Assoc. Prof. ADEM POLAT

Personal Information

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Publons / Web Of Science ResearcherID: AAF-6531-2019
Yoksis Researcher ID: 291304

Biography

Assoc. Prof. Dr. Adem POLAT is currently with the Department of Electrical-Electronics Engineering at **Çanakkale Onsekiz Mart University** (COMU). Dr. Adem POLAT was a **Visiting Professor and Postdoctoral Research Fellow** in the Shin Lab, the Division of Engineering in Medicine, **Harvard Medical School**. Dr. Adem POLAT has been granted by **TUBITAK 2219-International Postdoctoral Research Fellowship Program** in 2023. Dr. POLAT received his B.Sc. degree in Electronics and Communication Engineering, at **Istanbul Technical University**, in 2002. He received his M.Sc. and Ph.D. degrees in Satellite Communications and Remote Sensing Program at **Istanbul Technical University** in 2012 and 2018, respectively. He also received a B.Soc.Sc. degree in the Department of Philosophy at Anadolu University, in 2015. He was with the Division of Engineering in Medicine, Department of Medicine, Brigham and Women's Hospital, **Harvard Medical School** and **Harvard-MIT Health Sciences and Technology** as a fellowship of **TUBITAK 2214-A program** from 2016 to 2017 as well.

Dr. POLAT is also the founder of **OpTomo Medical Technologies Corp. Company** in Çanakkale Technology Development Zone Inc. and the founder and coordinator of **Biomedical-Electronics Deep Technology Laboratory** in COMU. His company and research team design, develop, and produce high-technology and deep-technology medical devices and products (*e.g. OpTomo: Robotic optical tomography device that images breast tumors in 3D with angular optical scanning*).

Dr. Adem POLAT has **PATENT and PCT** applications in the field of 3D imaging systems and his research focuses on 3D image reconstruction methodologies for digital breast tomosynthesis and CT, microscale biological imaging, and optical 3D cross-sectional imaging applications. His patent was honored with the **BEST ACADEMIC INVENTION AWARD** by **ISIF'23 8th Istanbul International Invention Fair**, organized by the Turkish Patent and Trademark Office in cooperation with the International Federation of Inventors' Union, the World Intellectual Property Organization, and the European Patent Office in 2023.

In 2023, Dr. Polat received the **FIRST PRIZE** in the TET Health Applications Category at the **TET Project Market 12 Competition** with the project titled '*Deep Technology-Based Tumor 3D Imaging Device*'.

His research and projects in biomedical imaging have been supported by TUSEB, TUBITAK, and BAP. He has 12 SCIE-indexed articles and more than a total of 20 papers. *One of his articles was **featured on the outside FRONT COVER of the Lab-on-a-Chip journal** and recognized as one of the **HOT papers** of 2019 in the journal.*

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Links for Adem POLAT:

Harvard Medical School, Shin Lab

Google Scholar

Linkedin

Youtube

COMU Faculty Member, Electronics Eng. Dept.

Dr.Polaton

Education Information

2023 - 2023	Post Doctorate, Harvard University, Harvard Medical School, Division of Engineering in Medicine, United States Of America
2017 - 2018	Doctorate, Harvard University, Harvard Medical School, Harvard-MIT Health Sciences and Technology , TÜBİTAK 2214/A Yurt Dışı Doktora Araştırma Burslusu, 2017 - 2018, United States Of America
2012 - 2018	Doctorate, Istanbul Technical University, Bilişim Enstitüsü, Uydu Haberleşmesi ve Uzaktan Algılama, Turkey
2016 - 2016	Doctorate, Universidade de Lisboa, Institute of Biophysics and Biomedical Engineering (IBEB) of the Faculty of Sciences, Portugal
2010 - 2015	Undergraduate, Anadolu University, Open Educatıon Faculty, Department Of Phılosophy, Turkey
2009 - 2012	Postgraduate, Istanbul Technical University, Bilişim Enstitüsü, Uydu Haberleşmesi ve Uzaktan Algılama, Turkey
1996 - 2002	Undergraduate, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, Turkey

