

**CURRICULUM VITAE**

**Name: David Akopian**  
**Rank: Assistant Professor**

**I. GENERAL INFORMATION****A. Personal Data:**

David Akopian, PhD  
 Assistant Professor  
 Electrical & Computer Engineering Department,  
 College of Engineering,  
 University of Texas at San Antonio.  
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**B. Education:**

**1997:** Doctor of Technology (Ph.D.) degree from Tampere University of Technology, Finland  
**1993-1997:** International Programm in DSP and Finnish Post-Graduate School GETA, Tampere University of Technology, Signal Processing Laboratory, Finland, EU  
**1990-1992:** Licenciate at the Institute for Problems of Informatics and Automation of the Armenian National Academy of Sciences, Yerevan, Armenia. Passed the tests for the Candidate degree (Ph.D) in Computer engineering, mathematical modelling and mathematical methods in science.  
**1981-1987:** BS and MS degrees from Moscow Institute of Physics and Technology (PhysTech), Department of Radio-Engineering and Cybernetics, Moscow, USSR (A top USSR/Russian university". Thesis: "Motion tracking of objects in a dense false detections environment"

**C. Academic Appointments** (chronological with latest first):

**2003-2009:** Assistant Professor, UTSA  
**1998-1999:** Coordinator of Tampere International Center of Signal Processing (TICSP).  
**1997-1999:** Senior Lecturer at the Signal Processing Laboratory, Tampere University of Technology

**D. Other Employment:**

**2001-2003:** Specialist, Research and Technology Access, Nokia Mobile Phones.  
**1999-2001:** Senior Research Engineer, Research and Technology Access, Nokia Mobile Phones.  
**1994-1998:** Teaching and research at the Signal Processing Laboratory, Tampere University of Technology, Finland.  
**1988-1993:** Research at the Institute for Problems of Informatics and Automation, Armenian National Academy of Sciences and Yerevan State University.  
**1987:** Trainee at the Moscow Research Institute on Radio-optics.

**E. Consulting:****F. Certification and Licensure:****G. Honors and Awards:**

- Finalist, Honorary Mention, 2008, 4<sup>th</sup> place at ATT National "Big Mobile on Campus Challenge" competition.
- Principal Investigator: NSF-SGER (Award #0833852 , 2008-2009)

- Course Redesign Award, 2008, UTSA COE
- Senior Investigator: NSF-CNS (Award #0551501, 2006-2009), (PI: Dr. Raju)
- Principal Investigator: AFRL/UTSA Award, 2006-2007
- Who's Who in America: 2006-2008
- Faculty Research Award, The University of Texas at San Antonio, 2005
- Investigator Award, Nokia Corporation, 2002
- Postgraduate Studies Fellowship, CIMO, Centre of International Mobility, Finland, 1993-1994
- Postgraduate Studies Fellowship, GETA, Finland, 1995-1997
- 20 patents

## II. TEACHING

### 1. Classroom/Laboratory:

Period	Course	Level
Fall 2008	<u>Spread Spectrum Communications and GPS</u>	<u>G</u>
Spring 2008	<u>Wireless Communications</u>	<u>G</u>
Spring 2008	<u>Communication Systems</u>	<u>U</u>
Fall 2007	<u>Simulation of Communication Systems</u>	<u>U/G</u>
Spring 2007	<u>Communication Systems</u>	<u>U</u>
Spring 2007	<u>Wireless Communications</u>	<u>G</u>
Fall 2006	<u>Simulation of Communication System</u>	<u>U</u>
Spring 2006	<u>Spread Spectrum Communications and GPS</u>	<u>G</u>
Fall 2005	<u>Communication Receivers</u>	<u>U</u>
Summer 2005	<u>Simulation of Communication Systems</u>	<u>G</u>
Spring 2005	<u>Spread Spectrum Communications and GPS</u>	<u>G</u>
Fall 2004	<u>DSP for Communications</u>	<u>U</u>
Spring 2004	<u>Spread Spectrum Communications</u>	<u>G</u>
Fall 2003	<u>Digital Signal Processing</u>	<u>U</u>
1997, 1998, 1999	<u>Advanced signal processing and applications</u>	<u>G</u>
Level: Undergraduate (U), Graduate (G)		

