

Asst. Prof. SEVİNÇ FİGEN ÖKTEM

Personal Information

Office Phone: [+90 312 210 2342](tel:+903122102342)

Fax Phone: [+90 312 210 2304](tel:+903122102304)

Email: figeno@metu.edu.tr

Web: <https://blog.metu.edu.tr/figeno/>

Biography

I am an Assistant Professor of Electrical and Electronics Engineering at METU, and the principal investigator of the Signal Processing And Computational sEnsing (SPACE) Lab. Before joining METU, I was a Post-Doctoral Research Associate with the NASA Goddard Space Flight Center, where I worked on the development of novel spectral imaging techniques for high-resolution solar imaging.

I received the Ph.D. degree from the University of Illinois at Urbana-Champaign (UIUC) in 2014, and the B.S. and M.S. degrees from Bilkent University, in 2007 and 2009, respectively. At UIUC, I was selected to the "List of Teachers Ranked as Excellent by Their Students", and was a recipient of the Professor Kung Chie Yeh Endowed Fellowship in 2012, and a NASA Earth and Space Science Fellowship from 2012 to 2014.

Education Information

Doctorate, University of Illinois at Urbana-Champaign, Mühendislik Fakültesi, Electrical and Computer Engineering, United States Of America 2009 - 2014

Post Graduate, İhsan Doğramacı Bilkent University, Institute Of Engineering And Natural Sciences, Elektrik Ve Elektronik Mühendisliği (YL) (Tezli), Turkey 2007 - 2009

Under Graduate, İhsan Doğramacı Bilkent Üniversitesi, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, Turkey 2003 - 2007

Dissertations

Post Graduate, Signal representation and recovery under partial information, redundancy, and generalized finite extent constraints, Bilkent Üniversitesi, Mühendislik Ve Fen Bilimleri Enstitüsü, Elektrik Ve Elektronik Mühendisliği (YL) (Tezli), 2009

Doctorate, Computational imaging and inverse techniques for high-resolution and instantaneous spectral imaging, University Of Illinois At Urbana-Champaign, 2009

Research Areas

Electrical and Electronics Engineering

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,

2018 - Continues

Assistant Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,
2015 - 2018

Advising Theses

Öktem S. F. , Efficient algorithms for convolutional inverse problems in multidimensional imaging, Post Graduate,
D.DOĞAN(Student), 2020

Öktem S. F. , Evaluation of classical and sparsity-based methods for parametric recovery problems, Post Graduate,
H.CAN(Student), 2020

Öktem S. F. , Computational spectral imaging techniques using diffractive lenses and compressive sensing, Post Graduate,
O.FATİH(Student), 2019

Öktem S. F. , Development of novel analysis and reconstruction techniques for coherent optical imaging systems, Post
Graduate, Ç.IŞIL(Student), 2019

ÖKTEM S. F. , Optimal design of sparse mimo arrays for wideband near-field imaging based on a statistical framework,
Post Graduate, M.BURAK(Student), 2018

ÖKTEM S. F. , Numerical and experimental evaluation of computational spectral imaging with photon sieves, Post
Graduate, T.ALKANAT(Student), 2016

Designed Lessons

Öktem S. F. , Vector Space Methods in Signal Processing, Under Graduate, 2018 - 2019

Öktem S. F. , Theory of Remote Image Formation, Post Graduate, 2015 - 2016

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- **Efficient computation of 2D point-spread functions for diffractive lenses**
Ayazgok S., Oktem F. S.
APPLIED OPTICS, vol.59, pp.445-451, 2020 (Journal Indexed in SCI)
- **Image Chain Simulation for Earth Observation Satellites**
Alici K. B. , Oktem F. S. , Karci O., Yilmaz A. S. , Selimoglu O.
IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING, vol.12, pp.4014-4023, 2019 (Journal Indexed in SCI)
- **Slitless Solar Imaging Spectroscopy**
Davila J. M. , Oktem F. S. , Kamalabadi F.
ASTROPHYSICAL JOURNAL, vol.883, 2019 (Journal Indexed in SCI)
- **Compressive spectral imaging with diffractive lenses**
Kar O. F. , Oktem F. S.
OPTICS LETTERS, vol.44, pp.4582-4585, 2019 (Journal Indexed in SCI)
- **Deep iterative reconstruction for phase retrieval**
Isil C., Oktem F. S. , Koc A.
APPLIED OPTICS, vol.58, pp.5422-5431, 2019 (Journal Indexed in SCI)
- **Sparsity-based three-dimensional image reconstruction for near-field MIMO radar imaging**
Oktem F. S.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.27, pp.3282-3295, 2019
(Journal Indexed in SCI)
- **Analytical Fresnel imaging models for photon sieves**
ÖKTEM S. F. , Kamalabadi F., Davila J. M.

