Prof. Mustafa Ergen

Personal Information

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Biography

Mustafa Ergen is professor in Istanbul Technical University. Previously, Mustafa was Chief Advisor in Turk Telekom, and earlier he co-founded Silicon Valley startup WiChorus Inc. focusing 4G technologies and company is acquired by Tellabs [now Coriant]. He was earlier a National Semiconductor Fellow [now TI] at the University of California Berkeley, where he co-founded the Distributed Sensing Lab, focusing on statistical sensor intelligence and vehicular communication. Mustafa completed four programs from UC Berkeley: PhD and MS degrees in electrical engineering, MA degree from international studies and MOT program from HAAS Business School. His BS is from electrical engineering as valedictorian from ODTU. Prof. Ergen has more than 40 patent applications, many publications and authored three books: "*Mobile Broadband*" and "*Multi-Carrier Digital Communications*" are about wireless communications and published from Springer. Last one about entrepreneurship is titled "*Girişimci Kapital: Silikon Vadisi Tarihi ve Startup Ekonomisi*", published by KUY where he is adjunct professor. He is also founder of venture funded Ambeent Inc. focusing 5G WiFi and AI.

Education Information

Post Doctorate, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, United States Of America 2005 - 2005
Postgraduate, University of California, Berkeley, Social Sciences, International and Area Studies, United States Of America 2002 - 2004
Doctorate, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, United States Of America 2000 - 2004
Postgraduate, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, United States Of America 2000 - 2002
Undergraduate, Middle East Technical University, Faculty Of Engineering, Department Of Electrical And Electronics Engineering, Turkey 1995 - 2000

Foreign Languages

English, C2 Mastery

Certificates, Courses and Trainings

Technology Management/Management of Technology, Management of Technology Program, University of California Berkeley, HAAS Business School , 2004

Dissertations

Doctorate, I-WLAN: Intelligent Wireless Local Area Networking, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, 2004
Postgraduate, Entrepreneurship Models of the Countries that Leverage Silicon Valley, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, 2004
Postgraduate, WTRP: Wireless Token Ring Protocol, University of California, Berkeley, Electrical Engineering and Computer Science, Electrical Engineering, 2002

Research Areas

Communication Engineering, Signal Processing, Computer Networks, Communications and Network Protocols, Data Routing, Computer Learning, Automated Problem Solving, Theorem Proving and Logical Reasoning

Academic Titles / Tasks

Professor, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2017 - Continues
Associate Professor, Koc University, Faculty Of Engıneerıng, Department Of Electrıcal And Electronıcs Engıneerıng, 2014 - 2017
Lecturer, Bogazici University, Engıneerıng (Cıvıl, Mechanıcal, Chemıcal, Electrıcal, Industrıal), Elektrik Elektronik B, 2010 - 2011

Academic and Administrative Experience

Uygulama ve Araştırma Merkezi Yönetim Kurulu Üyesi, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2018 - Continues
Manager of Research and Application Center, Istanbul Technical University, Elektrik-Elektronik, Elektronik Ve Haberleşme Mühendisliği, 2020 - 2021
Manager of Research and Application Center, Koc University, Faculty Of Engıneerıng, Department Of Electrıcal And Electronıcs Engıneerıng, 2013 - 2015

Advising Theses

Ergen M., Er Ö., Kitlesel fonlamanın ürün tasarımcıları için sunduğu fırsatlar: Türkiye'deki kitlesel fonlama platformları üzerine bir inceleme, Postgraduate, C.BÜYÜKPİLAVCI(Student), 2014
Ergen M., Anarım E., Spectrum aware self-organizing networking in ofdma/lte heterogeneous networks, Postgraduate, M.AHMET(Student), 2012

Jury Memberships

Post Graduate, Post Graduate, İstanbul Teknik Üniversitesi, December, 2019

Post Graduate, Post Graduate, İstanbul Teknik Üniversitesi, May, 2019

Designed Lessons

Ergen M., Entrepreneurship and Innovation, Undergraduate, 2010 - 2011
Ergen M., Introduction to Mobile Networks: 4G and Beyond, Undergraduate, 2009 - 2010

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Effective capacity and outage probability assessment of multiple-relay cognitive communication systems in Nakagami-m and Rayleigh fading channel**
Zahedi A., Ergen M., Ergen O., Shayea I., El-Saleh A. A.
TRANSACTIONS ON EMERGING TELECOMMUNICATIONS TECHNOLOGIES, vol.31, no.4, 2020 (SCI-Expanded)