Level: Undergraduate (U), Graduate (G)

### B. Instructional Development:

#### 1. Courses Developed (Course number, title, date)

1. 4643: Digital Signal Processing (Fall 2003)
2. 5283: Spread Spectrum Communications and GPS (Springs 2004, 2005, 2006, Fall 2008)
3. 4953: DSP for Communications (Fall 2004)
4. 5283: Simulation of Communication Systems (Summer 2005)
5. 4953: Simulation of Communication Systems (Fall 2005, Fall 2007)
6. 5283: Topics in Comms: Wireless Communications (Springs 2007, 2008)
7. 4613: Communication Systems (Springs 2007, 2008)
8. 5373: Wireless Communications (Spring 2009)
9. Numerous independent study courses on GPS, UWB, WLAN, embedded programming, 2004-2008

#### 2. Media and Software Developed

- Lecture notes in WebCT
- Matlab simulations for communication systems
- In-house WLAN positioning testbed
- In-house cell phone based education toolbox
- In-house cell phone based PreNotiS safety application

### C. Masters' Theses and Ph.D. Dissertations Directed

## 1. Masters

### A. MS Thesis/Project, Completed

1. **(MS Thesis Chair)** Swati Goyal, "Software Receiver Algorithms for Assisted GPS", Dec 2005
2. **(MS Thesis Chair)** Sunil D'Souza, "Secure Mobile Communication," Aug 2005
3. **(MS Thesis Chair)** Rakesh Kasarla "Surveying for WLAN positioning and overview", Dec 2007
4. **(MS Thesis Chair)** Khalil Naghdali, "Reduced Complexity UWB Receivers" MS thesis, May 2007
5. **(MS Thesis Chair)** Raja Sekhar Pilli, "Performance evaluation of frequency and time domain correlators for spread spectrum receivers": Dec 2007
6. **(MS Thesis Chair)** Susheel Miryakar "Development of mobile phone applications using J2ME: Preventive Notification System": Dec 2007
7. **(MS Thesis Chair)** Adnan Suleiman, "Scalable FFT Architectures," May 2007
8. **(MS Thesis Chair)** Paul Ybarra, "Optimization of wavelet transforms," May 2008
9. **(MS Thesis Chair)** Maheedhar Gunturu, "Integrity monitoring for WLAN positioning," Aug 2008
10. **(MS Project Chair)** Sandesh Reddy Nerallapally "Implementation of FFT Convolution Algorithms Using DSP fixed-point Processor", Aug 2008
11. **(MS Project Chair)** Mythreyee Doma, "Floating Point Implementation of FFT Convolution on TMS320C67xx Processor", Aug 2008

### B. MS Thesis, Ongoing

12. **(MS Thesis Chair)** Pradeep Kashyap, "Software GPS receiver development" expected: Dec 2008.
13. **(MS Thesis Chair)** Sriphani Kiran Yerubandi, "Robust WLAN positioning" expected: May 2009.
14. **(MS Thesis Chair)** Abhinav Kumar, "Simplified massive preventive communication for mobile applications" expected May 2009.

## 2. Ph.D. Dissertation

### 1. Ph.D. Dissertations Completed

1. **(PhD Thesis Chair)** Phanikrishna Sagiraju, A software GPS receiver design for indoor environments," Aug 2007
2. **(PhD Thesis Co-Chair)** Catalin Lacatus, "Distributed Codeword Adaptation and power control in Dynamic wireless Systems," Aug 2008

### 2. Ph.D. Dissertations, Ongoing

3. **(PhD Thesis Chair)** Alexandr Panchul, "Cooperative GPS and Communication Networks," expected: Aug 2009
4. **(PhD Thesis Chair)** Adnan Suleiman, "Scalable architectures for communication systems," expected: Aug 2010
5. **(PhD Thesis Chair)** Adel Hussein, "Scalable architectures for multimedia communications," expected: Dec 2009
6. **(PhD Thesis Chair)** Arpine Soghoyan, "Scalable architectures for multimedia communications," expected: Dec 2011.

