

## Assoc. Prof. NİMET KORKMAZ

### Personal Information

**Office Phone:** [+90 0352 432 3838](tel:+9003524323838) Extension: 21343

**Email:** [nimetkorkmaz@kayseri.edu.tr](mailto:nimetkorkmaz@kayseri.edu.tr)

**Other Email:** [nimetdahasert@erciyes.edu.tr](mailto:nimetdahasert@erciyes.edu.tr)

**Web:** <https://avesis.kayseri.edu.tr/nimetkorkmaz>

### International Researcher IDs

ORCID: 0000-0002-7419-1538

Publons / Web Of Science ResearcherID: AFA-4789-2022

Yoksis Researcher ID: 167223

### Education Information

Doctorate, Erciyes University, Mühendislik Fakültesi, Elektrik- Elektronik Mühendisliği , Turkey 2012 - 2018

Postgraduate, Erciyes University, Mühendislik Fakültesi, Elektrik- Elektronik Mühendisliği , Turkey 2010 - 2012

Undergraduate, Erciyes University, Mühendislik Fakültesi, Elektrik- Elektronik Mühendisliği , Turkey 2006 - 2010

### Dissertations

Doctorate, ALTERNATIVE MODELS AND HARDWARE APPROACHES FOR THE REALIZATION OF THE NEUROMORPHIC CENTRAL PATTERN GENERATORS , Erciyes University, Mühendislik Fakültesi, Elektrik- Elektronik Mühendisliği , 2018

Postgraduate, INVESTIGATION OF THE ELECTRONIC HARDWARE OF BIOLOGICAL NEURON MODELS, Kayseri University, Mühendislik, Mimarlık ve Tasarım Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, 2012

### Research Areas

Electrical and Electronics Engineering, Electronic

### Academic Titles / Tasks

Assistant Professor, Kayseri University, Mühendislik, Mimarlık ve Tasarım Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, 2021 - Continues

Lecturer PhD, Erciyes University, 2019 - 2021

Research Assistant, Erciyes University, Mühendislik Fakültesi, Elektrik- Elektronik Mühendisliği , 2010 - 2018

### Academic and Administrative Experience

Deputy Head of Department, Kayseri University, Mühendislik, Mimarlık ve Tasarım Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, 2021 - Continues

### Courses

ELEKTRONİK DEVRELER I, Undergraduate, 2022 - 2023

ELEKTRONİK DEVRE LABORATUVARI I, Undergraduate, 2022 - 2023

ELEKTRONİK ELEMANLAR, Undergraduate, 2022 - 2023

NÖROMORFİK MÜHENDİSLİK VE MERKEZİ DESEN ÜRETEÇLERİ, Postgraduate, 2022 - 2023

## Advising Theses

Korkmaz N., Biyolojik nöron modellerinin FPGA gerçekleştirmelerinde Taylor Maclaurin seri açılım yönteminin kullanılması, Postgraduate, B.ŞİVGA(Student), 2023

Kılıç R., Korkmaz N., Memristive neuromorphic system calculations and applications, Postgraduate, A.YASİN(Student), 2021

