

CURRICULUM VITAE

Prof. Alexander Fish

December 2019

Personal Details

First Name: Alexander
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Date of birth: 10/3/1976
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Education

Ph.D, 2002 – 2006 Institute: Electro-Optics (summa cum laude).
Faculty of Engineering, Ben-Gurion University,
Beer-Sheva, Israel.
Advisor: Prof. Orly Yadid-Pecht.
Subject: Smart active pixel sensors for ultra-low power applications.

M.Sc, 1999 – 2002 Institute: Department of Electrical and Computer Engineering
Faculty of Engineering, Ben-Gurion University,
Beer-Sheva, Israel.
Advisor: Prof. Orly Yadid-Pecht.
Subject: On-chip image processing: Active pixel sensor arrays using
Winner-take-all and center of mass algorithm.

B.Sc, 1995 - 1999 Institute: Electrical and Computer Engineering, Faculty of Engineering, Technion -
Israel Institute of Technology,

Academic Appointments

- 2017 - 2019 **Full Professor**, Faculty of Engineering, Bar-Ilan University, Ramat-Gan, Israel.
- Heading the Emerging Nanoscaled Integrated Circuits and Systems (EnICS) labs Impact Research Center
 - Heading the Teaching Committee of Faculty of Engineering
 - Leading research in the area of emerging nanoscaled integrated circuits and systems
 - Graduate and undergraduate student supervision
 - Teaching
- 2012 - 2017 **Associate Professor**, Faculty of Engineering, Bar-Ilan University, Ramat-Gan, Israel.
- Heading the Nanoelectronics track
 - Founder of the Emerging Nanoscaled Integrated Circuits and Systems (EnICS) labs
 - Leading research in the area of emerging nanoscaled integrated circuits and systems
 - Graduate and undergraduate student supervision
 - Teaching
- 2008-2012 **Senior Lecturer**, Department of Electrical and Computer Engineering, Ben-Gurion University, Beer-Sheva, Israel
- Heading the VLSI Systems Center (2011-2012)
 - Heading Low Power Circuits and Systems Lab
 - Leading research on ultra-low-power VLSI circuits and systems
 - Graduate and undergraduate student supervision
 - Teaching
- 2006 - 2008 **Postdoctoral Fellow**, Department of Electrical and Computer Engineering, University of Calgary, Canada
- Leading research on ultra-low-power mixed signal VLSI systems
 - Graduate students mentoring
 - Integrated Sensors Laboratory (ISL) management
- 2003 - 2006 **Lecturer**, Department of Electrical and Computer Engineering, Ben-Gurion University, Beer-Sheva, Israel
- 1999 - 2003 **Teaching Assistant**, Department of Electrical and Computer Engineering, Ben-Gurion University, Beer-Sheva, Israel

Research Interests

1. Energy efficient and high-performance nanoscale integrated circuits and systems.
2. Energy efficient memory arrays.
3. Radiation-Hardened memories.
4. CMOS image sensors and applications.
5. Hardware security.
6. Circuits and systems for biomedical applications.
7. Circuits for quantum computing.

Teaching Experience

Lecturer:

Digital Integrated Circuits	undergraduate;	Bar-Ilan University;	2013-
Advanced Topics in Hardware Security	graduate;	Bar-Ilan University;	2013-
Low Power Digital VLSI Circuits Design	graduate;	Bar-Ilan and Ben-Gurion;	2009- Universities.
Digital Electronic Circuits	undergraduate;	Bar-Ilan and Ben-Gurion;	2009- Universities.
Introduction to VLSI	undergraduate;	Ben-Gurion University;	2006
CMOS image sensors	undergraduate;	Ben-Gurion University;	2003-2005
VLSI design	undergraduate;	Ben-Gurion University;	2005

Awards

- 2016 “Teaching Excellence” recognition, Bar Ilan University, Ramat Gain, Israel, April, 2016.
- 2016 Award for excellence in research, Bar Ilan University, Ramat Gain, Israel, April, 2016.
- 2014 Supervisor of the Best Student paper at the IEEE S3S conference, San Francisco, October, 2014
- 2012 The Electrical Engineering Department “Teaching Excellence” recognition, Ben-Gurion University, Beer-Sheva, Israel, January, 2012.
- 2006 The Engineering Faculty Dean “Teaching Excellence” recognition, Ben-Gurion University, Beer-Sheva, Israel, January, 2006.
- 2005 Young innovator award for outstanding achievements in the field of information theories and

applications, International Journal “Information Theories and Applications”.

