

Sayfe Kiaei , Professor, School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ, Sayfe@asu.edu

Professional Summary

Distinguished IEEE Fellow and Motorola Endowed Chair Professor with more than four decades of leadership experience in both academia and industry. Renowned for contributions to analog IC, RFIC, Power Management IC, Power Converters, communication systems, signal and multi-medial processing, and solar energy technologies. Founder and director of multiple multimillion-dollar international research centers under NSF, industry, CDADIC, and DOD, and government.

Academic Appointments and Leadership

Includes positions at Arizona State University (Professor, Endowed Chair), Oregon State University (Assistant/Associate Professor), and University of Texas, Austin (Adjunct Professor).

Industrial Leadership

Motorola Inc., Senior Member of Technical Staff leading R&D for 2G–4G, Bluetooth, WiFi, GPS, DSL, and DOCSIS technologies; represented Motorola in ITU, ETSI, and 3GPP standards committees and with Boeing Co. (1985–87) as Research Engineer.

Honors and Recognition

- IEEE Fellow (2004–Present)
- IEEE Darlington Best Paper Award on Mixed-Signal IC(1995)
- Global Standards Award (Motorola, 1999)
- Carter Best Teaching Award (1992)
- NSF Industrial University Fellowship (1993)

Funded Research Projects (selected)

- COE-Energy Center (\$22.5M, 2021–2025)
- NSF Spectrum Sharing (5G/6G) (\$300K, 2020–2022)
- NSF IUCRC Connection One (\$8.5M, 2002–2020)
- USPCAS-Energy (\$18M, 2014–2020)
- NSF ERC Solar Testbed QESST (\$45M, 2010–2020)
- DARPA RADHARD Electronics (\$1.5M, 2005–2006).

Publications and Patents

Full list of IEEE publications, patents, and standards contributions are included below.

Detailed Curriculum Vitae

FIELDS OF SPECIALIZATION

- Integrated Circuits (IC): Analog & Digital IC, Radio Frequency IC, Communication IC (wireline and wireless), Power Management IC, Sensor IC, Digital Circuits (VLSI, Processor, DSP, Memory System, System Clocking).
- Power Management: Power Management IC, Converters and Inverters (DC-DC, AC-DC), Resonators, Energy System & Management, Solar Energy.
- Sensor Circuits & Bioelectronics: RFID, ZIGBEE, Bluetooth, Biosensors, Hearing Aid sensors, Cochlear implant, Implanted devices electronics, Medical Implanted Communication System (MICS).
- Communication Systems: Wireless (1G-5G), wireline (CABLE DOCSIS, DSL, Ethernet, Serial I/O), 2-way radio, BT, WIFI,NFC, Sensors.
- Signal Processing: Digital Signal Processing, Adaptive Signal Processing, Video & Audio and acoustic Signal Processing, Adaptive multi-medial Audio/video signal processing.

DEGREES

- Ph.D., Electrical and Computer Engineering, Washington State University, 1987
- M.S., Electrical and Computer Engineering, Washington State University, 1984
- B.S.E.E., Electrical Engineering, Northeastern University, Washington State University, 1982

ACADEMIC POSITIONS

Fall 2001-Present: Professor, Endowed Chair Professor in Analog and RFIC, School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ

Courses:

- Integrated Circuits: Analog and digital IC, Radio Frequency IC, RF transceiver, VLSI, Processor System Architecture, Controller, Microcontroller, ASIC, Multimedia processor, Memory, I/O, Memory Controller, Clock System
- Power Management: PMIC, Inverters, DC/AC-DC, Battery Management, Integrated Power Management IC
- Sensors, Bioelectronics, Biosensors, Hearing Aid Electronics, Implanted devices electronics
- Signal and Audio processing: DSP, Video/Audio/Acoustic processing, adaptive signal processing, Array processing
- Communication system: multi-media, wireline and wireless, IP, PHY and MAC layer, Wireless 1G, 2G GSM, 3G (UMTA, WBCDMA), 4G LTE, 5G, WiFi, Bluetooth, Wireless system standards, MODEM standards, Wireline CABLE, DOCIS, DSL, Ethernet, Serial I/O

Research Projects

Research Funded by NSF, DOC, USAID, DARPA, JPL, NASA, Motorola Inc., Intel Inc., Broadcom, Qualcomm, Raytheon, General Dynamics, Texas Instruments, and over 10 other industries.

2004-2020, Director and founder of NSF IUCRC Center Connection One, School of Electrical, Computer, and Energy Engineering, Arizona State University, Tempe, AZ;

- The NSF Connection One Industry/University Cooperative Research Center was established the center in 2002 with focus on communication system, integrated Circuits and Systems, wireless system, RF, multi-media, sensors, and power management. The center has five university member with over 30 industrial members. Total funding over \$10M.

2021-2025, Director and PI, USAID, Center of Excellence for Energy (COE) ASU/ Egypt , Funding \$22.5M; Director and PI: COE - USIAD Centers of Excellence for Energy (COE)

- COE/E is a partnership between ASU-US and three Egyptian partner universities (EPU): Ain Shams University (ASU-EG), Aswan University (AU), and Mansoura University (MU). COE areas included power system, grid, power electronics, DC-DC / Inverters, renewable energy, PV, BIPV, PV fabrication and lamination, PV testing and certification, Wind, Hydro, bio-fuel, fuel cell, batteries and storage, and thermal areas. COE funded over \$4M of research, and has developed new energy curriculum. COE supported exchange of over 90 students and faculty visiting ASU for the last 4 years.