- OPTICS EXPRESS, vol.26, pp.32259-32279, 2018 (Journal Indexed in SCI)
Periodic aperture imaging
Alici K. B. , Buyuk H., Yilmaz A. S. , Ozdemir C., Karci O., Oktem F. S. , Selimoglu O.
- OPTICAL ENGINEERING, vol.56, 2017 (Journal Indexed in SCI)
Effect of spatial distribution of partial information on the accurate recovery of optical wave fields
ÖKTEM S. F. , Ozaktas H. M.
- APPLIED OPTICS, vol.56, 2017 (Journal Indexed in SCI)
Linear Canonical Domains and Degrees of Freedom of Signals and Systems
ÖKTEM S. F. , Ozaktas H. M.
LINEAR CANONICAL TRANSFORMS: THEORY AND APPLICATIONS, vol.198, pp.197-239, 2016 (Journal Indexed in SCI)
- **Fast Algorithms for Digital Computation of Linear Canonical Transforms**
Koc A., ÖKTEM S. F. , Ozaktas H. M. , Kutay M. A.
LINEAR CANONICAL TRANSFORMS: THEORY AND APPLICATIONS, vol.198, pp.293-327, 2016 (Journal Indexed in SCI)
- **A Parametric Estimation Approach to Instantaneous Spectral Imaging**
Öktem S. F. , Kamalabadi F., Davila J. M.
IEEE TRANSACTIONS ON IMAGE PROCESSING, vol.23, pp.5707-5721, 2014 (Journal Indexed in SCI)
- **Phase-space window and degrees of freedom of optical systems with multiple apertures**
Ozaktas H. M. , Oktem F. S.
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION, vol.30, pp.682-690, 2013 (Journal Indexed in SCI)
- **Equivalence of linear canonical transform domains to fractional Fourier domains and the bicanonical width product: a generalization of the space-bandwidth product**
Oktem F. S. , Ozaktas H. M.
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION, vol.27, pp.1885-1895, 2010 (Journal Indexed in SCI)
- **Exact Relation Between Continuous and Discrete Linear Canonical Transforms**
Öktem S. F. , Özaktaş M. H.
IEEE SIGNAL PROCESSING LETTERS, vol.16, pp.727-730, 2009 (Journal Indexed in SCI)

Books & Book Chapters

- **Computational Spectral and Ultrafast Imaging via Convex Optimization**
Öktem S. F. , Gao L., Kamalabadi F.
in: Handbook of Convex Optimization Methods in Imaging Science, Vishal Monga, Editor, Springer, London/Berlin , Zug, pp.105-127, 2018
- **Fast Algorithms for Digital Computation of Linear Canonical Transforms**
Koç A., Öktem S. F. , Özaktaş M. H. , Kutay A.
in: Linear Canonical Transforms, Alper M Kutay,Haldun M Ozaktas,John J Healy,John T Sheridan, Editor, Springer-Verlag , New-York, pp.293-327, 2016
- **Linear Canonical Domains and Degrees of Freedom of Signals and Systems**
Öktem S. F. , Ozaktas H.
in: Linear Canonical Transforms, Healy John J,Kutay M Alper,Ozaktas Haldun M,Sheridan John T, Editor, Springer, London/Berlin , New-York, pp.197-239, 2016

Refereed Congress / Symposium Publications in Proceedings

- **Evaluation of Sparsity-based Methods for Parameterized Source Separation**

Baskaya H. C. , ÖKTEM S. F.

28th Signal Processing and Communications Applications Conference, Turkey, 5 - 07 October 2020

Analysis of Alternative Performance Metrics for Compressive Spectral Imaging

Gundogan U., ÖKTEM S. F.

28th Signal Processing and Communications Applications Conference, Turkey, 5 - 07 October 2020

Comparison of Dictionary-Based Image Reconstruction Algorithms for Inverse Problems

Dogan D., ÖKTEM S. F.

28th Signal Processing and Communications Applications Conference, Turkey, 5 - 07 October 2020

Deep CNN Prior Based Image Reconstruction for Multispectral Imaging

Manisali İ., Cam R., BEZEK C. D. , ÖKTEM S. F.

28th Signal Processing and Communications Applications Conference, Turkey, 5 - 07 October 2020

Model-based Phase Retrieval with Deep Denoiser Prior

Işıl Ç., ÖKTEM S. F.