- 2005 Best paper finalist award - Sensory Systems Track, IEEE International Symposium on Circuits and Systems, Kobe, Japan, May, 2005
 - 2004 Best paper finalist award - IEEE Conference on Electronics, Circuits and Systems, Tel-Aviv, Israel, December, 2004.
 - 1997 The Electrical Engineering Dean Award, Technion, Haifa, Israel.
 - 1998 The Technion President’s Award, Technion, Haifa, Israel.
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Research Grants

1. “Dual mode logic for energy reduction and performance improvement in RISC-V processor”, Magnet program, Israeli Innovation Authority, 2018-2020, GenPro consortium, Magnet program, Israel Innovation Authority, Amount:100,000\$.
2. ”System on a chip Laboratory – architecture and implementation of RISC-V based processor”, HiPer consortium, Magnet program, Israeli Innovation Authority, 2017-2019, GenPro consortium, Magnet program, Israel Innovation Authority, Amount:1,600,000\$.
3. "Advanced techniques for detection and improvement of droop voltage in integrated circuits”, Ministry of Science”, Ministry of Science, together with Prof. Shor (BIU), 2017-2020, Amount: 340,000\$.
4. "Inter-Cellular Cyborg (ICC)”, Ministry of Science, together with Prof. Popovzer (BIU), Prof. Shaham (TAU) and Prof. Socher (TAU). 2017-2020, Amount:680,000\$.
5. “High speed digital and memory design”, HiPer consortium, Magnet program, Chief Scientist of the Israeli Ministry of Industry of Economics, Magnet program, Israeli Innovation Authority, 2017-2019, Amount:170,000\$.
6. ”System on a chip Laboratory”, HiPer consortium, Magnet program, Israeli Innovation Authority, 2017-2019, together with Dr. Adam Teman, BIU, Israel Innovation Authority, Amount:1,600,000\$.
7. "Data Dependent Power Regulation for Hardware Security Applications", Kamin, competitive program of Israel Innovation Authority, 2017-2019, together with Dr. Osnat Keren, BIU. Amount: 220,000\$.
8. "Circuit level countermeasures to address power analysis synchronization for secured hardware", Israel Science Foundation, 2016-2020, Amount 280,000\$.
9. "Secured memories", Magneton Program, Chief Scientist of the Israeli Ministry of Industry of Economics, 2016-2018, together with Dr. Osnat Keren, BIU. Amount: 200,000\$.
10. ”High speed digital and memory design”, HiPer consortium, Magnet program, Chief Scientist of the Israeli Ministry of Industry of Economics, 2014-2017, Amount: 300,000\$.

11. "System on a chip Laboratory", HiPer consortium, Magnet program, Chief Scientist of the Israeli Ministry of Industry of Economics, 2014-2017, together with Prof. Wimer, BIU. Amount 2,500,000\$
12. RMTL logic as a countermeasure against DPA attacks, Kamin, new competitive program of Chief Scientist of the Israeli Ministry of Economy, 2013-2015, together with Dr. Osnat Keren, BIU. Amount: 220,000\$.
13. CMOS-SOI Visible and THZ Combined Imaging for Space Observing Applications, Tashtiyot grant under Israeli Ministry of Science, 2013-2016, together with Prof. Rosen, BGU and Dr. Eran Socher, TAU. Amount 350,000\$.
14. Black Box for SRAM Stability Measurement and Design Optimization at Nano-Scaled Processes, Israel-German Foundation for scientific research and development, 2014. Amount 33,000\$.
15. Energy savings in digital circuits and systems by Combined Multi Operation Mode (CMM), Israel Science Foundation, 2013-2016, together with Prof. Wimer, BIU. Amount 230,000\$.
16. Leakage Power Reduction in SRAM arrays, Magneton, program of Chief Scientist of the Israeli Ministry of Industry, Trade and Labor, 2013-2015. Amount: 160,000\$.
17. "CMOS Image sensors", Microsoft sponsored research, 2012 – 2014. Amount: 550,000\$.
18. Low Power Radiation Hardened Electronic Components for Space, Tashtiyot grant under Israeli Ministry of Science, 2012-2015, together with Prof. Ginosar, Technion. Amount 115,000\$.
19. Dual Mode Logic, Kamin, new competitive program of Chief Scientist of the Israeli Ministry of Industry, Trade and Labor, 2011-2013. Amount: 200,000\$.
20. Near Threshold logic and SRAMs, Low power NVM arrays, Chief Scientist of the Israeli Ministry of Industry, Trade and Labor (Magnet) / collaboration with Zoran and Tower, 2010-2011. Amount: 500,000\$.
21. Ultra-low power low voltage digital circuits, Chief Scientist of the Israeli Ministry of Industry, Trade and Labor (Magnet) / collaboration with Zoran, 2009-2010. Amount: 360,000\$.
22. Ultra-low power subthreshold digital circuits, Chief Scientist of the Israeli Ministry of Industry, Trade and Labor (Magnet) / collaboration with SanDisk, 2008-2009, together with Prof. O. Yadid- Pecht, BGU. Amount: 190,000\$.
23. Grant for Research Lab establishment, Planning and budgeting committee, 2008-2011. Amount: 70,000\$.