## Jury Memberships

Doctoral Examination, Doctoral Examination, Erciyes Üniversitesi, October, 2023

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Investigation of Synchronization Control of the Memristive/Resistive-Coupled Neural Network with Noise Effect**  
Abdalla O., Baran A. Y., Korkmaz N., Kılıç R.  
INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS IN APPLIED SCIENCES AND ENGINEERING, vol.34, no.8, pp.2450099, 2024 (SCI-Expanded)
- II. **A New Nonlinear Ion Drift Model of Memristor Element and its Versatile Analog Reconfigurable Realizations**  
Randrianantenaina J. L., Baran A. Y., Korkmaz N., KILIÇ R.  
JOURNAL OF CIRCUITS SYSTEMS AND COMPUTERS, no.06, 2024 (SCI-Expanded)
- III. **A Digital Emulator Design for the Swimming Rhythmic Pattern Generator of a Lamprey**  
Korkmaz N.  
IEEE ACCESS, vol.12, pp.43849-43861, 2024 (SCI-Expanded)
- IV. **Functional emulator designs for a memristor model with programmable analog and digital platforms**  
Randrianantenaina J. L., BARAN A. Y., KORKMAZ N., KILIÇ R.  
JOURNAL OF COMPUTATIONAL ELECTRONICS, vol.22, no.1, pp.519-530, 2023 (SCI-Expanded)
- V. **An alternative perspective on determining the optimum fractional orders of the synaptic coupling functions for the simultaneous neural patterns**  
Korkmaz N., Saçu İ. E.  
NONLINEAR DYNAMICS, vol.1, pp.1-2, 2022 (SCI-Expanded)
- VI. **On addressing the similarities between STDP concept and synaptic/memristive coupled neurons by realizing of the memristive synapse based HR neurons**  
Baran A. Y., Korkmaz N., Öztürk İ., Kılıç R.  
ENGINEERING SCIENCE AND TECHNOLOGY-AN INTERNATIONAL JOURNAL-JESTECH, vol.32, pp.101062, 2022 (SCI-Expanded)
- VII. **An effective method for the reduction of the device utilization amount in experimental realization of a fractional-order system**  
SAÇU İ. E., KORKMAZ N.  
NONLINEAR DYNAMICS, vol.108, no.3, pp.2369-2384, 2022 (SCI-Expanded)
- VIII. **A Phase Control Method for the Dynamical Attractor of the HR Neuron Model: The Rotation-Transition Process and Its Experimental Realization**  
KORKMAZ N.

NEURAL PROCESSING LETTERS, vol.53, no.6, pp.3877-3892, 2021 (SCI-Expanded)

- IX. **An extensive FPGA-based realization study about the Izhikevich neurons and their bio-inspired applications**  
Karaca Z., KORKMAZ N., Altuncu Y., KILIÇ R.  
NONLINEAR DYNAMICS, vol.105, no.4, pp.3529-3549, 2021 (SCI-Expanded)
- X. **Evaluating the effectiveness of several synchronization control methods applying to the electrically and the chemically coupled hindmarsh-rose neurons**  
Cimen Z., Korkmaz N., Altuncu Y., KILIÇ R.  
BIOSYSTEMS, vol.198, 2020 (SCI-Expanded)
- XI. **An Alternative Approach for Setting the Optimum Coupling Parameters Among the Neural Central Pattern Generators Considering the Amplitude and the Phase Error Calculations**  
Korkmaz N., KILIÇ R.  
NEURAL PROCESSING LETTERS, vol.50, no.1, pp.645-667, 2019 (SCI-Expanded)
- XII. **A Comparative Study on Determining Nonlinear Function Parameters of the Izhikevich Neuron Model**  
Korkmaz N., Ozturk I., KALINLI A., KILIÇ R.  
JOURNAL OF CIRCUITS SYSTEMS AND COMPUTERS, vol.27, no.10, 2018 (SCI-Expanded)
- XIII. **Modeling, simulation, and implementation issues of CPGs for neuromorphic engineering applications**  
Korkmaz N., Ozturk I., KILIÇ R.  
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION, vol.26, no.4, pp.782-803, 2018 (SCI-Expanded)
- XIV. **The investigation of chemical coupling in a HR neuron model with reconfigurable implementations**  
Korkmaz N., Ozturk I., KILIÇ R.  
NONLINEAR DYNAMICS, vol.86, no.3, pp.1841-1854, 2016 (SCI-Expanded)
- XV. **Multiple perspectives on the hardware implementations of biological neuron models and programmable design aspects**  
Korkmaz N., Ozturk I., KILIÇ R.  
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.24, no.3, pp.1729-1746, 2016 (SCI-Expanded)
- XVI. **Implementations of Modified Chaotic Neural Models with Analog Reconfigurable Hardware**  
Korkmaz N., KILIÇ R.  
INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS, vol.24, no.4, 2014 (SCI-Expanded)
- XVII. **Experimental realizations of the HR neuron model with programmable hardware and synchronization applications**  
Dahasert N., Ozturk I., KILIÇ R.  
NONLINEAR DYNAMICS, vol.70, no.4, pp.2343-2358, 2012 (SCI-Expanded)

