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Education Information

Doctorate, Rensselaer Polytechnic Institute, Biyomedikal Mühendisliği, United States Of America 1998 - 2002
Postgraduate, Rensselaer Polytechnic Institute, Matematik, United States Of America 1997 - 1998
Postgraduate, Rensselaer Polytechnic Institute, Biyomedikal Mühendisliği, United States Of America 1994 - 1995
Undergraduate, Bogazici University, Faculty Of Engineering, Department Of Mechanıcal Engıneerıng, Turkey 1988 - 1992

Foreign Languages

English, C1 Advanced
German, B2 Upper Intermediate

Dissertations

Doctorate, A Penetration-Based Finite Element Method for Hyperelastic 3-D Biphasic Tissues in Contact, Rensselaer Polytechnic Institute, Biyomedikal Mühendisliği, Biomedical Engineering, 2002
Postgraduate, Exponential Shape Functions in the Hybrid Finite Element Analysis of Biphasic Soft Tissue Layers, Rensselaer Polytechnic Institute, Biyomedikal Mühendisliği, ., 1995

Research Areas

Biomedical Engineering, Biomechanics, Mechanical Engineering, Mechanical, Finite Element Methods, Continuous Mechanics, Engineering and Technology

Academic Titles / Tasks

Associate Professor, Cukurova University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği, 2018 - Continues
Assistant Professor, Cukurova University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği, 2018 - 2018
Assistant Professor, Cukurova University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği, 2004 - 2018

Academic and Administrative Experience

Supervised Theses

ÜN M. K., Development of nature inspired algorithms for identification of Spine on ultrasound images in spina bifida

cases, Doctorate, Ç.Cengizler(Student), 2019
ÜN M. K., Finite element investigation of the effect of conductivity changes in ischemic heart tissue on electrocardiography, Doctorate, H.Kaghazchi(Student), 2019
ÜN M. K., Finite Element Optimization for Estimating the Hyperelastic Material Properties of Biphasic Soft Tissues, Doctorate, A.Çalık(Student), 2016
ÜN M. K., Simulation of a ring fixator system with patient-specific bone modeling, Doctorate, E.Avşar(Student), 2016
ÜN M. K., Medikal Görüntü İşleme Tekniklerinin Biyomekanik Bir Sistem Üstünde Uygulamaları, Doctorate, A.Aydın(Student), 2015
ÜN M. K., Determination of diameter distribution of nerve fibers from compound action potential data, Postgraduate, H.KAGHAZCHİ(Student), 2013
ÜN M. K., Finite element simulation of the electromagnetic absorption in human head, Postgraduate, T.Doğan(Student), 2012
ÜN M. K., Simulation of GSM network traffic with respect to network service quality parameters, Postgraduate, A.HAKAN(Student), 2010

Published journal articles indexed by SCI, SSCI, and AHCI

I. **A new ring fixator system for automated bone fixation**
Aydi(ı)n A., U(Ü)n M. K.
INTERNATIONAL JOURNAL OF MEDICAL ROBOTICS AND COMPUTER ASSISTED SURGERY, vol.20, no.3, 2024 (SCI-Expanded)

II. **INVESTIGATION OF THE EFFECT OF CONDUCTIVITY CHANGES OF ISCHEMIC HEART TISSUE ON THE ST SEGMENT OF ELECTROCARDIOGRAPHY USING THE FINITE ELEMENT METHOD**
Kaghazchi H., Kerem Ün M. K.
TRANSACTIONS OF FAMENA, vol.48, no.2, pp.17-30, 2024 (SCI-Expanded)

III. **A novel iterative finite element optimisation method of solving inverse problem of electrocardiography to localise ischemic region on the heart**
Kaghazchi N., Ün M. K.
MAEJO INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY, vol.16, no.03, pp.275-290, 2022 (SCI-Expanded)

IV. **A novel evolutionary method for spine detection in ultrasound samples of spina bifida cases**
Cengizler Ç., Kerem Ü., Buyukkurt S.
COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, vol.198, 2021 (SCI-Expanded)