Professional Activities

Editor and Technical Committees:

1. Editor-in-Chief, Journal of Low Power Electronics and Applications, MDPI, 2010 - 2018.
2. Associate Editor, IEEE Sensors Journal, since 2010.

3. Associate Editor, IEEE Access Journal, since 2013.
4. Associate Editor, Integration, the VLSI Journal, Elsevier, since 2013.
5. Associate Editor, Microelectronics Journal, Elsevier, since 2013.
6. Special issue editor, "Selected Topics in Low Power Design From Circuits to Applications", Journal of Low Power Electronics and Applications, MDPI, 2010.
7. Guest co-Associate Editor, special issue on "Design Methodologies for Low Power Arrays", IEEE Sensors Journal, 2010.
8. VSA Technical Committee member, IEEE Circuits and Systems Society, since 2012.
9. Sensory Systems Technical Committee member, IEEE Circuits and Systems Society, since 2007.
10. Bio-medical Circuits and Systems Technical Committee member, IEEE Circuits and Systems Society, since 2007.

Conference Organization, Management and Special Sessions:

1. Co-organizer of Special Session ““Hardware Security: New Attack Horizon and Countermeasures”, IEEE International Symposium on Circuits and Systems, Spain, 2020.
2. Co-organizer, TSMC – BIU workshop, Bar Ilan University, November 2019
3. Co-General Chair, BIU-Imec workshop, Bar Ilan University, February 2017.
4. Co-organizer, Hiper consortium workshop, Bar Ilan University, May 2017.
5. Co-organizer, WEEE workshop, Sweden, June 2017.
6. Tutorials Chair and Senior Committee member, IEEE S3S Conference, San Francisco, USA, 2016.
7. Co-Chair, Nano Electronic Systems, IEEE Melecon, Cyprus, 2016.
8. Fundamental Class Chair, Senior and Technical Committees member, IEEE S3S, San Francisco, USA, 2015.
9. Sensors track co-chair, IEEE ICECS, Egypt, 2015.
10. General Co-chair, Workshop on Energy Efficient Electronics, EPFL, Switzerland, 2014.
11. Technical Program Chair, IEEE FTFC Conference, Monaco, France, 2014.
12. Special Sessions Chair, IEEE Sensors Conference, Seville, Spain, 2014.
13. Senior Committee member, IEEE S3S Conference, San Francisco, USA, 2014.
14. General Chair, Workshop on Energy Efficient Electronics, Bar-Ilan, Israel, 2012.
15. TPC member, IEEE VLSI-SOC conference, since 2012.
16. Chair, Sensing and Sensor Networks track, IEEE International Conference on Electronics, Circuits and Systems, Seville, Spain, 2012.
17. Co-organizer of a Special Session on “Designing Next-Generation Energy Systems with More than Moore Technologies”, IEEEI, Eilat, Israel, 2012.
18. Chair, Circuit and System Design track, The 3rd Asia Symposium on Quality Electronic Design, 2012.

19. Co-chair, Circuit and System Design track, The 3rd Asia Symposium on Quality Electronic Design, 2011.
 20. Co-organizer of a Special Session on “Design Methodologies for Advanced Ultra Low Power Sensor and Memory Arrays”, IEEE Sensors Conference, Christchurch, New Zealand, October, 2009.
 21. Co-organizer of Special Session “Low Power Smart CMOS Image Sensors and Beyond”, IEEE International Symposium on Circuits and Systems, Seattle, USA, 2008.
 22. Co-organizer of a Special Session on “Smart” CMOS Image Sensors, IEEE Sensors Conference, Atlanta, USA, October, 2007.
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Reviewer for Journals and Conferences:

Conferences IEEE International Symposium on Circuits and Systems (ISCAS);
IEEE International Conference on Electronics, Circuits and Systems (ICECS);
IEEE Sensors Conference; IEEE International Midwest Symposium on Circuits and Systems;
IEEE FTFC conference and many others

Journals IEEE Sensors; IEEE Transactions on Circuits and Systems I;
IEEE Transactions on Circuits and Systems II; Optical Engineering;
Elsevier Sensors & Actuators; IEEE Transactions on Electron Devices;
IEEE Transactions on VLSI, IEEE Journal of Solid State Circuits; and many others

Membership in Professional Societies

Since 2003 Member of the IEEE society
Since 2013 Member of IEEE Solid State Circuits Society
Since 2013 Member of IEEE Circuits and Systems Society

Graduate Students

Current

1- Postdoctoral Fellow, 6 Ph.D students, 8 M.Sc students

Former:

4 Postdoctoral Fellows, 5 Ph.D students, 18 M.Sc students