II. **Performance Analysis of Mobile Broadband Networks With 5G Trends and Beyond: Rural Areas Scope in Malaysia**
Shayea I., Ergen M., Azmi M. H., Nandi D., El-Salah A. A., Zahedi A.
IEEE ACCESS, vol.8, pp.65211-65229, 2020 (SCI-Expanded)

III. **A Comprehensive Survey on Mobility Management in 5G Heterogeneous Networks: Architectures, Challenges and Solutions**
Gures E., Shayea I., Alhammadi A., Ergen M., Mohamad H.
IEEE ACCESS, vol.8, pp.195883-195913, 2020 (SCI-Expanded)

IV. **Individualistic Dynamic Handover Parameter Self-Optimization Algorithm for 5G Networks Based on Automatic Weight Function**
Shayea I., Ergen M., Azizan A., Ismail M., Daradkeh Y. I.
IEEE ACCESS, vol.8, pp.214392-214412, 2020 (SCI-Expanded)

V. **Edge on Wheels With OMNIBUS Networking for 6G Technology**
Ergen M., Inan F., Ergen O., Shayea I., Tuysuz M. F., Azizan A., Üre N. K., Nekovee M.
IEEE ACCESS, vol.8, pp.215928-215942, 2020 (SCI-Expanded)

VI. **Key Challenges, Drivers and Solutions for Mobility Management in 5G Networks: A Survey**
Shayea I., Ergen M., Hadri Azmi M., ALDIRMAZ ÇOLAK S., Nordin R., Daradkeh Y. I.
IEEE ACCESS, vol.8, pp.172534-172552, 2020 (SCI-Expanded)

VII. **What is Artificial Intelligence? Technical Considerations and Future Perception**
Ergen M.
ANATOLIAN JOURNAL OF CARDIOLOGY, vol.22, pp.5-7, 2019 (SCI-Expanded)

VIII. **New Weight Function for Adapting Handover Margin Level over Contiguous Carrier Aggregation Deployment Scenarios in LTE-Advanced System**
Shayea I., Ismail M., Nordin R., Ergen M., Ahmad N., Abdullah N. F., Alhammadi A., Mohamad H.
WIRELESS PERSONAL COMMUNICATIONS, vol.108, no.2, pp.1179-1199, 2019 (SCI-Expanded)

IX. **Optimum time/power fraction of energy harvesting in TSR/PSR SWIPT-based cooperative communications with effective capacity maximization approach**
Zahedi A., Ergen M., Shayea I.
AEU-INTERNATIONAL JOURNAL OF ELECTRONICS AND COMMUNICATIONS, vol.111, 2019 (SCI-Expanded)

X. **Spectrum Gap Analysis With Practical Solutions for Future Mobile Data Traffic Growth in Malaysia**
Shayea I., Azmi M. H., Abd Rahman T., Ergen M., Chua Tien Han C. T. H., Arsad A.
IEEE ACCESS, vol.7, pp.24910-24933, 2019 (SCI-Expanded)

XI. **Survey on Land Mobile Satellite System: Challenges and Future Research Trends**
Abo-Zeed M., Bin Din J., Shayea I., Ergen M.
IEEE ACCESS, vol.7, pp.137291-137304, 2019 (SCI-Expanded)

XII. **Critical Penetration for Vehicular Networks**

Ergen M.

IEEE COMMUNICATIONS LETTERS, vol.14, no.5, pp.414-416, 2010 (SCI-Expanded)

XIII. **Multichannel Medium Access Control for Dedicated Short-Range Communications**

Mak T. K., Laberteaux K. P., Sengupta R., Ergen M.

IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol.58, no.1, pp.349-366, 2009 (SCI-Expanded)

XIV. **Performance analysis of slotted carrier sense IEEE 802.15.4 medium access layer**

Pollin S., Ergen M., Ergen S. C., Bougard B., Van der Perre L., Moerman I., Bahai A., Varaiya P., Catthoor F.

IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, vol.7, no.9, pp.3359-3371, 2008 (SCI-Expanded)

XV. **Formulation of distributed coordination function of IEEE 802.11 for asynchronous networks: Mixed data rate and packet size**

Ergen M., Varaiya P.

IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol.57, no.1, pp.436-447, 2008 (SCI-Expanded)

XVI. **Dependence of cooperative vehicle system performance on market penetration**

Shladover S. E., Polatkan G., Sengupta R., VanderWerf J., Ergen M., Bougler B.