V. **A Nature-Inspired Search Space Reduction Technique for Spine Identification on Ultrasound Samples of Spina Bifida Cases**
Cengizler Ç., Ün M. K., Büyükkurt S.
Scientific Reports, pp.1, 2020 (SCI-Expanded)

VI. **Estimation of depth-dependent material properties of biphasic soft tissues through finite element optimization and sensitivity analysis**
ÜN M. K., ÇALIK A.
MEDICAL ENGINEERING & PHYSICS, vol.74, pp.73-81, 2019 (SCI-Expanded)

VII. **An analytical method to create patient-specific deformed bone models using X-ray images and a healthy bone model**
ÜN M. K., AVŞAR E., AKÇALI İ. D.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.104, pp.43-51, 2019 (SCI-Expanded)

VIII. **Sonlu Elemanlar Yöntemi ve Hassasiyet Analizi ile İki Fazlı Yumuşak Dokuların Malzeme Özelliklerinin Tayini**
ÜN M. K.
Çukurova Üniversitesi Mühendislik-Mimarlik Fakültesi Dergisi, vol.34, pp.201-210, 2019 (SCI-Expanded)

IX. **Determination of Nerve Fiber Diameter Distribution From Compound Action Potential: A Continuous**

Approach
ÜN M. K., Kaghazchi H.
IEEE TRANSACTIONS ON NEURAL SYSTEMS AND REHABILITATION ENGINEERING, vol.26, no.1, pp.77-83, 2018 (SCI-Expanded)

X. **Relevance of inhomogeneous-anisotropic models of human cortical bone: a tibia study using the finite element method**
Un K., ÇALIK A.
BIOTECHNOLOGY & BIOTECHNOLOGICAL EQUIPMENT, vol.30, no.3, pp.538-547, 2016 (SCI-Expanded)

XI. **A theoretical and experimental investigation of lateral deformations in a unilateral external fixator**
Ün K., AKÇALI İ. D., Gülşen M.
Journal of Medical Devices, Transactions of the ASME, vol.1, no.2, pp.165-172, 2007 (SCI-Expanded)

XII. **A penetration-based finite element method for hyperelastic 3D biphasic tissues in contact. Part II: Finite element simulations**
Un K., SPILKER R. L.
JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME, vol.128, no.6, pp.934-942, 2006 (SCI-Expanded)

XIII. **A penetration-based finite element method for hyperelastic 3D biphasic tissues in contact: Part 1 - Derivation of contact boundary conditions**
Un K., SPILKER R.
JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME, vol.128, no.1, pp.124-130, 2006 (SCI-Expanded)

XIV. **The effects of side-artifacts on the elastic modulus of trabecular bone**
Un K., BEVILL G., KEAVENY T. M.
JOURNAL OF BIOMECHANICS, vol.39, no.11, pp.1955-1963, 2006 (SCI-Expanded)

XV. **An evaluation of three-dimensional diarthrodial joint contact using penetration data and the finite element method**
DUNBAR W., Un K., DONZELLI P., SPILKER R.
JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME, vol.123, no.4, pp.333-340, 2001 (SCI-Expanded)

Articles Published in Other Journals

I. **A Historical Perspective to Biomedical Engineering and Biomedical Engineering Education in Turkey**
ÜN M. K.
International Journal of Advances in Biomedical Engineering, vol.1, no.1, pp.1-8, 2022 (Peer-Reviewed Journal)

II. **An Internal Clustering Validation Based Fitness Approach for Meta-Heuristic Diagnosis of Cervical Cancer**
ÜN M. K., GÜVEN M., CENGİZLER Ç., ERDOĞAN Ş., UĞUZ A. H.
Frontiers in Signal Processing, vol.4, no.2, pp.57-67, 2020 (Peer-Reviewed Journal)

III. **Evaluation of Calinski-Harabasz Criterion as Fitness Measure for Genetic Algorithm Based Segmentation of Cervical Cell Nuclei**
CENGİZLER Ç., ÜN M. K.
Journal of Advances in Mathematics and Computer Science, vol.22, pp.1-13, 2017 (Peer-Reviewed Journal)

