SÜHA TUNA, PhD

CONTACT INFORMATION	İstanbul Technical University Informatics Institute Department of Computational Science and Engineering, Ayazaga Campus, Informatics Institute, Room:206, 34469, Maslak, İstanbul, Türkiye	☎ +90 534 8922655 FAX +90 0212 2857073 ✉ suhatuna@itu.edu.tr ▭ https://web.itu.edu.tr/suhatuna/

PERSONAL INFORMATION

Birth: October 11, 1985   Nationality: Turkish
Maritial Status: Married with one child

RESEARCH INTERESTS

High dimensional modelling, scientific computing, bioinformatics, high performance computing (HPC), hyperspectral imagery, machine learning,

EDUCATION

İstanbul Technical University, İstanbul, Turkey

Ph.D. of Computational Science and Engineering   **September 2010 – March 2017**
- Thesis title: A New Support Function Determination Method in Enhanced Multivariance Products Representation
- Advisor: Prof. Dr. Metin Demiralp

Marmara University, İstanbul, Turkey

M.Sc. in Applied Mathematics   **September 2007 – July 2010**
- Thesis title: Evaluation of the Multivariate Integrals in Hybrid High Dimensional Model Representation Method Using Fluctuationlessness Approximation
- Advisor: Prof. Dr. N. A. Baykara

Kültür University, İstanbul, Turkey

B.Sc. in Mathematics and Computing   **September 2003 – June 2007**

PROFESSIONAL EXPERIENCE

İstanbul Technical University, İstanbul, Turkey
Faculty Member at Informatics Institute   **July 2021 – present**
Assistant Professor of Computational Science and Engineering

University of Strathclyde, Glasgow, UK

Postdoctoral Researcher   **February 2019 – November 2019**
Academic visitor at the Hyperspectral Imaging Centre, Department of Electronic & Electrical Engineering

Fatih Sultan Mehmet Vakıf University, İstanbul, Turkey

Faculty Member   **September 2017 – June 2021**
Assistant Professor of Computer Engineering in Faculty of Engineering

Vice Department Head   **October 2017 – January 2019**
Vice Head at the Department of Computer Engineering in Faculty of Engineering

İstanbul Technical University, İstanbul, Turkey

Research Assistant   **December 2010 – September 2016**
Assisted several graduate courses, including *Numerical Solutions of PDE's*, *Parallel & Distributed Computing*, *Parallel Numerical Algorithms & Tools*, *Scientific Computing I-II* and *Analysis & Applications of Numerical Methods for ODEs*

PROJECTS	Hyperspectral imagery compression *funded by The Scientific and Technical Research Council of Turkey under National Young Researchers Career Development Program (3501 TUBITAK CAREER) grant with agreement number 114E200* **February 2016 – October 2016**
AWARDS SCHOLARSHIPS	International Postdoctoral Research Scholarship Programme (BİDEB 2219) with the project entitled "Data reduction and feature extraction in hyperspectral imagery". *The grant is awarded by The Scientific and Technical Research Council of Turkey (TUBITAK) under with the application number 1059B191800733.* **February 2019 – November 2019**
TRAININGS	Message-Passing Programming with MPI (PRACE Training @EPCC), 17–19 July 2019, Edinburgh, UK
	Advanced Parallel Programming (PRACE Training @CSC), 15–17 February 2016, Helsinki, Finland
	Industry Focus: Petaflop System Administration; Marenostrum III (PRACE Training @BSC), 27–28 January 2014, Barcelona, Spain

COURSES TAUGHT

- Undergraduate Level
    - Image Processing
    - Computer Programming (C/C++)
    - Parallel Programming (MPI, OpenMP with C)
    - Numerical Methods
    - Probability and Statistics
    - Computer Ethics and Law
    - Introduction to Computer Engineering
    - Exploratory Data Analysis using MATLAB
- Graduate Level
    - Parallel and Distributed Computing (MPI, OpenMP with C focusing on scientific applications)
    - Mathematical Methods in Data Analysis and Machine Learning
    - Machine Learning with Big Data
    - Scientific Computing I
    - Scientific Computing II
    - Digital Image Processing and Analysis

TRAININGS GIVEN	*Introduction to Parallel Programming with OpenMP*, National Center for High Performance Computing of Turkey, **May 2016**
	Linux System Administration, Informatics Institute, Istanbul Technical University, **February 2015**
	High Performance Computing and Parallel Programming Summer School, National Center for High Performance Computing of Turkey, **June–July 2011**
SPOKEN LANGUAGES	Turkish (native), English (fluent in speaking, reading and writing)
PROGRAMMING	Python, C, C++, Message Passing Interface (MPI), OpenMP, Java
TECHNOLOGIES	Linux, MacOS, Bash Scripting, MATLAB, PySpark, LaTeX 2_ε, TeX.
SYSTEMS ADMINISTRATION	High Performance Computing clusters administration, knowledge of virtualization softwares and virtual server maintenance.