## D. Membership on Graduate Committees

### 1. Masters

1. **(MS Committee Member)** Veerabhadra S. Bhamidipati, "New methods of calculation of reversible integer discrete cosine transform," 2004
2. **(MS Committee Member)** Zhangji Hu "MIMO and space-time coding: system analysis and simulations", 2004
3. **(MS Committee Member)** Benjamin Mello Rodriguez II, "Detection of hidden information within secure communication channels", 2004
4. **(MS Committee Member)** "Secure multilayer database system for digital media archiving" by Okan Caglayan, August 2005.
5. **(MS Committee Member)** "Secured and high capacity stegonographic algorithms for color

- and binary images" by Ravindranath Cherukuri, August 2005
6. **(MS Committee Member)** "Optimizing the performance of a code division multiple access (CDMA) system using the total square correlation (TSC) metric" by Matthew Aguirre
  7. **(MS Committee Member)** "Performance evaluation of analog fiber optic links" by Pushkar Chennu, December 2005.
  8. **(MS Committee Member)** "New methods of filtering for 1-D signals by the paired transform" by Jung-Hua Liao, May 2005.
  9. **(MS Committee Member)** "Integer-to-integer quaternion fourier transformations" by Sree Phani Kishore Devineni, August 2005.
  10. **(MS Committee Member)** "Prediction of an engine component damage using Monte Carlo simulation and particle filtering" by Jin Woo Kim, August 2005.
  11. **(MS Committee Member)** "Effect of ASE noise on M-QAM fiber optic link performance," by Jennifer James, July 2006
  12. **(MS Committee Member)** "Digital forensic solution for electronic design theft: efficient digital image processing solution for automatic recognition and comparison of printed circuit boards (PCBS), schematic and layout images," by Hani Saleh, July 2006
  13. **(MS Committee Member)**, "Optimal placement of nodes in wireless sensor networks with sensitivity constraints," by Mark Glover, Nov 2006
  14. **(MS Committee Member)**, "Fingerprint verification based on image filtering of ridges," by Naveena Marupudi, Aug 2006
  15. **(MS Committee Member)**, "Multiresolution signal resolution by fourier transform time-frequency correlation analysis," by Julian U Anugom, May 2006
  16. **(MS Committee Member)** Methods in UWB communications, by D. Popescue student, Nov 2006
  17. **(MS Committee Member)** Wasif Ali Faraz Mir, "Performance evaluation and establishment of BER model for equal and unequal spaced channels in high bit-rate WDM systems," Dec 2007
  18. **(MS Committee Member)** Ravindranath C Cherukuri, "System of systems based adaptive secured digital multimedia communication channels," PhD. proposal, Nov 2007
  19. **(MS Committee Member)** Shilpa Chalasani, "Performance of Temperature Sensors in Mobile Health Care Services" MS project, Dec 2007
  20. **(MS Committee Member)** Kotamaraju Hasitha "Environmental Monitoring Using Wireless Sensor Networks", MS project, Dec 2007
  21. **(MS Committee Member)**, Mihir Bhalavat, Chair: F. Hudson. August 2008.
  22. **(MS Committee Member)**, Marissa Colette, Chair: F. Hudson. August 2008.
  23. **(MS Committee Member)**, Sudheera Valleballi, Chair: GVS. Raju. August 2008.
  24. **(MS Committee Member)**, Yousuf Rashid, Chair: M. Shadaram. Dec 2008.
  25. **(MS Committee Member)**, Soheel, Chair: M. Shadaram. Dec 2008.
  26. **(MS Committee Member)**, Ruting Jia, Chair: Chunjiang Qian. Aug 2008.