IV. **Automatic 3D modeling and simulation of bone-fixator system in a novel graphical user interface**
AVŞAR E., Ün K.
Informatics in Medicine Unlocked, vol.2, pp.78-91, 2016 (Scopus)

V. **Tekil Olmayan Fiksatör Otomasyonu**
AYDIN A., AKÇALI İ. D., AVŞAR E., ÜN M. K., MUTLU H., İBRİKÇİ T., BİÇER Ö. S., ÖZKAN C., Durmaz A.
Çukurova Üniversitesi Mühendislik Mimarlık Fakültesi Dergisi, vol.30, no.2, pp.81-92, 2015 (Peer-Reviewed Journal)

VI. **Tekil Olmayan Fiksatör Otomasyonu**
AYDIN A., Akcali I. D., AVŞAR E., ÜN M. K., Mutlu H., İBRİKÇİ T., BİÇER Ö. S., ÖZKAN C., Durmaz A.
ÇUKUROVA ÜNİVERSİTESİ MÜHENDİSLİK MİMARLIK FAKÜLTESİ DERGİSİ, vol.30, no.2, pp.81-92, 2015 (Peer-Reviewed Journal)

VII. **Ortopedik Uygulamalarda Bilgisayarlı Denetim Sistemi**
AVŞAR E., AKÇALI İ. D., AYDIN A., ÜN M. K., MUTLU H., İBRİKÇİ T., ÖZKAN C., BİÇER Ö. S.
Çukurova Üniversitesi Mühendislik Mimarlık Fakültesi Dergisi, vol.30, no.2, pp.93-101, 2015 (Peer-Reviewed Journal)

VIII. **Ortopedik Klinik Uygulamalar için bir Fiksatörün Tasarımı İmalatı ve Kullanılışı**
AKÇALI İ. D., Şahlar M. O., AYDIN A., İBRİKÇİ T., ÜN M. K., ESEN R., Gülşen M., Bayram H.
Mühendis ve Makina, vol.51, 2010 (Peer-Reviewed Journal)

Books

I. **Constitutive models of cartilage tissue**
ÜN M. K.
in: Cartilage Tissue and Knee Joint Biomechanics: Fundamentals, Characterization and Modelling, AMIRSADEGH REZAZADEH NOCHEHDEHI, FULUFHELO NEMAVHOLA, SABU THOMAS, HANNA J. MARIA, Editor, Academic Press , pp.289-311, 2024

II. **Constitutive models of cartilage tissue**
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III. **Biyomekanik**
AKDOĞAN G., ÜN M. K., CANPOLAT Ç.
in: Biyomedikal Mühendisliğinin Temelleri, Asyalı Musa Hakan, Kara Sadık, Yılmaz Bülent, Editor, Nobel Yayınevi, Ankara, pp.97-149, 2016

IV. **Fiksatör Otomasyonu**
AKÇALI İ. D., ÜN M. K., İBRİKÇİ T., ESEN R.
Tubitak Proje No:106M466 Kesin Raporu, Adana, 2010

V. **Kas-İskelet Sistemi Biyomekaniği, Cilt 2**
AKÇALI İ. D., Gülşen M., ÜN M. K.
Adana, 2009

VI. **Kas-İskelet Sistemi Biyomekaniği, Cilt 1**
AKÇALI İ. D., Gülşen M., ÜN M. K.
Adana, 2009

VII. **Modelleme ve Benzetimde Temel İlkeler**
ÜN M. K.
in: Kas-İskelet Sistemi Biyomekaniği, İ.D. Akçalı, M. Gülşen, K. Ün, Editor, Adana, Adana, pp.179-196, 2009

VIII. **Eksternal Fiksatörler**
AKÇALI İ. D., Gülşen M., ÜN M. K., Mutlu H.
in: Kas-İskelet Sistemi Biyomekaniği, İ.D. Akçalı, M. Gülşen, K. Ün, Editor, Adana, Adana, pp.521-664, 2009

IX. **Malzemeler, Biyomalzemeler ve Kas-İskelet Sistemi Uygulamaları**
ÜN M. K., SAVAŞ M. A., ALTINTAŞ S.
in: Kas İskelet Sistemi Biyomekaniği Cilt 1, Akçalı İbrahim Deniz, Gülşen Mahir, Ün Mustafa Kerem, Editor, Rekmay Matbaa, Ankara, pp.33-94, 2009