Foreign Languages

English, C1 Advanced

Dissertations

2018	Compressed sensing based 3D image reconstruction in digital breast tomosynthesis and micro-bioimaging, Istanbul Technical University, Bilişim Enstitüsü, Uydu Haberleşmesi ve Uzaktan Algılama, Doctorate
2012	Adıyaman civarındaki hidrokarbon sızıntılarının Landsat TM uydu görüntüleriyle belirlenmesi, Istanbul Technical University, Bilişim Enstitüsü, Uydu Haberleşmesi ve Uzaktan Algılama, Postgraduate

Research Areas

Signal Processing, Biomedical Image Processing, Biosignal Processing

Academic Titles / Tasks

2022 - Continues	Associate Professor, Canakkale Onsekiz Mart University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği
2023 - 2023	Associate Professor, Harvard University, Harvard Medical School, Engineering in Medicine
2021 - 2022	Assistant Professor, Canakkale Onsekiz Mart University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği
2018 - 2021	Assistant Professor, Adana Alparslan Türkeş Science And Technology University, Faculty Of Engıneerıng, Department Of Electrıcal And Electronıc Engıneerıng

Academic and Administrative Experience

2018 - 2021	Rektörlüğe Bağlı Birim Başkanı, Adana Alparslan Türkeş Science And Technology University, Rectorate, Dış İlişkiler Birimi
2018 - 2021	Head of International Office, Adana Alparslan Türkeş Science And Technology University, Rectorate, Uluslararası Öğrenci Ofisi
2018 - 2021	Erasmus Program Institutional Coordinator, Adana Alparslan Türkeş Science And Technology University, Rectorate, Erasmus Kurum Koordinatörlüğü

Courses

2023 - 2024	Biomedical Engineering, Undergraduate
2023 - 2024	Sayısal İşaret İşleme, Undergraduate
2021 - 2022	Tıbbi Görüntüleme Temelleri, Undergraduate
2021 - 2022	Doktorlar İçin Tiyatro, Undergraduate
2022 - 2023, 2021 - 2022	Digital Signal Processing, Undergraduate
2021 - 2022	Proje Yazımı ve Akademik Sunum Teknikleri, Postgraduate
2020 - 2021, 2019 - 2020, 2018 - 2019	Engineering Mathematics I, Undergraduate
2019 - 2020, 2018 - 2019	Linear Algebra, Undergraduate
2020 - 2021, 2019 - 2020	Differential Equations, Undergraduate
2019 - 2020	Advanced Wavelet Theory, Doctorate
2019 - 2020, 2018 - 2019	Wavelet Theory, Postgraduate
2019 - 2020, 2018 - 2019	Research Methodology and Scientific Ethic, Doctorate
2019 - 2020	Principles of Image Processing, Postgraduate
2019 - 2020, 2018 - 2019	Research Methodology and Scientific Ethic, Postgraduate
2018 - 2019	Basics of Biomedical Imaging, Postgraduate
2019 - 2020	Theater, Undergraduate
2018 - 2019	Biomedical Imaging, Undergraduate

Advising Theses

2021	Polat A., Postgraduate, C.EDİZ(Student), Detection of MCF-7 breast cancer cells and monitoring of area, radius, and perimeter developments of them in different days

Jury Memberships

January 2021	PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Adana Alparslan Türkeş Bilim Ve Teknoloji Üniversitesi
January 2021	PhD Thesis Monitoring Committee Member, PhD Thesis Monitoring Committee Member, Adana Alparslan Türkeş Bilim Ve Teknoloji Üniversitesi

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Introducing a novel fast algebraic reconstruction technique and advancing 3D image reconstruction in a specialized bioimaging system**
POLAT A.
Biomedical Signal Processing and Control, vol.88, 2024 (SCI-Expanded)