2014-2020, Director, USAID, ASU/PCASE: Center for Advance Studies in Energy, Funding \$18M. Director and PI: PCASE - Partnership Center for Energy systems,

- Energy Center funded by the USAID. USIAD Centers for Advanced Studies in Energy program (USPCAS-E) is a partnership between Arizona State University and two leading Pakistani universities: the National University of Science and Technology (NUST) Islamabad and the University of Engineering and Technology in Peshawar (UET). PCASE funded over \$5M of research, and has developed two new Graduate schools of Energy. Within 5 years, the center has over 1000 MS and PHD Students, with 14 new energy MS and PhD degrees, two new building with over 20 energy labs, and supported exchange of over 200 students. PCASE areas included power system, grid, power electronics, renewable energy, PV, BIPV, PV fabrication and lamination, PV testing and certification, Wind, Hydro, bio-fuel, fuel cell, batteries and storage, and thermal areas.

2008-2012: Associate Dean of Research, Ira A. Fulton Schools of Engineering, Arizona State University

- Responsible for leading the research infrastructure, promoting and developing research programs with industry and federal agencies, leading large multi-university proposals,

investing and providing seed funding to foster new research areas, and promoting graduate program in the college of engineering. Research Enterprise support included:

- Increase College of Engineering research funding from \$50M to over \$80M.
- Working with Vice President for Research, Dean's, and directors on University-wide research initiatives.
- Established the first NSF Engineering Research Center (ERC) at the ASU on Solar Energy QESST. Managed, organized and planned the ERC proposal process. ASU is the lead school partnering with MIT, Georgia Tech, U of Delaware, Cal-Tech, U of New Mexico, and UA.
- Lead the QESST testbeds for the development of built-in PV(BIPV) system including solar array integration with roof shingles, PV windows, single chip BIPV module regulator, and PV fabrication.
- Lead several trans-disciplinary 4M research projects (4M: multi-million, multi-investigator, multi-disciplinary, multi-university grants) in energy, security, and related initiatives.
- Oversight of over 20 existing research centers in the college of Engineering.
- Engage with industry and federal government to establish new research collaborations.
- Organized workshops and supported proposals for NSF, NIH, DOE, DOD, DARPA, etc.
- Organized workshops for new assistant professors to apply for NSF CAREER Awards. ASU CAREER awards grew from 3 annual awards in 2008 to over 15 CAREER awards by 2012.
- Research Administration and pre-award proposal administration for the schools. Developed a decentralized research administration and advancement team for the Schools supporting 5 schools, 12 departments, over 220 engineering faculty, with funding over \$70M.
- Annual budget over \$7M for supporting research centers, seed funding for new center, cost sharing, proposal support, equipment and infrastructure support, graduate scholarships, and research administration.
- ADR Staffs included, Director of industrial and government liaison, Director of research administration, and 14 research advancement staff.
- Graduate Programs: Recruiting, Fellowships, marketing, outreach, coordination with departments

1997-2001, Adjunct Professor, Electrical and Computer Engineering Dept., The University of Texas, Austin, Texas,

- Taught graduate courses at UT Austin on communication System, signal processing, multi0medial comm. Co-advised two Ph.D. program committees in IC design and Telecomm (while at Motorola)

1987-1993, Assistant / Associate Professor - Electrical and Computer Engineering Department, Oregon State University, Corvallis, OR

- Research and classes in Electronics, DSP, Communication system, multi-medial, Audio/video processing, networks, Wireless systems, MODEMS, Power management, power electronics. Graduated 30 MS and Ph.D. students.
- Faculty Chair, Computer Engineering Program, Developed a new Computer Engineering Program at OSU in 1987
- 1987-1993, NSF Center For Digital / Analog IC (CDADIC) Co-Director, NSF IUCRC Center director at Oregon State University. The CDADIC was established the center in 1987 with focus on integrated circuits at WSU, UW, and OSU with over 20 industrial members
 - <https://cdadic.oregonstate.edu/>

INDUSTRIAL POSITIONS

1993-2002: Motorola Inc., Senior Member of Technical Staff, Personal Communication Sector, Austin, Texas - Worked projects related to wireless communications, two-way push-to-talk radios, wireless networks, ADSL and MODEM RF, and related areas.