2020 OSA Imaging and Applied Optics Congress, 22 - 26 June 2020

Model-based Inversion Methods for Compressive Spectral Imaging with Diffractive Lenses

Dogan D., ÖKTEM S. F.

2020 OSA Imaging and Applied Optics Congress, 22 - 26 June 2020

Computational Imaging and Inverse Problems: Making the Invisible Visible

ÖKTEM S. F.

21. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, İstanbul, Turkey, 06 September 2019

Anlık Spektral Görüntüleme için Tasarım Eniyileme

Ayazgok S., Öktem S. F.

27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, 24 - 26 April 2019

Deep Learning-Based Hybrid Approach for Phase Retrieval

IŞIL Ç., ÖKTEM S. F. , KOÇ A.

OSA Imaging and Applied Optics Congress, Munich, Germany, 24 - 27 June 2019

Fast Computational Spectral Imaging with a Programmable Diffractive Lens

Kar O. F. , ÖKTEM S. F.

OSA Imaging and Applied Optics Congress, Munich, Germany, 24 - 27 June 2019

Convolutional Inverse Problems in Imaging with Convolutional Sparse Models

Dogan D., ÖKTEM S. F.

OSA Imaging and Applied Optics Congress, Munich, Germany, 24 - 27 June 2019

Snapshot Spectral Imaging with Generalized Photon Sieves

Ayazgok S., ÖKTEM S. F.

OSA Imaging and Applied Optics Congress, Munich, Germany, 24 - 27 June 2019

Image deconvolution via efficient sparsifying transform learning *Hızli Seyrekleştirici Dönüşüm*

Öğrenme ile Görüntü Ters Evrisimi

Akyon F., Kamaci U., Öktem S. F.

26th IEEE Signal Processing and Communications Applications Conference, SIU 2018, İzmir, Turkey, 2 - 05 May

2018, pp.1-4

Image restoration for sparse aperture optical systems *Seyrek açıklıklı optik sistemler için imge onarımı*

Iskender B., Oktem F. S.

26th IEEE Signal Processing and Communications Applications Conference, SIU 2018, İzmir, Turkey, 2 - 05 May

2018, pp.1-4

A Phase-Space Approach to Diffraction-Limited Resolution

Işıl Ç., Öktem S. F.

Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LSC, MATH, pCAOP), Florida, United States Of

America, 25 - 28 June 2018

Compressive Photon-Sieve Spectral Imaging

Kar O. F. , Kamaci U., Akyon F., Öktem S. F.

Imaging and Applied Optics 2018 (3D, AO, AIO, COSI, DH, IS, LACSEA, LSC, MATH, pCAOP), Florida, United States Of America, 25 - 28 June 2018

● **Diffusion tensor magnetic resonance electrical impedance tomography versus magnetic resonance conductivity tensor imaging**

Sadighi M., Öktem S. F. , Eyüboğlu B. M.

International Society of Magnetic Resonance in Medicine ESMRMB Joint Annual Meeting, Paris, France, 16 - 21 June 2018, vol.26, pp.1-4

● **Effect of different sparsity priors on compressive photon-sieve spectral imaging**

Kar O. F. , Öktem S. F. , Kamaci U., Akyon F. C.

2018 26th Signal Processing and Communications Applications Conference (SIU), İzmir, Turkey, 2 - 05 May 2018

● **UWB 3D Near-Field Imaging with a Sparse MIMO Antenna Array for Concealed Weapon Detection**

Anadol E., Seker I., Camlica S., Topbas T. O. , Koc S., Alatan L., Oktem F., Civi O. A.

Conference on Radar Sensor Technology XXII, Florida, United States Of America, 16 - 18 April 2018, vol.10633

● **Optimal Design of Sparse MIMO Arrays for Near-Field Ultrawideband Imaging**

Kocamis M. B. , ÖKTEM S. F.

25th European Signal Processing Conference (EUSIPCO), Greece, 28 August - 02 September 2017, pp.1952-1956

● **OTF Analysis of a Spaceborne CMOS Imaging Sensor**

Alici K. B. , Karci O., Yilmaz A. S. , Ozdemir C., ÖKTEM S. F. , Selimoglu O.

8th International Conference on Recent Advances in Space Technologies (RAST), İstanbul, Turkey, 19 - 22 June 2017, pp.133-138

● **Çok Genişbantlı Mikrodalga Görüntüleme için Optimal MIMO Dizilimi**

Kocamis B., ÖKTEM S. F.

