.29-33

- XXIII. **An efficient integrated interface electronics for electromagnetic energy harvesting from low voltage sources**
Ulusan H., Gharehbaghi K., Zorlu O., Muhtaroglu A., KÜLAH H.
2013 17th International Conference on Solid-State Sensors, Actuators and Microsystems, TRANSDUCERS and EUROSENSORS 2013, Barcelona, Spain, 16 - 20 June 2013, pp.450-453
- XXIV. **Towards a Vibration Energy Harvesting WSN Demonstration Testbed 24th Tyrrhenian International Workshop on Digital Communications**
BAGHAEE S., ULUŞAN H., SORAYA C., OZGE Z., KÜLAH H., BIYIKLIOĞLU ÜNSAL E.
Green ICT (TIWDC), CENOVA, Italy, 23 - 25 September 2013
- XXV. **An Efficient Integrated Interface Electronics for Electromagnetic Energy Harvesting from Low Voltage Source**
ULUŞAN H., Gharehbaghi K., Zorlu Ö., MUHTAROĞLU A., KÜLAH H.
International Conference on Solid-State Sensors, Actuators, and Microsystems, Transducers, BARCELONA, Spain, 16 - 20 July 2013
- XXVI. **Towards a vibration energy harvesting WSN demonstration testbed**
Baghaee S., ULUŞAN H., Chamanian S., Zorlu O., KÜLAH H., Uysal-Biyikoglu E.
2013 24th Tyrrhenian International Workshop on Digital Communications - Green Information and Communications Technology, TIWDC 2013, Genoa, Italy, 23 - 25 September 2013
- XXVII. **A Self-Powered Rectifier Circuit for Low-Voltage Energy Harvesting Applications**
Ulusan H., Gharehbaghi K., Zorlu O., Muhtaroglu A., KÜLAH H.
International Conference on Energy Aware Computing, CYPRUS, 3 - 05 December 2012
- XXVIII. **A Fully Integrated Power Management Circuit for Electromagnetic Energy Harvesting Applications**
Gharehbaghi K., Ulusan H., Zorlu O., Muhtaroglu A., KÜLAH H.
International Conference on Energy Aware Computing, CYPRUS, 3 - 05 December 2012

Metrics

Publication: 46

Citation (WoS): 341

Citation (Scopus): 477

H-Index (WoS): 11

H-Index (Scopus): 14