## 2. Ph.D. Dissertation

1. **(PhD Thesis Committee member)**, Okan Caglayan, Chair Sos Aghaian, Nov 2008
2. **(PhD Committee Member)** Chris Smith, "Hiding, Detecting and removing steganographic noise," PhD Thesis, May 2007
3. **(PhD Committee Member)** Ashok Tummala, "Host based intrusion detector: component of distributed intrusion detection system (DIDS) architecture", Dec 2007
4. **(PhD Committee Member)** Yufang Yin, "Bayesian Signal Processing for Communications and Genomics" May 2007
5. **(PhD Committee Member)** Ocan Caglayan, "Digital Multimedia System Security applications based on transform domain techniques," PHD thesis proposal, Dec 2007
6. **(PhD Committee Member)** Ravindranath C Cherukuri, "System of systems based adaptive secured digital multimedia communication channels," PhD. proposal, Nov 2007
7. **(International Ph.D. thesis committee member)** "Multistage robust adaptive filtering of multichannel remote sensing images" by Oleg Tsymbal, Tampere University of Technology, 2005.

## E. Postdoctoral Fellows Supervised

Phanikrishna Sagiraju, 2007-2008

**F. Undergraduate Students (Research) Supervised**

H. Nguyen, T. Nguyen, R. Trevino, E. Teran-Delgado on Senior Design Project related to cell phone programming.

**III. RESEARCH****A. Bibliography:****1. Books/Book Chapters****1a. Books**

D. Akopian, *Systematic Approaches to Parallel Architectures for DSP Algorithms*, 1997, Acta Polytechnica Scandinavica, EI 89, Espoo, Finland, ISBN 952-5148-29-7

**1b. Book Chapters****2. Journal Papers (refereed full length)****2a. Published or In Press**

1. C. Lacatus, P. Yaddanapudi, D. Akopian, M. Shadaram, "Dynamic spectrum and power allocation for unlicensed wireless systems," accepted to IEEE Systems Journal, Oct 2008.
1. C. Lacatus, D. Akopian, M. Shadaram, "Reduced complexity for optimal spreading sequence design," in press, IEEE Transactions on Circuits and Systems, 2008.
2. P. Sagiraju, G.V.S. Raju, D. Akopian, "Fast acquisition implementation for high sensitivity global positioning system receivers based on joint and reduced space search," IEE Proceedings on Radar, Sonar, and Navigation, in press, 2008. (will be available at [ieeexplore.ieee.org](http://ieeexplore.ieee.org))
3. C. Smith, S. Agaian, D. Akopian, "A wavelet-denoising approach using polynomial threshold operators," IEEE Signal Processing Letters, in press, 2008.
4. D. Akopian and S. Agaian, "A fast time-recursive correlator for DSSS systems," IEEE Signal Processing Letters, in press, 2008.
5. D. Akopian, "On optimal bit allocation for classification-based source-dependent transform coding," Research Letters in Signal Processing, vol. 2008, ID 421650. (available at [www.hindawi.com](http://www.hindawi.com))
6. D. Akopian and S. Agaian, "Fast matched Filters in Time Domain," IEE Proceedings on Radar, Sonar & Navigation, vol 153, No.6, Dec 2006, pp. 525-531. (available at [ieeexplore.ieee.org](http://ieeexplore.ieee.org))
7. P. Sagiraju, S. Agaian, D. Akopian, "A Reduced Complexity Acquisition of GPS Signals for Software Embedded Applications" IEE Proceedings on Radar, Sonar & Navigation, Vol. 153, No.1, Feb 2006, pp. 69-78. (available at [ieeexplore.ieee.org](http://ieeexplore.ieee.org))
8. D. Akopian, "Fast FFT Based GPS Satellite Acquisition Methods" IEE Proceedings on Radar, Sonar & Navigation, Vol. 152, No. 4, August 2005, pp. 277-286. (available at [ieeexplore.ieee.org](http://ieeexplore.ieee.org), a top accessed paper, e.g. 3<sup>rd</sup> top accessed in March 2008)
9. D. Akopian and J. Astola, "An optimal nonlinear extension of linear filters based on distributed arithmetic," IEEE Transactions on Image Processing, Vol. 14, Issue 5, May 2005, pp. 616-623.
10. H. Sairo, D. Akopian, J. Takala, "Weighted dilution of precision as quality measure in satellite positioning", Radar, Sonar and Navigation, IEE Proceedings, Vol. 150, Issue: 6, 1 Dec. 2003, pp: 430 – 436. (available at [ieeexplore.ieee.org](http://ieeexplore.ieee.org))
11. D. Akopian, J. Takala, J. Saarinen, J. Astola, "Multistage interconnection networks for parallel Viterbi decoders," IEEE Transactions on Communications, Vol. 51, No.9, Sep 2003, pp.1536-1545.
12. J. Takala, D. Akopian, J. Astola, J. Saarinen "Constant geometry algorithm for Discrete Cosine Transform" IEEE Transactions On Signal Processing, vol. 48, No.6, June 2000, pp. 1840-1843
13. J. Astola and D. Akopian, "Architecture oriented regular algorithms for a class of trigonometric transforms," IEEE Transactions Signal Processing., April 1999, pp. 1109-1124
14. J. Astola, D. Akopian, "A time-recursive implementation of threshold Boolean filters," IEEE Trans. Circuits and Systems II, February 1999, pp. 139-148.
15. J. Astola, D. Akopian, O. Vainio, S. Agaian, "Digit-serial architectures for stack filters," EURASIP Signal Processing Journal, in vol. 61, pp. 181-197, September 1997.
16. D. Akopian, O. Vainio, S. Agaian, and J. Astola, "SBNR processor for stack filters," IEEE Trans. Circuits and Systems II, vol. 44, pp. 197-208, Mar. 1997.
17. D. Akopian, O.Vainio, J.Astola, "Processors for generalized stack filters," IEEE Trans. On Signal Processing, vol. 43, no. 6, pp. 1541-1546, June, 1995.