- Motorola Cellular Division, Wireless Technology Center (WITC), 1997-2002. Responsible for development of integrated circuits and systems for wireless handset. Lead number of projects including cellular (2G, 3G, 4G), wireless connectivity (Bluetooth and WIFI transceiver), GPS and location Receiver, wireless networks, 2-way radios and related areas.
- Motorola Semi-conductor products sector (SPS), Broadband Products Operations, 1995-1997, Worked on the development of XDSL (ADSL, VDSL, G.lite), MODEM, DOCSIS, Wireline communication, Optical broadband communication systems including OFDM, modulation, synchronization, equalization and the development of a single chip ADSL transceiver (CopperGoldTm). The transceiver contained Analog Front End (A/D, D/A, Hybrid), custom DSP, baseband processor, Memory, I/O, Clock system, DMT, modulation, demodulation, FFT, IFFT, echo canceler, time domain equalizer, front-end constellation mapping, Trellis code modulation, Viterbi decoder), audio and acoustic processing, DSP, video/audio / signal processing, and an on-chip DSP core.
- Land Mobile Products Sector LMPS 1993-1995, Responsible for Wireless digital two-way radios, developed RFIC, RF receiver, RF transmitter, digital audio and acoustic processing, audio and acoustic custom IC, DSP, frequency synthesizer, ADC, DAC, hot spot wireless network, next generation of digital two-way radios, "Talk about Radios", Japanese cellular systems (PHS).
- Standards, Represented Motorola in various standards including 2G-4G, GPS, Bluetooth working group, WiFi, 802.11, and DSL standards including T1E1, International Telecommunication Unit (ITU), T1E1, ETSI, 3GPPP, Universal ADSL Working Group (UAWG), Bluetooth working group, G.Lite working group, etc.

1985-87: Member of Research Staff, Boeing Co., Bellevue, Wa, Flight Systems Research and Technology Center, summer. Design Engineer, Hardware and CAD tool development for system control.

CONSULTANT

- Medtronic's, Analog bio-sensors, MICS, 2004-2005.
- Intel Inc. Chandler, AZ, 2002-2006: Development of 3G-4G Wireless transceiver.
- Sony Inc., San Diego, CA & Tokyo, Japan, 2002-2004: Review and development of various telecom cellular system architecture including 3G system architecture, and GPS system.
- Motorola Inc. 2002-2005: Supporting development of BT, WiFi, E911, GPS integrated circuits and systems for the cellular and mobile handsets.
- Hewlett Packard, Corvallis, OR – 1990-1993: Various project on development of custom analog and digital IC's for printer and inkjet system.
- Tektronix Inc, Beaverton, OR - 1988-1990: Design and Implementation of Data acquisition system for Spectrum analyzer, development of custom DSP algorithm for the Tektronix spectrum analyzer including system architecture, simulation, analysis, and design of oversampled data acquisition system.

FUNDED RESEARCH PROJECTS

Partial list of Research Awards

2021-2025 – COE – Center of Excellence for Energy, U.S. Agency for International Development (USAID), PI and Director, \$22.5M.

2020-2022 - Center for Next Generation Wireless Spectrum Sharing (5-6G Spectral sharing) The National Science Foundation (NSF), SII Planning, PI, \$300K.

Communication of shared spectrum for multi-media / Data / WiFi / Cellular

2002-2020 – Industry/University Cooperative Research Center (IUCRC), The National Science Foundation (NSF) - Connection One, NSF contribution \$1.5M.

Annual Industry Contribution: Total over \$7M.

2015-2016 – Integration of Smart Dynamic Optical Communication, The National Science Foundation (NSF), Integration of Smart Dynamic Optical Communication Networks for Intelligent Distribution of Power Workload and Data in Disaster, \$200K

2015-2020 – U.S. Agency for International Development (USAID), PCASE – Center for Energy systems, PI and Director, \$18M.

2013-2014 Arizona Space Grant Consortium, NASA, Goddard Space Flight Center, RADHARD electronics, \$200K

2012-2015 – Solar Energy, Private Donor, Solar Energy Development on international projects, \$2M

2011-2014 – Self-Characterization for Calibration MEMS Sensors, Semi-Conductor Research Corporation

Self-Characterization for Calibration and Process Feedback of MEMS Devices, bio-sensor , \$300K

2011-2013 - Bio-Sensors for Vital Signs Monitoring Device Design, The National Science Foundation (NSF), Remote wireless Bio-Sensors for Vital Signs Monitoring Device Design, \$250K

2010-2011 – Adaptive Compensation of Analog circuits, The National Science Foundation, Adaptive Compensation of Analog circuits imperfections using DSP methods, \$150K,

2010-2011 – Adaptive Self-Healing Wireless Sensor, The National Science Foundation, Autonomous Self-Healing Sensor Network Radio and Mixed-Signal Readout System Design, National Science Foundation (NSF), \$300K

2010-2020 – Solar Testbed, The National Science Foundation (NSF), \$45M , QESST NSF ERC Center on Solar Energy, Testbed Director

2010-2015 – REU, undergraduate research projects, The National Science Foundation (NSF), Research Experience for Undergraduate Students, projects: adaptive video, audio and acoustic, Glucose Amp-meter and impedeometer, total \$400K

2008-2013 - Solar System, The Science Foundation of Arizona (SFAZ), PEPER- Photovoltaic Environmental Performance and Reliability for the Arizona-Wide Electric Grid, \$1.2M.

2008-2009 - Medically implanted bio-sensor, The National Science Foundation (NSF), Medically implanted bio-sensor, wireless implanted bio-sensors, Wireless Glucose sensors, MICS, \$200K

2007-2011 – MEMS implanted hearing aid and bio-sensors, The National Science Foundation (NSF), Micro-Power Multi-Phase on-chip MEMS Hearing Aid, Adaptive hearing aid audio processor, 2007-2011, \$500K.