II. **Tracing 2D Growth of Pancreatic Tumoroids Using the Combination of Image Processing Techniques and Mini-Opto Tomography Imaging System**
Akbaba C. E., POLAT A., Göktürk D.
Technology in Cancer Research and Treatment, vol.22, 2023 (SCI-Expanded)

III. **Optimization and alternative image processing approach for the comprehensive assessment of delamination and uncut fiber in drilling fiber metal laminate**
Ekici E., Motorcu A. R., Polat A.
JOURNAL OF THE BRAZILIAN SOCIETY OF MECHANICAL SCIENCES AND ENGINEERING, vol.44, no.502, pp.1-23, 2022 (SCI-Expanded)

IV. **Linear and non-linear dynamics of the epidemics: System identification based parametric prediction models for the pandemic outbreaks**
Tutsoy O., POLAT A.
ISA TRANSACTIONS, vol.124, pp.90-102, 2022 (SCI-Expanded)

V. **A Realistic Breast Phantom Proposal for 3D Image Reconstruction in Digital Breast Tomosynthesis**
POLAT A., Kumrular R. K.
Technology in Cancer Research and Treatment, vol.21, 2022 (SCI-Expanded)

VI. **An alternative approach to tracing the volumic proliferation development of an entire tumor spheroid in 3D through a mini-Opto tomography platform**
POLAT A., Gokturk D.
MICRON, vol.152, 2022 (SCI-Expanded)

VII. **The comprehensive analysis of the determination of wavelet function-level pair for the decomposition and reconstruction of artificial S1 heart signals by using multi-resolution analysis**
POLAT A.
BIOMEDICAL SIGNAL PROCESSING AND CONTROL, vol.70, 2021 (SCI-Expanded)

VIII. **Development of a Multi-Dimensional Parametric Model With Non-Pharmacological Policies for Predicting the COVID-19 Pandemic Casualties**
Tutsoy O., Polat A., Colak S., Balikci K.
IEEE ACCESS, vol.8, pp.225272-225283, 2020 (SCI-Expanded)

IX. **A Novel Parametric Model for the Prediction and Analysis of the COVID-19 Casualties**
Tutsoy O., Colak S., Polat A., Balikci K.
IEEE ACCESS, vol.8, pp.193898-193906, 2020 (SCI-Expanded)

X. **Digital Breast Tomosynthesis imaging using compressed sensing based reconstruction for 10 radiation doses real data**
Polat A., Matela N., DİNLER A., Zhang Y. S., Yıldırım İ.
BIOMEDICAL SIGNAL PROCESSING AND CONTROL, vol.48, pp.26-34, 2019 (SCI-Expanded)

XI. **A miniaturized optical tomography platform for volumetric imaging of engineered living systems**
Polat A., Hassan S., Yıldırım İ., Oliver L. E., Mostafaei M., Kumar S., Maharjan S., Bourguet L., Cao X., Ying G., et al.
LAB ON A CHIP, vol.19, no.4, pp.550-561, 2019 (SCI-Expanded)

XII. **An iterative reconstruction algorithm for digital breast tomosynthesis imaging using real data at three radiation doses**
Polat A., Yıldırım İ.
JOURNAL OF X-RAY SCIENCE AND TECHNOLOGY, vol.26, no.3, pp.347-360, 2018 (SCI-Expanded)

Articles Published in Other Journals

I. **Determination of Appropriate Thresholding Method in Segmentation Stage in Detecting Breast Cancer Cells**
AKBABA C. E., POLAT A.
Journal of advanced research in natural and applied sciences (Online), vol.8, no.1, pp.54-62, 2022 (Peer-Reviewed Journal)

II. **Comprehensive Analysis of Alpha-Parametric Set for the Calculation of Intersection Lengths of Radiological Ray Path in Siddon's Algorithm Used in 3D Image Reconstruction**
Polat A.
Journal of Advanced Research in Natural and Applied Sciences, vol.7, no.2, pp.172-181, 2021 (Peer-Reviewed Journal)