TRANSPORTATION RESEARCH RECORD, no.2000, pp.121-127, 2007 (SCI-Expanded)

XVII. **Throughput analysis and admission control for IEEE 802.11a**

Ergen M., Varaiya P.

MOBILE NETWORKS & APPLICATIONS, vol.10, no.5, pp.705-716, 2005 (SCI-Expanded)

XVIII. **WTRP - Wireless token ring protocol**

Ergen M., Lee D., Sengupta R., Varaiya P.

IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol.53, no.6, pp.1863-1881, 2004 (SCI-Expanded)

XIX. **QoS aware adaptive resource allocation techniques for fair scheduling in OFDMA based broadband wireless access systems**

Ergen M., Coleri S., Varaiya P.

IEEE TRANSACTIONS ON BROADCASTING, vol.49, no.4, pp.362-370, 2003 (SCI-Expanded)

XX. **Channel estimation techniques based on pilot arrangement in OFDM systems**

Coleri S., Ergen M., Puri A., Bahai A.

IEEE TRANSACTIONS ON BROADCASTING, vol.48, no.3, pp.223-229, 2002 (SCI-Expanded)

Articles Published in Other Journals

I. **THE ROLE OF WEALTH FUNDS IN AN ENTREPRENEURIAL ECONOMY**

Bostan M., Ergen M.

TURKISH POLICY QUARTERLY, vol.16, no.2, pp.39-46, 2017 (ESCI)

Books & Book Chapters

I. **Entrepreneurial Kapital - Silicon Valley History and Startup Economy**

Ergen M.

Alfa Basım Yayım, İstanbul, 2015

II. **Mobile Broadband Including WiMAX and LTE**

ERGEN M.

Springer, New York, 2009

III. **Multicarrier Digital Communications Theory and Applications of OFDM**

ERGEN M.

Springer, New York, 2004

Refereed Congress / Symposium Publications in Proceedings

I. **Dimming Support for Visible Light Communication in Intelligent Transportation and Traffic System**
Ucar S., Turan B., Ergen S. C., Ozkasap O., Ergen M.
IEEE/IFIP Network Operations and Management Symposium (NOMS), İstanbul, Turkey, 25 - 29 April 2016,
pp.1193-1196

II. **Spectrum-Aware Dynamic Frequency Reuse (SADFR) for SON-Based OFDMA HetNets**
Karaman M. A., Gur G., Ergen M., Anarim E.
IEEE Wireless Communications and Networking Conference (WCNC), İstanbul, Turkey, 6 - 09 April 2014, pp.2558-
2563

III. **Performance analysis of slotted carrier sense IEEE 802.15.4 acknowledged uplink transmissions**
Pollin S., Ergen M., Ergen S. C., Bougard B., Catthoor F., Bahai A., Varaiya P.
IEEE Wireless Communications and Networking Conference, Nevada, United States Of America, 31 March - 03 April
2008, pp.1559-1564

IV. **Decomposition of energy consumption in IEEE 802.11**
Ergen M., Varaiya P.
IEEE International Conference on Communications (ICC 2007), Glasgow, United Kingdom, 24 - 28 June 2007,
pp.403-408

V. **Unequal importance image communication over heterogeneous networks**
Malboubi M., Bahai A., Ergen M., Varaiya P., Walrand J.
65th IEEE Vehicular Technology Conference, Dublin, Ireland, 22 - 25 April 2007, pp.629-633

VI. **Estimating Network Internal Link Loss Behavior From End-to-End Multi-cast Measurements**
Ergen S. C., Ergen M., Varaiya P.
IEEE Wireless Communications and Networking Conference, Nevada, United States Of America, 3 - 06 April 2006,
pp.2335-2341

VII. **Distributed cognitive coexistence of 802.15.4 with 802.11**
Pollin S., Ergen M., Timmers M., Dejonghe A., Van der Perre L., Catthoor F., Moerman I., Bahai A.
1st International Conference on Cognitive Radio Oriented Wireless Networks and Communications, Mykonos Isl,
Greece, 8 - 10 June 2006, pp.53-57

VIII. **Performance Analysis of Slotted Carrier Sense IEEE 802.15.4 Medium Access Layer**
Pollin S., Ergen M., Ergen S. C., Bougard B., Van der Perre L., Catthoor F., Moerman I., Bahai A., Varaiya P.
IEEE Global Telecommunications Conference (GLOBECOM 06), San-Francisco, Costa Rica, 27 November - 01
December 2006