25th Signal Processing and Communications Applications Conference (SIU), Antalya, Turkey, Turkey, 15 - 18 May 2017

● **EFFICIENT SPARSITY-BASED INVERSION FOR PHOTON-SIEVE SPECTRAL IMAGERS WITH TRANSFORM LEARNING**

Kamaci U., Akyon F. C. , Alkanat T., Oktem F. S.

5th IEEE Global Conference on Signal and Information Processing (GlobalSIP), Montreal, Canada, 14 - 16 November 2017, pp.1225-1229

● **Optimal MIMO Array Configuration for Ultrawideband Microwave Imaging**

Kocamis M. B. , ÖKTEM S. F.

25th Signal Processing and Communications Applications Conference (SIU), Antalya, Turkey, 15 - 18 May 2017

● **Milli Arcsecond Imaging of the Solar Corona**

Joseph D., ÖKTEM S. F. , FARZAD K.

41st COSPAR Scientific Assembly (cancelled), 30 July - 07 August 2016

● **Computational image formation with photon sieves for milli arcsecond solar imaging**

ÖKTEM S. F. , Kamalabadi F., Davila J.

41st COSPAR Scientific Assembly (cancelled), 30 July - 07 August 2016

● **Fast Computation of Two Dimensional Point Spread Functions for Photon Sieves**

ÖKTEM S. F. , Alkanat T.

OSA Imaging and Applied Optics Congress 2016, 25 - 28 July 2016

● **Foton Süzgeci ile Hesaplamalı Spektral Görüntüleme**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

24th Signal Processing and Communications Applications Conference, Turkey, 16 - 19 May 2016

● **Milli Arcsecond MAS Imaging of the Solar Corona**

Davila J. M. , ÖKTEM S. F. , Kamalabadi F., O'Neill J., Gradac A. M. N. , Daw A. N. , Rabin D. M.

AAS/Solar Physics Division Meeting, 31 May - 03 June 2016

● **Computational Spectral Imaging with Photon Sieves**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

24th Signal Processing and Communication Application Conference (SIU), Zonguldak, Turkey, 16 - 19 May 2016, pp.425-428

● **High-Resolution Solar Imaging With Photon Sieves**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

American Geophysical Union, Fall Meeting, 15 - 19 December 2014

● **Exploring the Photon Sieve: Mathematical Framework and Experimental Categorization**

ONeill J., Davila J. M. , ÖKTEM S. F. , Daw A.

Next Generation Instrumentation in Solar and Space Physics: Critical Measurements From Low Cost Missions/Platforms, AGU Fall Meeting, 15 - 19 December 2014

● **Slitless Solar Spectroscopy**

Kamalabadi F., ÖKTEM S. F. , Davila J. M.

American Geophysical Union, Fall Meeting, 15 - 19 December 2014

● **High resolution computational spectral imaging with photon sieves**

Öktem S. F. , Kamalabadi F., Davila J.

IEEE Int. Conf. on Image Processing (ICIP), Paris, France, 27 - 30 October 2014

● **Imaging Techniques for High-Resolution and Instantaneous Observations of the Solar Corona**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

7th Solar Information Processing Workshop, 18 - 21 August 2014

● **Slitless solar spectroscopy**

ONeill J., Davila J. M. , ÖKTEM S. F.

224th American Astronomical Society Meeting, 1 - 05 June 2014

● **Parameter estimation for instantaneous spectral imaging**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

IEEE Int. Conf. on Acoustic Speech and Signal Processing (ICASSP), 4 - 09 May 2014

● **Linear Canonical Transforms, Degrees of Freedom, and Sampling in Optical Signals and Systems**

ÖZAKTAŞ M. H. , ÖKTEM S. F.

22nd Signal Processing and Communications Applications Conference (SIU), Turkey, 23 - 25 April 2014

● **Image formation model for photon sieves**

ÖKTEM S. F. , Davila J., Kamalabadi F.

IEEE Int. Conf. on Image Processing (ICIP), 15 - 18 September 2013

● **Condition number in recovery of signals from partial fractional Fourier domain information**

ÖKTEM S. F. , ÖZAKTAŞ M. H.

OSA Adaptive Optics: Methods, Analysis and Applications 2013, 23 - 27 June 2013

● **Degrees of freedom of optical systems and signals with applications to sampling and system simulation**

ÖKTEM S. F. , ÖZAKTAŞ M. H.

2013 OSA Imaging Systems and Applications (IS), 23 - 27 June 2013

● **Cramer Rao bounds and instrument optimization for slitless spectroscopy**

ÖKTEM S. F. , Kamalabadi F., Davila J.