III. **Klinik Uygulamalarda İleri Biyomedikal Görüntüleme Teknolojileri**
KUMRULAR R. K., POLAT A.
European Journal of Science and Technology, vol.23, pp.207-221, 2021 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

I. **Measuring automated detection success of main tumor structures in breast cancer images**
Akbaba C. E., Polat A.
3rd International Eurasian Conference on Science, Engineering and Technology (EurasianSciEnTech 2021), Ankara, Turkey, 15 - 17 December 2021, pp.58

II. **A polydimethylsiloxane (PDMS) phantom proposal for testing the performance of 3D image reconstruction techniques for biological samples in microscale resolution**
POLAT A.
3rd International Conference on Innovative Studies of Contemporary Sciences, February 19-21, 2021,Tokyo, Japan, Tokyo, Japan, 19 - 21 February 2021

III. **Measuring the object detection success of global and adaptive thresholding methods applied to the breast cancer image**
Akbaba C. E., POLAT A.
4th International 19 May Innovative Scientific Approaches Congress, December, 21-22, 2020, Samsun, Turkey, Samsun, Turkey, 21 - 22 December 2020

IV. **Analysis of α-set to prevent data loss in Siddon algorithm used in radiological ray path calculation in digital breast tomosynthesis**
Polat A.
5th International Battalgazi Scientific Studies Congress, December, 18-20, Malatya, Turkey, Malatya, Turkey, 18 - 20 December 2020

V. **Enhancement of the image of a tumor produced by MCF-7 breast cancer cells using various image filtering methods**
Akbaba C. E., POLAT A.
4th Asia Pacific International Modern Sciences Congress, December, 12-13, 2021, Subic Bay, Philippines, Subic Bay, Philippines, 12 - 13 December 2020

VI. **Detection of breast cancer cells and observation of their development using image processing techniques**

Akbaba C. E., POLAT A.
Cukurova 4th International Scientific Researches Conference, February, 21-23, 2020, Adana, Turkey, Adana, Turkey, 21 - 23 February 2020

VII. **Implementation of maj orization-minimization (MM) algorithm for 3D total variation minimization in DBT image reconstruction**
Polat A., Matela N., Mota A. M., Yıldırım İ.
2016 IEEE Nuclear Science Symposium, Medical Imaging Conference and Room-Temperature Semiconductor Detector Workshop, NSS/MIC/RTSD 2016, Strasbourg, France, 29 October - 06 November 2016

VIII. **The Mapping of Hydrocarbon Seepages by Using Landsat TM Satellite Images: Adıyaman Case Study**
POLAT A., ÖRMECİ C.
20th International Petroleum and Natural Gas Congress and Exhibition of Turkey, May, 27-29, 2015, Ankara, Turkey, Ankara, Turkey, 27 - 29 May 2015

IX. **The Determination of Hydrocarbon Seepages by Using Landsat TM Satellite Images nearby Adıyaman**
POLAT A., ÖRMECİ C.
8th International Soil Science Congress - Land Degradation and Challenges in Soil Management, May, 15-17, 2012, Çeşme-İzmir, Turkey, Çeşme, İzmir, Turkey, 15 - 17 May 2012

Supported Projects

2024 - 2026	Production of a portable deep technology tomosynthesis device (TomoSyn) that detects the required surgical margin of breast cancer tumor and sentinel lymph node (SLN) metastasis with 3D imaging in lumpectomy surgery, Research Project of the Presidency of Turkey Health Institutes (TÜSEB)
2022 - 2024	Development of New Haploid Identification and Sorting System for Maize (NHISS-Maize), TÜBİTAK International Bilateral Joint Cooperation Program Project
2020 - 2023	Hardware design and embedded system software for electronically controlled new generation hospital beds, TUBITAK Project
2021 - 2022	OpTomo: Robotic optical tomography device that images breast tumors in 3D with angular optical scanning, TUBITAK Project
2019 - 2020	Development of 3-D imaging software for artificial intelligence based robotic mini-opto bio-tomography device capable of imaging cancer cells by angular scanning , TUBITAK Project
2018 - 2020	Compressed Sensing Based 3D Image Reconstruction in Digital Breast Tomosynthesis, Project Supported by Higher Education Institutions