2007-2009 – Implantable Bio-Sensors, The National Science Foundation (NSF), High Efficiency Power Delivery and Front-End Module Design for Implantable Bio-Sensors \$480K

2005-2009 - MIMO Wireless network, The National Science Foundation (NSF), Cognitive MIMO Communications for Dynamic-Spectrum Wireless Networks, sharing multi-medial MIMO system, \$150K

2005-2009 - Radio Network, The National Science Foundation (NSF), Autonomous Self-Healing Sensor Network Radio, , \$250K

2005-2008 Integrated LiDAR on a chip, BAE Systems, Integrated on-chip Time Measurement Circuits LiDAR; \$650K

2005-2008 – Power Management Circuits, Freescale Semiconductor, PWM, Battery & Power management, \$150K

2005-2006 – RADHARD Electronics, DOD: Defense Advanced Research Projects Agency (DARPA), Radhard by Design - MRC/DARPA, Total funding \$1.5M

2005-2010 - Wireless Integrated Nano Technology Center, State of Arizona, WINTECH-Wireless Integrated Nano Technology Center, broad spectrum of projects on wireless shared spectrum system including video/audio/data and IP, \$450K annually, total \$2.5M

2004-2005 –NASA , Integration of Ultra-Low power RF CMOS, \$127K

2004-2008 – Implanted Neural-Enabled Prostheses bio-sensor with Cochlear implant, Deference Advance Research Project Agency (DARPA), Implanted Neural-Enabled Prostheses biosensor (Cochlear implant) with Sensorimotor Integration, \$500K

2004-2008 – NEMS RF Filters, Deference Advance Research Project Agency (DARPA), Nano-Mechanical RF Band pass resonator for 2GHZ RF Applications, with JPL, \$2.2 M,

2003-2005 - Implanted Neuro-Sensor, DOD-ARMY-ARL: Army Research Office (ARO), Implanted Neuro-sensor, \$175K

2002-2005 – RFIC, WiFi, Intel Corporation, Design of Multi-Standard RF Front-End Circuits for Cellular and WiFi, \$300K

2002 – Geo-location, GPS, SRC, LOW POWER ULTRA - WIDE BAND GEOLACTION SYSTEMS, \$65K.

2001-2003 – UWB, WIFI, SRC (Semi-conductors research Corp), Ultra-Wideband Transceivers for cellular and WiFi 802.11, \$225K

1987-1993 - Design of Analog/Digital IC's, The National Science Foundation, Center for the Design of Analog/Digital IC's (CDADIC) 1987-1995, At Oregon State, \$1.5M

1992-1994 – RFIC, Motorola Land Mobile Products Sector, LMPS, Low Power IF processing for Direct Digital Transceivers, \$100K,

1993 – Mixed-Signal IC, Hewlett-Packard, Hewlett-Packard Faculty Chair position in Mixed-Signal IC, HP, \$500K

1992-1993 - Faculty industry Fellowships, The National Science Foundation, National Science Foundation, Motorola Inc. Faculty Industry Fellowship, \$250K,

1992-1993 - Research Initiation Award (RIA) , The National Science Foundation, National Science Foundation, Research Initiation Award (RIA) (same as current CAREER Award), Synthesis and Automatic Derivation of Multi-Rate VLSI Arrays for DSP Algorithms, \$320K.

1988-1992 – Center for the Design of Analog/Digital IC's (CDADIC), CDADIC, various projects on Low-Noise Source Coupled Logic (SCL), Mixed-Mode IC's, CDADIC \$350K.

1988- Spectrum and time analyzers, Tektronix Inc., Decimation Filters for A/D Noise Enhancements, Tektronix, Inc., \$100K,

1987-1993 – DARPA, MOSIS, Tektronix, IT, Motorola, Various grants for IC Fabrication (DARPA/MOSIS, VLSI)

Testing equipment (Tek, HP), DSP system development (TI, Motorola)

AWARDS

- IEEE Fellow 2004-Present
- IEEE Fellows CAS Committee Chair, 2009-2012
- Global Standards Award, For contributions in the International Telecommunication Unit (ITU) for Asymmetric Digital Subscriber Line (ADSL) G.Lite Standards. Motorola Inc., 1999.
- 10X Cycle Reduction Award, for development of new IC design process from DSP algorithm to IC layout, Motorola Inc., 1995.
- IEEE Darlington best paper Award, IEEE Circuits and Systems Society Best Paper Award, 1995. For “Characterization and Comparison of CMOS FSCL Circuits with Conventional CMOS for mixed-signal ICs,” Published at: IEEE Trans. on Circuits and Systems II, Sept. 93.
- Carter Best Teaching Award, College of Engineering Best Teacher Award, Oregon State University, 1992. For “outstanding and inspirational teaching in the College of Engineering”. Award is selected by the confidential vote of all of the undergraduate students in the College of Engineering among over 125 professors in the College.
- Industrial University Fellowship (IUF) Award, National Science Foundation, 1993.
- Research Initiation Award, National Science Foundation, 1990-93.
- Outstanding Graduate Student Scholarship, Azur-Data Inc. WSU, 1984