X. **Yumuşak Dokuların Mekaniği: Kıkırdak, Menisküs, Tendon ve Bağ Dokuları**
ÜN M. K.
in: Kas-İskelet Sistemi Biyomekaniği, İ.D. Akçalı, M. Gülşen, K. Ün, Editor, Adana, Adana, pp.251-324, 2009

XI. **Malzemeler, Biyomalzemeler ve Kas-İskelet Sistemi Uygulamaları**

Savaş M. A., ÜN M. K., Altıntaş S.
in: Kas-İskelet Sistemi Biyomekaniği, İ.D. Akçalı, M. Gülşen, K. Ün, Editor, Adana, Adana, pp.33-94, 2009

Papers Published in Refereed Scientific Meetings

I. **The Effect of Ischemic Conductivity and Regularization Methods for Localizing the Ischemic Region on the Heart: A Finite Element Study**
Kaghazchi H., ÜN M. K.
Uluslararası Multidisipliner Doğa Bilimleri ve Mühendislik Kongresi, ICOMNAS 2021, Ankara, Turkey, 01 December 2021

II. **Reconstruction of epicardial potentials from electrocardiography signals using regularization methods**
ÜN M. K., Kaghazchi H.
2nd International Scientific-Practical Conference - Modern Information, Measurement And Control Systems: Problems And Perspectives (MIMCS 2020), Baku, Azerbaijan, 02 December 2020

III. **Finite Element Inverstigation of Effect of Conductivity Changes in Ischemic Heart Tissue on Electrocardiography Reading**
Kaghazchi H., ÜN M. K.
Uluslararası 19 Mayıs Multidisipliner Çalışmalar Kongresi, Samsun, Turkey, 17 - 19 May 2019, pp.126

IV. **FINITE ELEMENT INVESTIGATION OF THE EFFECT OF CONDUCTIVITY CHANGES IN ISCHEMIC HEART TISSUE ON ELECTROCARDIOGRAPHY READING**
Kaghazchi H., ÜN M. K.
Uluslararası 19 Mayıs Multidisipliner Çalışmalar Kongresi, Samsun, Turkey, 17 - 19 May 2019, pp.126

V. **An Unsupervised Clustering Based Feature Evaluation Approach for Breast Cancer Identification**
CENGİZLER Ç., ÜN M. K.
International Congress on Biological and Medical Sciences, Niğde, Turkey, 30 October - 03 November 2018, pp.59

VI. **Finite Element Optimization for Estimating Inhomogeneous Material Properties of Biphasic Soft Tissues**
ÇALIK A., ÜN M. K.
9th International Biomechanics Congress, Eskişehir, Turkey, 12 - 22 September 2018, pp.448-451

VII. **Finite element optimization for estimating depth-dependent material properties of biphasic soft tissues**
ÜN M. K., ÇALIK A.
The 23rd Congress of the European Society of Biomechanics, Sevilla, Spain, 2 - 05 July 2017

VIII. **Finite Element Optimization for Estimating the Depth-dependent Material Propertiesof Biphasic Soft Tİssue**
ÜN M. K., ÇALIK A.
23 Congress of European Society of Biomechanics, Sevilla, Spain, 2 - 05 July 2017

IX. **Singularity analysis of a fixator by closest points approach Fiksatörün En Yakin Noktalar Yaklaşimiyla Tekillik Denetimi**
AKÇALI İ. D., AVŞAR E., DURMAZ A., Sağdiç I., AYDIN A., ÜN M. K., Mutlu H., İBRİKÇİ T., ÖZKAN C., BİÇER Ö. S.
Medical Technologies National Conference, TIPTEKNO 2015, Bodrum, Turkey, 15 - 18 October 2015

X. **Fiksatörün En Yakın Noktalar Yaklaşımıyla Tekillik Denetimi**
AKÇALI İ. D., AVŞAR E., AYDIN A., ÜN M. K., İBRİKÇİ T.
Tıp Teknolojileri Ulusal Kongresi, TIPTEKNO'15, Muğla, Turkey, 15 - 18 October 2015