**2b. Submitted/Under Preparation.**

1. D. Akopian, J. Syrjarinne, "Assisted GPS Positioning without Navigation Data Decoding," submitted to IEEE Transactions on Vehicular Technology, Dec. 2007.

2. D. Akopian, A. Melkonyan, P. Chen, "Validation of HDOP Measure for Impact Localization in Structural Health Monitoring," submitted to IEEE Sensors Journal, Feb. 2008.
3. C. Lacatus, D. Akopian, M. Shadaram, "Adaptive dispreading code design for GPS receivers," submitted to IEEE Transactions on Applied Signal Processing, June 2008.
4. P.K. Sagiraju, P. Kashyap, P. Chen, D. Akopian, "Block Correlator for Tracking GNSS Signals," submitted to IEEE Transactions on Circuits and Systems II, 2008.

### 3. Conference Papers

#### 3a. Published or Accepted

##### Invited

1. D.Akopian, J. Takala, J.Saarinen, J. Astola, "Multistage interconnection networks for parallel Viterbi decoders," Proceedings of First International Workshop on Spectral Techniques and Logic Design for Future Digital Systems, TICSP Series #10, December 2000, pp.131-155.
2. D. Akopian, M. Helsingius & J. Astola,"Multibase Approaches for Compression of Still Images," Invited presentation in International Workshop on Transforms and Filter Banks (WTFB'99), March 5-7, 1999, Brandenburg an der Havel, Germany, 16p.
3. D. Akopian and J. Astola, "Fast architecture oriented algorithms for trigonometric transforms and their mapping to scalable structures," Proceedings of First International Workshop on Transforms and Filterbanks, TICSP Series-1, June 1998, pp. 433-471.
4. D. Akopian "Mapping of fast transform algorithms to scalable structures," Short Course, Summer School on Multimedia and Computer Networking, Mangalia, Romania, 2-9 Aug. 1998.