PROFESSIONAL RECOGNITION

- IEEE Fellow, 2004-Present
- IEEE Fellow Committee Chair, CAS, 2008-2010
- IEEE Fellow Committee member, 2007-2010.
- IEEE Senior Member, 1993-Present, IEEE Member 1987-1992.
- IEEE Faculty Advisor, Oregon State University, 1987-1990

IEEE Editorials

- IEEE Microwave Magazine, Editor,
- IEEE System Journal, Associate Editor, 2010-2011.
- IEEE Transactions on VLSI, Associate Editor, Jan 2001-2008.
- IEEE Communication Magazine, Editor, Feature Issues on "Circuits for Wireless and Wireline Communications," April 1999.
- IEEE Transactions on Microwave Theory and Techniques, editor, Special Issue on: "Radio Frequency IC Design," Dec. 1998.
- IEEE Transactions on Circuits and Systems-II, editor, Special Issue on: "Low-Power Wireless Communication Systems," June 1997.
- Associate Editor, IEEE Transactions on Circuits and Systems-II, 1993-1996.
- Editor and Reviewer for many IEEE journals and conferences
- Founding member of IEEE RF Integrated Circuits Symposium
- Associate Editor, IEEE Communications, Tutorial & Surveys Magazine, 2006-2009.

Conference Organizations

Conference chair, Technical Program committee chair and TPC member, tutorials, workshops, session chair, etc. in RFIC, ISSCC, ISCAS, VLSI, ICASSP, Low-Power Symposium, ICC, Application Specific IC's, IMS, MTT, etc.

- RFIC Executive Committee members, 2000-2017
- RFIC Steering Committee Member, RFIC symposium, 1996-2017.
- RFIC Founding member, 1995-96.
- Technical Program Chair, IEEE International Sym. on Circuits and Systems, Phoenix, AZ, 2002.
- ISSCC Admin Council, Conferences Committee 2000-2005.
- General Chair, Radio Frequency IC (RFIC) Symposium, Seattle, WA, 2002.
- Technical Program Chair, RFIC Symposium, Phoenix, AZ, 2001.
- Finance Chair, RFIC symposium, Boston, MA, 2000.
- Publicity Chair, RFIC symposium, Los Angeles, CA, 1999.
- Transactions Chair, RFIC symposium, Baltimore, MD, 1998.
- General Chair, Int. Sym. on Low-Power Electronics and Design (ISLPED), Bio-Sensors, Monterey, CA, 97.
- Executive Committee Member, Int. Symp. On Low-Power Electronics and Design, 96-2000.
- Technical Program Committee Member of the following conferences:
- International Conference on Circuits and Systems: 1996, 2000, 2001, 2004-2008
- RFIC Symposium, 1996-2018
- Application Specific Array Processing (ASAP): 2000-2002

- Technical Program Chair, Int. Sym. on Low-Power Electronics and Design, Monterey, CA, 96.
- Arizona Telecom Comm (ATIC)
- GLS VLSI 1998, Lafayette, Louisiana, 1998
- VLSI Design 98, Chennai, India, Jan. 1998.
- ICECS, Lisbon, Portugal, 98.
- Application Specific Array Processing, 1995-97, 2000
- Vehicular Technology Conference, 1995-97.
- Inter. Conf. on Intelligent Information Systems, D.C., 1994-95.
- IEEE Pacific Rim Conference on Communications & Computers, Victoria, BC, Canada, 1991.

EXPERT WITNESS (partial list)

Patent litigation, patent validity, infringement, IPR, expert reports, deposition, testimony, and trade secrets at ITC, District court, and USPTO in the following areas (Complete list of cases available):

Electronics: Analog and Digital IC, Radio Frequency Integrated Circuits RFIC, Power Management, Battery Management, PMIC

Bioelectronics: Bi-sensors, Glucose monitoring system, Heart monitoring system, Hearing AID

Wireless communication: shared spectrum multi-media communication, Cellular: 1G- 5G, OFDM, WLAN: WiFi, 802.11, Bluetooth, ZIGBEE, RFID and NFC, Wireless Standards (ITU, ETSI, 3GPPP, LTE) including AMPS, GSM, CDMA, WCDMA, LTE, 1G, 2G, 3G, 4G, BT, WiFi (802.11), Satellite communications, Satellite Transceiver, ECHO and Multi-path cancelation

Wireline Communications: Wireline multi-media communication, MODEM, Digital Subscriber Line, ADSL, VDSL, MODEM, DOCSIS, Wireline standards including DSL, MODEM and DOCIS, Ethernet, Serial I/O, and related standards ITU/ETSI

GPS & Location: GPS system, GPS receiver, location determination

MEMS: MEMS, Bulk Acoustic Wave Filters, SAW, MEMS resonators, MEMS sensors, MEMS accelerometer

Signal processing & Communication: Mukti-medial processing, Vidoe/Audio and acoustic signal processing, adaptive signal processing, Communication networks, Communication system

PATENTS, PUBLICATIONS

Patents and Patent Applications (partial list)