XI. **Singularity Detection İn an External Fixator of Gough Stewart Platform Type**
AKÇALI İ. D., AVŞAR E., DURMAZ A., AYDIN A., ÜN M. K., İBRİKÇİ T., MUTLU H., ÖZKAN C., BİÇER Ö. S.
International Conference on Innovative Technologies, Dubrovnik, Croatia, 9 - 11 September 2015, pp.284-287

XII. **Singularity Detection in an External Fixator of Gough-Stewart Platform Type**
AKÇALI İ. D., AVŞAR E., Durmaz A., AYDIN A., ÜN M. K., İBRİKÇİ T., Mutlu H., ÖZKAN C., BİÇER Ö. S.

International Conference on Innovative Technologies, IN-TECH 2015, Dubrovnik, Croatia, 9 - 11 September 2015, pp.284-287

XIII. **A Graphical User Interface for an External Fixation System**
AVŞAR E., ÜN M. K., AKÇALI İ. D.
IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), Valencia, Spain, 1 - 04 June 2014, pp.480-483

XIV. **A Gradient Optimization Approach for the Determination of Diameter Distribution of Nerve Fibers from Compound Action Potential Data**
ÜN M. K., Kaghazchi H.
10th International Conference on Electronics, Computer and Computation, Ankara, Turkey, 4 February - 09 July 2013, vol.1, no.2, pp.5-8

XV. **Pollution of drinking water transported by corroded metallic pipelines**
Hussain A. M., Sanoussi A. A., Hussain H. A. M.
10th International Conference on Modelling, Monitoring and Management of Water Pollution, Bucharest, Romania, 9 - 11 June 2010, vol.135, pp.61-69

XVI. **Substantial Discrepancy Between In Vitro and In Situ Behavior of Trabecular Bone**
BEVILL G., ÜN M. K., KEAVENY T. M.
52nd Annual Meeting of Orthopaedic Research Society, Chicago, United States Of America, 9 - 10 July 2006, pp.3-7

XVII. **Comparison of linear and nonlinear models for biphasic soft tissues in contact**
ÜN M. K., SPILKER R. L.
2001 Bioengineering Conference, Snowbird, Ut, United States Of America, 4 - 09 July 2001, pp.3-7

XVIII. **Comparison of Linear and Nonlinear Models for Biphasic Tissues in Contact**
ÜN M. K., Spilker R.
ASME 2001 Bioengineering Conference, Snowbird, UT, United States Of America, 27 June - 01 July 2001, vol.50, pp.373-374

XIX. **Finite element simulation of biphasic soft tissue contact with application to the shoulder joint**
Un K., SPILKER R.
23rd Annual International Conference of the IEEE-Engineering-in-Medicine-and-Biology-Society, İstanbul, Turkey, 25 - 28 October 2001, vol.23, pp.1504-1507

XX. **Finite element simulation of cartilage mechanics during diarthrodial joint motion using physiological data**
ÜN M. K., DONZELLI P., SPILKER R. L.
IMECE 2000, Orlando, United States Of America, 9 - 24 July 2000, pp.3-7

XXI. **Finite element methods for solving human joint mechanics problems**
SPILKER R. L., DONZELLI P., ÜN M. K.
International Conference on Computational Methods in Biomechanics and Biomedical Engineering, Lizbon, Portugal, 2 - 16 July 1999, pp.5-6

XXII. **Simulation of biphasic soft tissue contact in the human glenohumeral joint using penetration data**
ÜN M. K., DONZELLI P., SPILKER R. L., Wang V. M., Ateshian G. A., Mow V. C.
1999 Bioengineering Conference, Big Sky, Mt, United States Of America, 1 - 09 July 1999, pp.56-87

XXIII. **Simulation on Biphasic Soft Tissue Contact in the Human Glenohumeral Joint Using Penetration Data**
ÜN M. K., Donzelli P., Spilker R., Wang V., Ateshian G., Mow V.
ASME 1999 Bioengineering Conference, Big Sky, MT, United States Of America, 16 - 20 June 1999, vol.42, pp.115-116

Metrics

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