##### Other:

1. D. Akopian, S. Agaian, A. Kumar, R. Creutzburg, "A mobile-to-server link for wireless steganography," SPIE Electronic Imaging/Multimedia on Mobile Devices Conference, San Jose, CA, Jan 2009.
2. A. Kumar, D. Akopian, P. Chen, "Performance study of a mobile preventive notification system (PreNotiS)," SPIE Electronic Imaging/Multimedia on Mobile Devices Conference, San Jose, CA, Jan 2009.
3. P. Kashyap, D. Akopian, A. Samant, "An assisted GPS messaging for GPS simulators for embedded mobile positioning", SPIE Electronic Imaging/Multimedia on Mobile Devices Conference, San Jose, CA, Jan 2009.
4. A. Kumar, D. Akopian, P. Chen, "A dynamic client/server message-exchange application for mobile phones", SPIE Electronic Imaging/Multimedia on Mobile Devices Conference, San Jose, CA, Jan 2009.
5. M. Gunturu, S. Yerubandi, A. Melkonyan, D. Akopian, P. Chen, "Integrity Monitoring In WLAN Positioning Systems", SPIE Defence and Security Conference, Orlando, FL, Apr. 2009.
6. Bhargav Lastname, David Akopian, "Study of WLAN Positioning on Mobile Platforms", SPIE Defence and Security Conference, Orlando, FL, Apr. 2009.
7. C. Lacatus, D. Akopian, M. Shadaram, "Adaptive OFDMA Scheme for spectrum and power allocation", World Automation Congress, Sep. 2008.
8. A. Panchul, D. Akopian, P. Chen, "Mobile Event Reporting for Symbian platforms", World Automation Congress, Sep. 2008.
9. P.K. Sagiraju, P. Kashyap, D. Akopian, "Block Correlator for Tracking GNSS Signals," ION GNSS 2008 Conference, Savannah, Georgia, Sep. 16-19, 2008.
10. A. Panchul, D. Akopian, "Educational Applications Development for Smartphones," ASEE Annual Conference, June 2008, Pittsburgh, PA.
11. C. Lacatus, D. Akopian, M. Shadaram, "Implementation Approaches of Adaptive Algorithms for Crosscorrelation Effect Compensation in Weak Signal Conditions," Proceedings of IEEE PLANS 2008 Conference, Monterey, CA, May 5-8, 2008.
12. D. Akopian, P. Chen, M. Gunturu, P. Sagiraju, "Implementation of an intrusion detection system based on wireless positioning", Proceeding of SPIE, Vol. 6982, pp. 698205-698205-11. Mobile Multimedia/Image Processing, Security, and Applications, March 2008, Orlando, FL.
13. D. Akopian, P. Chen, S. Miryakar, A. Kumar, "PreNotiS: Massive Preventive Notification System," Proceeding of SPIE, Vol. 6982, pp. 69820Y-69820Y-8. Mobile Multimedia/Image Processing, Security, and Applications, March 2008, Orlando, FL.
14. K. Naghdali, S. Dursun, D. Akopian, "Non-uniform pulse quantization for mutiplication-free correlation in ultra wideband receivers," Proceeding of SPIE, Vol. 6980, pp. 698009-698009-7. Wireless Sensing and Processing III, March 2008, Orlando, FL.