ID	title	assignee	inventor/author
AU-2003222007-A8	Oscillator frequency correction in gps signal acquisition	Motorola Inc	Sayfe Kiaei, Thomas M King, George J Geier
WO-03093858-A3	Oscillator frequency correction in gps signal acquisition	Motorola Inc	Thomas M King, George J Geier, Sayfe Kiaei
WO-2004048909-A3	Compressed vector-based spectral analysis method and system for nonlinear rf blocks	Univ Arizona, Shahin Farahani, Sayfe Kiaei, Nazanin Darbanian	Shahin Farahani, Sayfe Kiaei, Nazanin Darbanian
US-2006226909-A1	Monolithic supply-modulated rf power amplifier and dc-dc power converter ic	Siamak Abedinpour, Sayfe Kiaei	Siamak Abedinpour, Sayfe Kiaei
US-7218085-B2	Integrated ZVS synchronous buck DC-DC converter with adaptive control	Arizona Board Of Regents	Siamak Abedinpour, Sayfe Kiaei
US-7327333-B2	Monolithic supply-modulated RF power amplifier and DC-DC power converter IC	Arizona Board Of Regents, Acting For And On Behalf Of Arizona State University	Siamak Abedinpour, Sayfe Kiaei
US-7528754-B1	Finite impulse response digital to analog converter	Arizona Board Of Regents	Bertan Bakaloglu, Sayfe Kiaei, Shahin Taleie
US-2018049703-A1	Wireless in-shoe physical activity monitoring	Timothy W. Markison, Sayfe Kiaei, Gary McCoy	Timothy W. Markison, Sayfe Kiaei, Gary McCoy
US-10264996-B2	Method and apparatus for wirelessly monitoring repetitive bodily movements	Sayfe Kiaei	Sayfe Kiaei
US-2019231226-A1	Method and apparatus for wirelessly monitoring repetitive bodily movements	Sayfe Kiaei	Sayfe Kiaei
US-10653337-B2	Local object detection system	Timothy W. Markison, Sayfe Kiaei, Gary McCoy	Timothy W. Markison, Sayfe Kiaei, Gary McCoy
US-2020266708-A1	Electronic circuit and method of controlling three-level switching converters	Arizona Board Of Regents On Behalf Of Arizona State University	Parisa Mahmoudidaryan, Sayfe Kiaei, Bertan Bakaloglu
US-11108325-B2	Electronic circuit and method of controlling three-level switching converters	Arizona Board Of Regents On Behalf Of Arizona State University	Parisa Mahmoudidaryan, Sayfe Kiaei, Bertan Bakaloglu
US11129547B2	Wireless in-shoe physical activity monitoring	Sigmasense LLC	Timothy W. Markison, Sayfe Kiaei, Gary McCoy

Standards Contributions

- “Spectral Compatibility of ADSL: Frequency Overlap vs. OFDM,” T1E1, Dec. 97.
- “Echo Cancellation for G.Lite Universal ADSL,” OFDM, Universal ADSL Working Group, Atlanta, GA, Jan 98.
- “8-bit QAM Constellation effects on reach for universal ADSL,” OFDM, Universal ADAL Working Group, Atlanta, GA, Jan 98.
- “Trellis Code Modulation coding gain for OFDM,” Universal ADSL Working Group, Atlanta, GA, Jan 98.
- “Monte Carlo Modeling and simulation of twisted pair wiring for OFDM,” Universal ADAL Working Group, Atlanta, GA, Jan 98.
- “Overlap Upstream/Downstream spectral allocation for OFDM ADSL,” International Telecommunication Unit, Chicago, March 98.
- “Echo Cancellation for ADSL OFDM,” International Telecommunication Unit, Antwerp, Belgium, 98.
- “Performance of Echo Cancellation ADSL in OFDM system in the presence of Near End Cross Talk (NEXT),” International Telecommunication Unit, Honolulu, Hawaii, June 98.
- Presentations and editorials at various XDSL and OFDM standards: ITU, ETSI, UAWG, and T1E1, 97-99.
- Presentations and editorials at various standards including Bluetooth SIG, WiFi, 802.11, NFC, RFID, 2G-5G, ITU, 3GPPP, 802.11, ..

Books

“Design, Modeling and Testing of Data Converters, P Carbone, S Kiaei,” F Xu - 2014 – Springer, © Springer-Verlag Berlin Heidelberg 2014

Refereed Journal Papers

1. Alizadeh, M. Yaghoobi, M. Meghdadi, A. Medi, and S. Kiaei, “A 10-W X-Band Class-F High-Power Amplifier in a 0.25- μm GaAs pHEMT Technology,” IEEE Trans. Microwave Theory Techn., vol. 69, no. 1, pp. 157–169, Jan. 2021.
2. S. A. Ayati, A. Alizadeh, and S. Kiaei, “CMOS Full-Duplex Mixer-First Receiver with Adaptive Self-Interference Cancellation,” IEEE Trans. Circuits Syst. I: Regular Papers, vol. 68, no. 2, pp. 868–878, Feb. 2021.