## Articles Published in Other Journals

- I. **The rotation-transition procedure of the Fitzhugh-Nagumo neuron model and its hardware verification**  
KORKMAZ N.  
PAMUKKALE UNIVERSITY JOURNAL OF ENGINEERING SCIENCES-PAMUKKALE UNIVERSITESI MUHENDISLIK BILIMLERI DERGISI, no.3, pp.316-323, 2024 (ESCI)
- II. **Synchronization of electrically and chemically coupled ızhikevich neuron model via backstepping control method**  
ÇİMEN Z., KORKMAZ N., Kiliç R.  
Niğde Ömer Halisdemir Üniversitesi Mühendislik Bilimleri Dergisi, vol.12, no.4, pp.1581-1587, 2023 (Peer-Reviewed Journal)
- III. **FPAA-based Implementation of the memristor device designed with the Tukey window function**  
Randrianantenaina J. L., Baran A. Y., Korkmaz N., Kılıç R.

- Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.38, no.3, pp.525-535, 2022 (Peer-Reviewed Journal)
- IV. **The FPGA-Based Realization of the Electromagnetic Effect Defined FitzHugh-Nagumo Neuron Model**  
Korkmaz N., Şıvga B.  
Chaos Theory and Applications , vol.4, no.2, pp.88-93, 2022 (Peer-Reviewed Journal)
- V. **The Application of the Rotation Control Process to the Electromagnetic Field-Effect Fitzhugh-Nagumo Neuron Model**  
Korkmaz N., Şıvga B.  
Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.38, no.2, pp.242-249, 2022 (Peer-Reviewed Journal)
- VI. **The fractional version and the circuit synthesis of the Rayleigh oscillator for the rhythmic pattern generators**  
Korkmaz N., Saçu İ. E.  
Niğde Ömer Halisdemir Üniversitesi Mühendislik Bilimleri Dergisi, vol.11, no.3, pp.584-591, 2022 (Peer-Reviewed Journal)
- VII. **Fraksiyonel dereceli FitzHugh-Nagumo nöron modelinin devre sentezi için alternatif bir yaklaşım**  
Korkmaz N., Saçu İ. E.  
Pamukkale Üniversitesi Mühendislik Bilimleri Dergisi, vol.28, no.2, pp.248-254, 2022 (ESCI)
- VIII. **Rotation-controlled Wilson-Cowan neuron model and its hardware**  
Korkmaz N.  
Niğde Üniversitesi Mühendislik Bilimleri Dergisi, vol.11, no.1, pp.77-83, 2022 (Peer-Reviewed Journal)
- IX. **Kimyasal Kuplajlı Izhikevich Nöron Modelinin Lyapunov Kontrol Metodu ile Senkronizasyonu**  
Karaca Z., Korkmaz N., Altuncu Y., Kılıç R.  
Avrupa Bilim ve Teknoloji Dergisi, vol.32, pp.736-740, 2021 (Peer-Reviewed Journal)
- X. **An efficient design procedure to implement the fractional-order chaotic jerk systems with the programmable analog platform**  
Korkmaz N., Saçu İ. E.  
Chaos Theory and Applications, vol.3, no.2, pp.59-66, 2021 (Peer-Reviewed Journal)
- XI. **The Circuit Synthesis of the Fractional-Order Chaotic Lorenz System**  
Saçu İ. E., Korkmaz N.  
Avrupa Bilim ve Teknoloji Dergisi, no.24, pp.42-43, 2021 (Peer-Reviewed Journal)
- XII. **Experimenting Chaos with Chaotic Training Boards**  
Kılıç R., Korkmaz N.  
Chaotic Modeling and Simulation (CMSIM), no.1, pp.71-84, 2016 (Peer-Reviewed Journal)