PUBLICATIONS   **Tuna, S.**, Güleç, Ç., Yücesan, E., Çırakoğlu, A. Tarkan Argüden, Y., "Gene Teams are on the Field: Evaluation of Variants in Gene-Networks Using High Dimensional Modelling", *IEEE/ACM Transactions on Computational Biolaogy and Bioinformatics*, **2023**, DOI: 10.1109/TCBB.2023.3292245

Ozturk, S., Kosemen, A., Sen, Z., **Tuna, S.**, Bayazit, S. S., Kilinc, N., "Advancements in Selective Detection of Chemical Warfare Simulants through Machine Learning-Assisted Approaches and Investigation of Adsorption Equilibrium with Co-Polymer-Based QCM Sensors", *(Under review in Sensors and Actuators B)*, **2023**

Haydarov, S., Aydin, M., Faydaci, C., **Tuna, S.**, Ozturk, S., "Low-cost VIS/NIR range handheld and portable photospectrometer and evaluation of machine learning algorithms for classification performance", *Engineering Science and Technology, an International Journal*, **2023**, DOI: 10.1016/j.jestch.2022.101302

Tuna, S., Korkmaz Özay, E., Tunga, B., Gürvit, E., Tunga, M. A., "An Efficient Feature Extraction Approach for Hyperspectral Images Using Wavelet High Dimensional Model Representation", *International Journal of Remote Sensing*, **2022**, DOI: 10.1080/01431161.2022.2147036

Tuna, S., Töreyin, B. U., Demiralp, M., Ren, J., Marshall, S., Zhao, H., "Iterative Enhanced Multivariance Products Representation for Effective Compression of Hyperspectral Images", *IEEE Transactions on Geoscience and Remote Sensing*, **2020**, DOI: 10.1109/TGRS.2020.3031016

Tuna, S., Demiralp, M., "Zero Interval Limit Perturbation Expansion for the Spectral Entities of Hilbert-Schmidt Operators Combined with Most Dominant Spectral Component Extraction: Convergence and Confirmative Implementations", *J. Math. Chem.*, **2017**, 55(6), DOI: 10.1007/s10910-017-0740-1

Demiralp, M., **Tuna, S.**, "Zero Interval Limit Perturbation Expansion for the Spectral Entities of Hilbert-Schmidt Operators Combined with Most Dominant Spectral Component Extraction: Formulation and Certain Technicalities", *J. Math. Chem.*, **2017**, 55(6), DOI: 10.1007/s10910-017-0739-7

Tuna, S., Demiralp, M. "On Autonomy Imposition in Zero Interval Limit Perturbation Expansion for the Spectral Entities of Hilbert-Schmidt Integral Operators", *Mathematics*, **2017**, 5(1), 2, DOI: 10.3390/math5010002

Tuna, S., Demiralp, M., "Validity and Failure of the Autonomy Imposition on the Eigenfunctions in Zero Interval Limit Perturbation Expansion for Hilbert-Schmidt Integral Operators", *International Journal of Applied Physics*, **2016**, 1, 42–48

Sukhanov, A., **Tuna, S.**, Töreyin, B. U., "Lossy Compression of Hyperspectral Images by Using Enhanced Multivariance Products Representation (EMPR) Method", in Turkish, *24th. IEEE Congress on Signal Processing and Communication Applications, SIU'16*, **2016**, DOI: 10.1109/SIU.2016.7496142

Tuna, S., Demiralp, M., "Bivariate enhanced multivariance products representation (EMPR) at zero volume limit via geometric separation", *AIP Conf. Proc., Int. Conf. Comp. Meth. Sci. Eng.*, **2015**, DOI: 10.1063/1.4938944

Tuna, S., Tunga, B., "A Novel Piecewise Multivariate Function Approximation Method via Universal Matrix Representation", *J. Math. Chem.*, **2013**, 51(7), DOI:10.1007/s10910-013-0179-y

Tuna, S., Tunga, B., "Node Optimization Through Enhanced Multivariance Product Representation (EMPR)", *Procs. of 13th Int. Conf. Comp. and Math. Meth. in Sci. and Eng. (CMMSE'13)*, 1322-1330, **2013**

Tuna, S., Demiralp, M., "Probabilistic Evolution Approach for Initial Value Problems over Fourier Basis Set", *AIP Conf. Proc., 9th Int Conf. on Math. Prob. in Eng., Aerospace and Sci.*, **2012**, DOI: http://dx.doi.org/10.1063/1.4765618

Tuna, S., Demiralp, M., "Certain Validations of Probabilistic Evolution Approach for Initial Value Problems", *WSEAS Conf. on Advances in Systems Theory, Signal Processing and Comp. Sci.*, **2012**

Tuna, S., Baykara, N. A. , Demiralp, M., "Weighted Singular Value Decomposition for Folded Matrices", *AICT'11 Proc. of the 2nd Int. Conf. on App. Inf. and Comp. Theory*, **2011**, ISBN: 978-1-61804-034-3

Tuna, S., Demiralp, M., "Effects of the Weight Function Choices on Single-Node Fluctuation Free Integration", *Procs. of 11th Int. Conf. Comp. and Math. Methods in Sci. and Eng.*, **2011**

Tuna, S., Demiralp, M., "Matrix High Dimesional Model Representation (MHDMR) with the Weight Matrices Generated by Subspace Construction", *AIP Conf. Proc., Int. Conf. on Num. Anal. and App. Math.*, **2011**, DOI: http://dx.doi.org/10.1063/1.3637829

Tuna, S., Baykara, N. A., Demiralp, M., "Roles of the Basis Functions on the Weight Function Generating Subspace Construction", *AIP Conf. Proc., Int. Conf. on Num. Anal. and App. Math.*, **2010**, DOI: http://dx.doi.org/10.1063/1.3498302

Tuna, S., Baykara, N. A., Demiralp, M., "Taylor Series Based Integration With The Fluctuation Freely Approximated Remainder Over Gauss Wave Type Basis Functions", *AIP Conf. Proc., Int. Conf. of Comp. Meth. in Sci. and Eng.*, **2009**, DOI:http://dx.doi.org/10.1063/1.4771815

Tuna, S., Tunga, B., Baykara, N. A., Demiralp, M., "Fluctuation Free Matrix Representation Based Univariate Integration in Hybrid High Dimensional Model Representation (HHDMR) Over Plain and Factorized HDMR", *WSEAS Transactions on Mathematics*, **2009**, ISSN: 1109-2769

OTHER
INTERESTS   Travelling, Classical Music

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