3. S. Nazhad, A. Alizadeh, M. Frounchi, J. D. Cressler, B. Bakkaloglu, and S. Kiaei, "5-GHz Injection-Locked Delay Cell With 10–25 ns Adjustable Group Delay in SiGe BiCMOS," *IEEE Trans. Circuits Syst. II: Express Briefs*, vol. 71, no. 3, pp. 1042–1046, Mar. 2024.
4. Alizadeh, S. Hassanzadehyamchi, A. Moradinia, A. S. Nazhad, M. Frounchi, O. Momeni, A. M. Niknejad, J. D. Cressler, and S. Kiaei, "D-Band Active Transmission Line with 33-GHz Bandwidth and 13-dB Gain at $f_{\max}/2$," *IEEE Trans. Microwave Theory Techn.*, vol. 72, no. 4, pp. 2452–2465, Apr. 2024.
5. CMOS Full-Duplex Mixer-First Receiver With Adaptive Self-Interference Cancellation. S. -A. Ayati; A. Alizadeh; S. Kiaei, *IEEE Transactions on Circuits and Systems I*, Jan 2021.
6. A 10-W X-Band Class-F High-Power Amplifier in a 0.25 μ m GaAs pHEMT Technology, A. Alizadeh; M. Yaghoobi; M. Meghdadi; A. Medi; S. Kiaei, *IEEE Transactions on Microwave Theory and Techniques*, Jan 2021.
7. An X-Band Class-J Power Amplifier With Active Load Modulation to Boost Drain Efficiency, A. Alizadeh; S. Hassanzadehyamchi; A. Medi; S. Kiaei, *IEEE Transactions on Circuits and Systems I: Sep 2020*
8. In-Field Recovery of RF Circuits from Wearout Based Performance Degradation, D. Chang; J. N. Kitchen; S. Kiaei; S. Ozev, *IEEE Transactions on Emerging Topics in Computing*, Jun 2020
9. A 50-V Isolation, 100-MHz, 50-mW Single-Chip Junction Isolated DC-DC Converter With Self-Tuned Maximum Power Transfer Frequency, C. Liu; D. Mandal; Z. Yao; M. Sun; J. Todsén; B. Johnson; S. Kiaei; B. Bakkaloglu, *IEEE Transactions on Circuits and Systems II: Express Briefs*, May 2019
10. Wideband Hybrid Envelope Tracking Modulator With Hysteretic-Controlled Three-Level Switching Converter and Slew-Rate Enhanced Linear Amplifier, P. Mahmoudidaryan; D. Mandal; B. Bakkaloglu; S. Kiaei, *IEEE Journal of Solid-State Circuits*, 2019.
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137. "Hierarchical Estimation Algorithms," Proc. of IEEE Conference on Man, Cybernetics, and Systems, Tucson, AZ, October 1985. [U. Desai S. Kiaei]
138. "Approximation of Markovian Models with Non-Constant Parameters," Proc. of 23rd IEEE Conference on Dec., Las Vegas, NV, pp. 1642-1644, December 1984. [U. Desai, S. Banerjee, S. Kiaei]
139. "A Canonical Correlation Approach to Reduced-Order LQR Design," Proc. of 23rd IEEE Conference on Dec., Las Vegas, NV, pp. 1523-1528, December 1984. [U. Desai, S. Banerjee, S. Kiaei]

GRADUATE STUDENT ADVISEES & RESEARCH PROJECT

(Partial list of Students graduated, current employment to the best of my knowledge)

- J. Durgam, VLSI Design of Dynamically Reconfigurable Array Processors, MSEE, 1988. Intel.
- J. Gilbert, Minimization Techniques for PLAs, MSEE, 1988, Tektronix Inc.
- L. Luo, CCA Methods for ARMA Spectral Estimation, MSEE, 1989. Berkeley Research Center
- E. Zahl, Enhancement Methods for A/D Noise Reduction, MSEE, 1989. AT&T
- L. Aihua, Synthesis of MRAs, MSEE, 1990. Intel.
- F. Aslam, Image Restoration Methods, MSEE, 1990.
- S.H. Chee, FSCL Circuits for Mixed-Mode IC's, MSEE, 1990. Linear Tech.
- C. Dawson, MSEE, 1990. Boeing
 - Chow, Source-Coupled Logic ALU, MSEE, 1990. Intel
- S. Maskai, Decimation Filters Using FSCL Circuits, MSEE, 1991. Intel
- L. Louis, VLSI Implementation of Toeplitz Matrices, MSEE, 1991.
- R. Badyal, Bit/Serial VLSI Design of IIR Filters, MSEE, 1992, HP
- Lap Mui, Piece-Wise Linear Schedule for VLSI Arrays, MSEE, 1992. HP
- S. Abdennadher, Adaptive Sigma-Delta Modulators, MSEE, 1992. Level One / Intel.
- H. Bribech, Second Order Adaptive A/D Schemes, MSEE, 1992.
 - Hickman, MSEE, 92. Tektronix
- M. Maleki, Current-Mode Flash A/D, MSEE, 1992. University of Oregon
- Man Wong, Low-Noise Decimation Filter for Mixed-Mode ICs, MSEE, 1993, Motorola.
- Anu Krishna Swamy, Low Noise IC Blocks for Mixed-mode IC's, MSEE, 1993, Ph.D., 1997.
- Manu Srivastava, Comparison of Differential Logic (FSCL, CVSL, DSLL), MSEE, 1994, Intel.
- Joel Oren, VLSI Design of Asynchronous FIR Filters, MSEE thesis, Feb. 1994. E-Systems.