## Refereed Congress / Symposium Publications in Proceedings

- I. **FPA-based implementation of a memristor element defined by the Hanning window function**  
Randrianantenaina J. L., Baran A. Y., Korkmaz N., Kılıç R.  
V. INTERNATIONAL TURKIC WORLD CONGRESS ON SCIENCE AND ENGINEERING, Bishkek, Kyrgyzstan, 15 - 17 September 2023, pp.139-147
- II. **A Study on Implementation of the Motor Neuron in the Swimming Pattern Generator of a Lamprey Taşemen Balığının Yüzme Desen Üreticindeki Motor Nöronun Gerçekleştirimi Üzerine Bir Çalışma**  
Korkmaz N.  
31st IEEE Conference on Signal Processing and Communications Applications, SIU 2023, İstanbul, Turkey, 5 - 08 July 2023
- III. **On Swimming Movement Controller Neurons in the Central Pattern Generator of a Lamprey**  
Korkmaz N.  
10th International Conference on Advanced Technologies, Van, Turkey, 25 - 27 November 2022, pp.60
- IV. **Prodromakis pencere fonksiyonu ile tasarlanan memristör elemanın FPGA tabanlı gerçekleştirimi**  
Baran A. Y., Randrianantenaina J. L., Korkmaz N., Kılıç R.  
IV. International Turkic World Congress on Science and Engineering (TURK-COSE 2022), Niğde, Turkey, 23 - 24

June 2022, pp.1-6

- V. **Coupling the FitzHugh-Nagumo Neuron Model with Memristive Synapse Structure in Neuromorphic Systems**  
Baran A. Y., Korkmaz N., Kılıç R.  
2021 Innovations in Intelligent Systems and Applications Conference (ASYU), Elazığ, Turkey, 6 - 08 October 2021, pp.1-4
- VI. **A Programmable Analog Device Based Emulation Circuit Design for Excitatory and Inhibitory Neurons**  
Korkmaz N.  
3rd International Congress on Human-Computer Interaction, Optimization and Robotic Applications (HORA), Ankara, Turkey, 11 - 13 June 2021, pp.1-4
- VII. **Çok Kanatlı Bir Kaotik Sistemin Fraksiyonel Versiyonu ve Devre Sentezi**  
Saçu İ. E., Korkmaz N.  
29. IEEE Sinyal İşleme ve İletişim Uygulamaları Kurultayı (SIU2021), İstanbul, Turkey, 9 - 11 June 2021, pp.1-4
- VIII. **THE CIRCUIT SYNTHESIS OF THE FRACTIONAL-ORDER CHAOTIC RÖSSLER SYSTEM**  
Saçu İ. E., Korkmaz N.  
International Symposium of Scientific Research and Innovative Studies, ISSRIS 2021, Balıkesir, Turkey, 22 - 25 February 2021, pp.489-498
- IX. **Lyapunov Kontrolörünün Kuplajlı FHN Nöronlarının Sekronizasyonu Üzerindeki Etkisi ve Sistemin Donanım Doğrulaması**  
Çimen Z., Korkmaz N., Altuncu Y., Kılıç R.  
28. IEEE SİNYAL İŞLEME ve İLETİŞİM UYGULAMALARI KURULTAYI, Gaziantep, Turkey, 5 - 07 October 2020, pp.1-4
- X. **Farklı İki Kontrolör Kullanılarak Kuplajlanan Senkron FHN Nöronları Arasındaki Hata Değerlerinin Belirlenmesi**  
Çimen Z., Korkmaz N., Altuncu Y., Kılıç R.  
Elektrik, Elektronik ve Biyomedikal Mühendisliği Konferansı, ELECO 2018, Bursa, Turkey, 30 November - 01 December 2018, pp.47-51
- XI. **Hardware verification: Determining the parameters of the modified Izhikevich neuron model with genetic algorithm**  
Korkmaz N., Ozturk I., KALINLI A., KILIÇ R.  
10th International Conference on Electrical and Electronics Engineering, ELECO 2017, Bursa, Turkey, 29 November - 02 December 2017, pp.588-592
- XII. **Parameter estimations for the modified Izhikevich neuron model with optimization methods**  
Korkmaz N., Öztürk İ., Kalın A., Kılıç R.  
10th Chaotic Modeling and Simulation International Conference, Barcelona, Spain, 30 May - 02 June 2017, pp.1
- XIII. **A comparative study on experimental realizations of multiscroll chaos generators**  
Kılıç R., Korkmaz N., Öztürk İ.  
9th Chaotic Modeling and Simulation International Conference,, London, United Kingdom, 23 - 26 May 2016, pp.51
- XIV. **On the flexible hardware solutions of biological neuron models and synchronization applications**  
Korkmaz N., Kılıç R.  
21th International Conference on Nonlinear Dynamics of Electronics Systems,, Bari, Italy, 10 - 12 July 2013, pp.11
- XV. **An introductory study for chaos training board series**  
Kılıç R., Korkmaz N., Günay E.  
21th International Conference on Nonlinear Dynamics of Electronics Systems,, Bari, Italy, 10 - 12 July 2013, pp.1
- XVI. **Reconfigurable implementations of PWL-based multiscroll chaos generator**  
Arik S., Korkmaz N., Ozturk I., KILIÇ R., GÜNAY E.  
8th International Conference on Electrical and Electronics Engineering, ELECO 2013, Bursa, Turkey, 28 - 30 November 2013, pp.604-608
- XVII. **Merkezi desen üreteçleri için donanımsal çözümler**  
Günay E., Kılıç R., Korkmaz N., Öztürk İ.  
Elektrik - Elektronik ve Bilgisayar Mühendisliği Sempozyumu ELECO 2012, Bursa, Turkey, 29 November - 01