Patent

2022	Patent

Activities in Scientific Journals

2023 - Continues	TECHNOLOGY IN CANCER RESEARCH AND TREATMENT, Committee Member
2022 - Continues	Frontiers in Biomaterials Science, Editor

Scientific Refereeing

December 2023	TUBITAK Project, 1507 - TÜBİTAK SME R&D Start Support Program, Canakkale Onsekiz Mart University, Turkey
June 2023	TECHNOLOGY IN CANCER RESEARCH AND TREATMENT, Journal Indexed in SCI-E

February 2023	PLOS ONE, Journal Indexed in SCI-E
July 2022	Transactions on Pattern Analysis & Machine Intel., Journal Indexed in SCI-E
June 2022	Journal of advanced research in natural and applied sciences (Online), National Scientific Refreed Journal
March 2021	MEDICAL PHYSICS, Journal Indexed in SCI-E
November 2020	TUBITAK Project, 1501 - Industry R & D Projects Support Program, Gizli, Turkey
May 2020	TUBITAK Project, 1507 - TÜBİTAK SME R&D Start Support Program, Gizli, Turkey
November 2019	IEEE Journal of Biomedical and Health Informatics, Journal Indexed in SCI-E
May 2019	MEASUREMENT, Journal Indexed in SCI-E
February 2019	TUBITAK Project, 1507 - TÜBİTAK SME R&D Start Support Program, Gizli, Turkey
January 2019	MEASUREMENT, Journal Indexed in SCI-E
November 2018	TUBITAK Project, 1501 - Industry R & D Projects Support Program, Gizli, Turkey
November 2018	TUBITAK Project, 1501 - Industry R & D Projects Support Program, Gizli, Turkey
September 2018	MERSİN ÜNİVERSİTESİ SAĞLIK BİLİMLERİ DERGİSİ, National Scientific Refreed Journal

Scientific Consultations

2021 - Continues	Project Consultancy, Efelyum Ltd. Şti
2021 - Continues	Project Consultancy, Mespa A.Ş. / Efelyum Ltd. Şti.

Metrics

Publication: 24
Citation (WoS): 16
Citation (Scopus): 84
H-Index (WoS): 2
H-Index (Scopus): 6

Congress and Symposium Activities

2023	TIPTA YAPAY ZEKA KONGRESİ, Invited Speaker, Çanakkale, Turkey

Scholarships

2023 - 2023	Harvard Medical School - USA (2219 - Yurt Dışı Doktora Sonrası Araştırma Bursu), TUBITAK
2016 - 2017	Harvard Medical School - USA (2214-A Yurt Dışı Doktora Sırası Araştırma Bursu), TUBITAK

Awards

November 2023	BİRİNCİLİK ÖDÜLÜ, Elektrik Ve Elektronik İhracatçıları Birliği (Turkish Electro Technology - Tet)
May 2023	BEST ACADEMIC INVENTION AWARD, Isif'23 8Th Istanbul International Invention Fair, Organized By The Turkish Patent And Trademark Office İn Cooperation With The International Federation Of Inventors' Union, The World Intellectual Property Organization, And The European Patent Office.

Non Academic Experience

2009 - 2018	Public Corporation, TPAO, Log Başmühendisliği

2009 - 2018	TPAO /
2007 - 2009	Public Corporation, Dış Ticaret Müsteşarlığı, Dış Ticarette Standardizasyon
2007 - 2009	T.C. Başbakanlık Dış Ticaret Müsteşarlığı /
2004 - 2007	Business Establishment Private, Özel Sektör, Ar-Ge / Üretim
2004 - 2007	Elektronik ve otomasyon alanında faaliyet gösteren özel şirketler /