- Y. Zheng, VLSI Design and Synthesis of Multi-Rate Arrays, Ph.D. March 94, Hughes Research.
- Satish Kulkarni, Low-Sensitivity Filters, MSEE, 1995, Motorola.
- Amit Dutta, Multi-user Interference Cancellation, Ph.D, Dec. 97, Faculty, India.
- Dwight Poplin, Multiplierless MPEG Decoder, MSEE, 1996. HP.
- Maxim Scarpa, Adaptive I/Q Miss-match Correction for Direct Conversion Receivers, MSEE 1998.
- Jeff McNeal, Sigma-Delta Frequency-to-Time Conversion, MSEE, 1998. Level One Comm.
- Julia Vogel, Adaptive DC offset Cancellation, MSEE, 1998. Faculty in Germany.
- Takao Inoue, MS, Echo Cancellation for ADSL, 1998. MSEE, The U of Texas at Austin.
- Navid Lashkarian, Frequency off-set estimation and Synchronization of OFDM systems, Ph.D., June 1999. Broadcom Inc. & Faculty at UC San Jose.
- Guner Arslan, (co-advisor with B. Evans), "Fast Equalization for DMT systems, with applications to ADSL," Ph.D. The University of Texas at Austin, 2000
- Salem Abdennadher, I/Q Mismatch Correction for RF Wireless transceivers, Ph.D., Level One Comm/Intel.
- Can Sandalci, DSL Line Driver, Ph.D., 2001, Intel.
- 34. Dean Badillo, Low-Cost VCO Ring Oscillators, PhD, 2004, Intel, Chandler,
- 35. Siamak Abedinpour, PhD, 2005 Freescale, Tempe, Arizona
- 36. Hemanth Shivalingaiah, Multi-Band Low Noise Amplifiers, Ph.D., 2006, Intel,
- 37. Shahin Farahani, PhD, 2006, Qualcomm Inc,
- 38. Nazanin Darbanian, M.S. Freescale, Tempe, Arizona
- 39. Joe Rutkowski, Joseph, MS, 2004, Phillips.
- 40. Chaudhuri, Bikram, Synthesizer, MS/PhD, MS 2004.
- Zhang, Jiandong, MEMs, MEMS, December-04
- Afsahi, Ali, MS/PHD, UC San Diego, QUALCOMM, Connection One
- Chen, Xiaomin, UWB, PHD, 2007, SRC/Motorola
- Jali, Hilda, Power Management, MS, June-05,
- Xuejin Wang, RF Optimization, 2006 CAD tools, PhD, Neo-Linear
- Umar Lyles, Power Amplifier, MS, 2006. Texas Instruments
- MS, Erika Munoz, RADHARD, 2007, Intel
- Waleed Khali, (Co-Advisor), Professor at Ohio State
- Jennifer Kitchen, PhD, 2009, Professor at ASU
- Shahin Mehdizad Taleie, RFDAC, PhD, 2009, Qualcomm
- Ilker Deligoz, PHD, 2009, Qualcomm
- Hyung Kim, PhD, Jan 2010, Intel
- Jung Le, PhD 2010, Intel, TI
- Syed Naqvi, PhD, 2012, Intel.
- Todd Martin, MS, 2011, TI
- Seungkee Min, PhD, 2011, Intel
- Ali Meamar, Post Doc, RFIC 2013

- Hitesh Khunti, MS 2013, Qualcom
- Debashis Mandal, Post Doc, Research faculty 2015-2018
- Edgar Martinez, PhD, 2015, Qualcomm
- Chirag Desai, MS, 2016, Qualcom
- Sanjay Avasarala, MS, 2016
- Li Ming, MS, 2017
- Qirong Peng, MS, 2017,
- Yu Geng, PhD, 2018
- Amir Ayati, PhD Aug 2018; Qualcomm
- Pasisa Mahmoudi, PhD, May 2019, Qualcomm
- Chai Yong, MS: 2015, PHD: 2019, Qualcomm
- Shrikant Singh, MS: 2016, PhD, 2019, Movandi
- Amir Alizadeh, Research Faculty 2019-Present
- Ata S. PhD, 2021, Ata Sarrafinejad, PhD, 2021
- Jie Fu, PhD, 2028
- Shamma Nasrin, Post Doc 2026

UNIVERSITY COMMITTEES

Various Committees at ASU, Oregon State University, etc.

INSTRUCTIONAL SUMMARY

Partial list of classes taught at Oregon State University (87-93), Motorola (93-2002), UT Austin (97-2002), Arizona State University (2002-present)

- Digital IC Design, Analog IC, RFIC, Digital IC, Power Management IC, VLSI
- Wireless Transceiver, Wireless Communications, GPS, Telecomm Systems, Digital Communication
- Signal Processing, Advance digital signal processing, Communication, Digital Communication, Digital Processing, Adaptive array processing, Audio Processing
- Computer Architecture, Microprocessor System Architecture, Pipeline Array Processing