December 2012, pp.332-335

- XVIII. **Implementation of Izhikevich neuron model with field programmable devices Izhikevich nöron modelinin alan programlanabilir elemanlarla gerçekleştirimi**  
Dahasert N., Öztürk I., KILIÇ R.  
2012 20th Signal Processing and Communications Applications Conference, SIU 2012, Fethiye, Mugla, Turkey, 18 - 20 April 2012
- XIX. **SC-CNN based n-scroll generator: Implementation issues and experimental verification**  
KILIÇ R., GÜNAY E., Dahasert N.  
Nonlinear Dynamics of Electronic Systems, NDES 2012, Wolfenbuttel, Germany, 11 - 13 July 2012, pp.165-168
- XX. **External and internal control applications for SC-CNN-based chaotic circuit**  
GÜNAY E., KILIÇ R., Dahasert N.  
2011 20th European Conference on Circuit Theory and Design, ECCTD 2011, Linköping, Sweden, 29 - 31 August 2011, pp.620-623

## Supported Projects

- Kılıç R., Baran A. Y., Korkmaz N., Project Supported by Higher Education Institutions, Yüksek Başarımlı Nöral Ağ Yapıları Tasarımı ve Uygulama Tabanlı Performans İncelemesi, 2024 - 2026
- KORKMAZ N., Project Supported by Higher Education Institutions, İlkel Omurgalı Canlı Taşemen Balığının Yüzme Hareketi Kontrolörü Merkezi Desen Üretici Hücrelerinin Nöromorfolojik Gerçekleştirimi, 2022 - 2023
- Kılıç R., Korkmaz N., Project Supported by Higher Education Institutions, NÖROMORFOLOJİK MERKEZİ DESEN ÜRETEÇLERİNİN GERÇEKLEŞTİRİMİNDE ALTERNATİF MODEL VE DONANIM YAKLAŞIMLARI, 2016 - 2018
- Kılıç R., Günay E., Korkmaz N., Project Supported by Higher Education Institutions, KAOTİK DEVRELER VE SİSTEMLERİN İNCELENMESİNE DÖNÜK EĞİTİM SETLERİNİN TASARIMI VE GERÇEKLEŞTİRİLMESİ, 2011 - 2014
- Kılıç R., Korkmaz N., Project Supported by Higher Education Institutions, Biyolojik Nöron Modellerinin Elektronik Donanımlarının İncelenmesi, 2011 - 2012

## Scientific Refereeing

- Adıyaman Üniversitesi Mühendislik Bilimleri Dergisi, National Scientific Refreed Journal, October 2023
- NONLINEAR DYNAMICS, Journal Indexed in SCI-E, September 2023
- CHAOS THEORY AND APPLICATIONS, Other Indexed Journal, March 2023

## Metrics

- Publication: 50  
Citation (WoS): 82  
Citation (Scopus): 94  
H-Index (WoS): 4  
H-Index (Scopus): 4