IEEE Int. Conf. on Acoustic Speech and Signal Processing (ICASSP), 26 - 31 May 2013

● **Multi-order slitless solar spectroscopy: a parametric inversion approach**

ÖKTEM S. F. , Kamalabadi F., Davila J. M.

6th Solar Information Processing Workshop, 13 - 16 August 2012

● **Analytical precision limits in slitless spectroscopy**

ÖKTEM S. F. , Kamalabadi F.

2012 IEEE Statistical Signal Processing Workshop (SSP), 5 - 08 August 2012

● **Schulz-Snyder Phase Retrieval Algorithm as an Alternating Minimization Algorithm**

ÖKTEM S. F. , Blahut R. E.

2011 OSA Computational Optical Sensing and Imaging (COSI), 10 - 14 July 2011

● **Linear Algebraic Analysis of Fractional Fourier Domain Interpolation Problem**

ÖKTEM S. F. , ÖZAKTAŞ M. H.

17th Signal Processing and Communications Applications Conference, Turkey, 9 - 11 April 2009

● **Linear Algebraic Analysis of Fractional Fourier Domain Interpolation**

ÖKTEM S. F. , Ozaktas H. M.

IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey, 9 - 11 April 2009, pp.158-161

Supported Projects

- ÖKTEM S. F. , Project Supported by Higher Education Institutions, En iyi optik tasarım ve örnekleme için uzam-frekans uzayına dayalı teknikler geliştirilmesi, 2015 - Continues
- Öktem S. F. , TUBITAK Project, Foton-Süzgeci İle Sıkıştırılmış Spektral Görüntüleme: Modeller, Algoritmalar, Ve Deneysel Uygulama, 2018 - 2021
- Vural E., Öktem S. F. , TUBITAK Project, Düşük Boyutlu Veri Kümeleri için Grafa Dayalı Transfer Öğrenme, 2017 - 2018
- Öktem S. F. , Project Supported by Other Official Institutions, İMECE-Uydu Alt Yapısı Geliştirilmesi, 2017 - 2017
- Öktem S. F. , Alatan L., Aydın Çivi H. Ö. , Koç S. S. , Alatan A. A. , Candan Ç., Ergül Ö. S. , Project Supported by Other Private Institutions, 3-boyutlu Güvenlik Görüntüleme Radarı Projesi - Elektromanyetik Modelleme, Simülasyon ve Çözüm Yöntemleri, 2015 - 2017
- Öktem S. F. , Project Supported by Other Official Institutions, İMECE-Uydu Alt Yapısı Geliştirilmesi, 2016 - 2016

Scientific Refereeing

- JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION, National Scientific Refreed Journal, December 2019
- TUBITAK Project, 1002 - Quick Support Program, Middle East Technical University, Turkey, December 2019
- ICCV 2019 Workshop on Learning for Computational Imaging (LCI): Sensing, Reconstruction, and Analysis (<https://sites.google.com/view/iccv-lci2019/home>), Conference Paper (Full Text), August 2019
- ICCV 2019 Workshop On Learning For Computational Imaging (LCI): Sensing, Reconstruction, And Analysis (<https://sites.google.com/view/iccv-lci2019/home>), Conference Paper (Full Text), August 2019
- ICCV 2019 Workshop On Learning For Computational Imaging (LCI): Sensing, Reconstruction, And Analysis (<https://sites.google.com/view/iccv-lci2019/home>), Conference Paper (Full Text), August 2019
- IEEE TRANSACTIONS ON IMAGE PROCESSING, SCI Journal, May 2019
- IEEE TRANSACTIONS ON IMAGE PROCESSING, SCI Journal, March 2019
- SIU 2019, Conference Paper (Full Text), February 2019
- SIU 2019, Conference Paper (Full Text), February 2019
- SIU 2019, Conference Paper (Full Text), February 2019
- SIU 2019, Conference Paper (Full Text), February 2019
- IEEE TRANSACTIONS ON SIGNAL PROCESSING, SCI Journal, February 2019
- ICASSP 2019, Conference Paper (Full Text), January 2019
- ICASSP 2019, Conference Paper (Full Text), January 2019
- ICASSP 2019, Conference Paper (Full Text), January 2019
- IEEE TRANSACTIONS ON SIGNAL PROCESSING, SCI Journal, September 2018
- TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, Journal Indexed in SCI-E, September 2018
- ICASSP 2018, Conference Paper (Full Text), January 2018

Invited Congress and Symposium Activities

21. Ulusal Optik, Elektro-Optik ve Fotonik Çalıştayı, Invited Speaker, İstanbul, Turkey, 2019

Citations

Total Citations (WOS):146

h-index (WOS):6