IX. **Throughput Performance of a Wireless VoIP Model with Packet Aggregation in IEEE 802.11**
Ergen M., Ergen S. C., Varaiya P.
IEEE Wireless Communications and Networking Conference, Nevada, United States Of America, 3 - 06 April 2006,
pp.2235-2239

X. **Multiple description image coding: A new efficient and low complexity approach for wireless
applications**
Malboubi M., Bahai A., Ergen M.
43rd Annual Allerton Conference on Communication, Control and Computing 2005, Illinois, United States Of
America, 28 - 30 September 2005, vol.1, pp.448-453

XI. **Throughput analysis of an extended service set in IEEE 802.11**
Ergen M., Dundar B., Varaiya P.
IEEE Global Telecommunications Conference (GLOBECOM 04), Texas, United States Of America, 29 November - 03
December 2004, pp.1040-1045

XII. **Throughput formulation and WLAN optimization in mixed data rates for IEEE 802.11 DCF mode**
Ergen M., Varaiya P.
IEEE Global Telecommunications Conference (GLOBECOM 04), Texas, United States Of America, 29 November - 03
December 2004, pp.266-269

XIII. **Improving the aggregate throughput of access points in IEEE 802.11 wireless LANs**
Dong X., Ergen M., Varaiya P., Puri A.
28th Annual IEEE International Conference on Local Computer Networks held in conjunction with Workshop on

High-Speed Local Networks/Workshop on Wireless Local Networks, BONN KONIGSWINTER, Germany, 20 - 24 October 2003, pp.682-690

XIV. **Wireless token ring protocol-performance comparison with IEEE 802.11**

Ergen M., Lee D., Sengupta R., Varaiya P.

8th IEEE International Symposium on Computers and Communication (ISCC 2003), Antalya, Turkey, 30 June - 03 July 2003, pp.710-715

XV. **FLORAX - Flow-rate based hop by hop backpressure control for IEEE 802.3x**

Lee D., Coleri S., Dong X., Ergen M.

5th IEEE International Conference on High Speed Networks and Multimedia Communications (HSNMC 2002), Jeju-Si, South Korea, 3 - 05 July 2002, pp.202-207

XVI. **Verification and power analysis of an event-based system (TinyOS) and sensor network with hybrid automata**

Coleri S., Ergen M.

6th World Multi-Conference on Systemics, Cybernetics and Informatics (SCI 2002)/8th International Conference on Information Systems Analysis and Synthesis (ISAS 2002), Florida, United States Of America, 14 - 18 July 2002, pp.553-558

XVII. **MEWLANA-mobile IP enriched wireless local area network architecture**

Ergen M., Puri A.

56th IEEE Vehicular Technology Conference, Vancouver, Canada, 24 - 28 September 2002, pp.2449-2453

XVIII. **Lifetime analysis of a sensor network with hybrid automata modelling**

Coleri S., Ergen M., Koo T. J.

Proceedings of the 1st ACM International Workshop on Wireless Sensor Networks and Applications, Atlanta, GA, United States Of America, 28 September 2002, pp.98-104

XIX. **A study of channel estimation in OFDM systems**

Coleri S., Ergen M., Puri A., Bahai A.

56th IEEE Vehicular Technology Conference, Vancouver, Canada, 24 - 28 September 2002, pp.894-898

XX. **Wireless Token Ring Protocol**

Ergen M., Lee D., Puri A., Varaiya P., Attias R., Sengupta R., Tripakis S.

6th World Multi-Conference on Systemics, Cybernetics and Informatics (SCI 2002)/8th International Conference on Information Systems Analysis and Synthesis (ISAS 2002), Florida, United States Of America, 14 - 18 July 2002, pp.19-24

XXI. **Application of GPS to mobile IP and routing in wireless networks**

Ergen M., Coleri S., Dundar B., Jain R., Puri A., Varaiya P.

56th IEEE Vehicular Technology Conference, Vancouver, Canada, 24 - 28 September 2002, pp.1115-1119

Metrics

Publication: 59
Citation (WoS): 1664
Citation (Scopus): 2513
H-Index (WoS): 13
H-Index (Scopus): 16

Entrepreneurship Activities

Anonymous, AMBEENT WIRELESS YAZILIM VE BİLİŞİM ANONİM ŞİRKETİ, 10 October 2016, Founder Owner

Non Academic Experience

MiSONE A.Ş.
Celtic Plus
University of California Berkeley
Networld2020
5GPPP
Türk Telekom Group
TOBB Üniversitesi
Wichorus Inc.
University of California Berkeley