15. C. Lacatus, D. Akopian, M. Shadaram, "Fast convergence of distributed joint spreading sequence and power control algorithms," 2008 IEEE Radio and Wireless Symposium, RWS, 22-24 Jan 2008, Orlando, FL.
16. D. Akopian, P. Ybarra, P. Chen, "Optimization of time-varying two-band filterbanks for wavelet transforms," Proceedings of IEEE SoSE 2007 Conference, April 16-18, 2007, San Antonio, TX.
17. K. Naghdali, S. Dursun, D. Akopian, "Non-uniform pulse quantization for multiplication-free correlation in ultra wideband receivers," UTSA 2007 ESB Student Conference, Accepted to SPIE Defence and Security Conference, March 2008, Orlando, FL.
18. A. Melkonyan, D. Akopian, P. Chen, "Impact Localization for Structural Health Monitoring," UTSA 2007 ESB Student Conference, Nov 9, 2007.
19. A. Panchul, D. Akopian, "Educational Applications Development for Smartphones," UTSA 2007 ESB Student Conference, Nov 9, 2007, abstract accepted to 2008 ASEE Annual Conference, June 2008, Pittsburgh, PA
20. H. Nguyen, T. Nguyen, R. Trevino, E. Teran-Delgado, A. Panchul, D. Akopian, "A case study of context-driven application as an example of educational project on cell phone platforms," UTSA 2007 ESB Student Conference, Nov 9, 2007.
21. Phani K. Sagiraju, Praveen Gali, David Akopian, G.V.S. Raju, "Enhancing Security in Wireless Networks Using Positioning Techniques," Proceedings of IEEE SoSE 2007 Conference, San Antonio, TX, April 16 -18, 2007.
22. Phani K. Sagiraju, Aleksandr Panchul, David Akopian, "A Software GPS+ Receiver Toolkit " Proceedings of IEEE SoSE 2007 Conference, San Antonio, TX, April 16 -18, 2007.
23. Phani K. Sagiraju, David Akopian, "Performance Study of Reduced Search FFT-Based Acquisition" Proceedings of ION National Technical Meeting, San Diego, California, January 22-24, 2007.
24. C. Lacatus, D. Akopian, M. Shadaram, "Fast convergence of distributed joint spreading sequence and power control algorithms," 2008 IEEE Radio and Wireless Symposium, RWS, 22-24 Jan 2008, Orlando, FL.
25. C. Lacatus, D. Akopian, M. Shadaram, "An adaptive approach to compensate crosscorrelation effects in weak signal conditions for satellite positioning systems," ION GNSS Conference, 26-28 Sep 2007, Fort Worth, TX.
26. C. Lacatus, D. Akopian, M. Shadaram, "Spectrum assignment for flexible rate cognitive OFDM Systems," 2007 IEEE MILCOM Conference, 29-31 Oct 2007, Orlando, FL
27. C. Lacatus, D. Akopian, M. Shadaram, "Spreading sequence design for MC-CDMA systems," IEEE International Conference on System of Systems Engineering, SoSE 2007, April 15-18, 2007, San Antonio, TX
28. D. Bhupathiraju, D. Akopian, "Automatic Sorting and Storage Based on Location Information" ION NTM 2007, January 2007.
29. P. Sagiraju, H. Valio, D. Akopian, "Fine Frequency Estimation in Weak Signals for GPS Receivers" ION NTM 2006, January 18, Monterey, CA.
30. P. Sagiraju, D. Akopian, "Performance of Two-Stage Massive Correlator Architecture for Fast Acquisition of GPS Signals" IEEE Region 5 Conference, April 2006, San Antonio, TX.
31. A. Panchul, D. Akopian, "On porting computer applications into Symbian cell phone platform", IEEE Region 5 Conference, April 2006, San Antonio, TX.
32. A. Panchul, D. Bhupathiraju, S. Agaian, D. Akopian, "An imaging toolbox for smart phone applications", Mobile Multimedia/Image Processing for Military and Security Applications, SPIE Defense and Security Symposium, 17-21 April 2006, Orlando, FL
33. P. Sagiraju, D. Bhupathiraju, GVS Raju, D. Akopian, "Software GPS receiver test-bed development at UTSA" IEEE PLANS 2006.
34. D. Bhupathiraju, P. Sagiraju, D. Akopian, "An automatic digital album," IEEE WTS Conference, April 28-29, 2006, Pomona, CA.
35. D. Akopian, S. Agaian, H. Valio, "Fast time-recursive matched filters for DSSS communications," US Institute of Navigation, ION NTM 2006 Conference, January 2006.
36. S. Agaian, D. Akopian and S. D'Souza "Wireless Steganography" SPIE Electronic imaging Conference, January 2006.
37. D. Akopian and S. Agaian, "A Fast position recovery approach for GPS receivers in jamming environments and a recommendation for future GPS signal structure," IEEE MILCOM Conference, Atlantic City, Oct. 17-21, 2005.
38. Phani K. Sagiraju, David Akopian and David Magee "A Fast Acquisition Algorithm for Indoor Receivers", US Institute of Navigation (ION), 61st Annual Meeting, June 2005.
39. D. Akopian, Phani K. Sagiraju, S. Agaian, G.V.S. Raju, "A Reduced complexity frequency domain acquisition of DS-SS Signals for embedded applications," IS&T/SPIE's Symposium on Electronic Imaging: Science & Technology, Jan. 2005.

40. D. Akopian, S. Agaian, "Fast and Parallel matched filters in time domain," US Institute of Navigation, GNSS' 2004 Conference, September 21-24, 2004, Long Beach, CA, USA
41. D. Akopian, S. Agaian, "A fast algorithm for long FIR filters with small coefficient alphabet", The 2004 Int. Workshop on Spectral Methods and Multirate Signal Processing, SMMSP2004, September 11-12, 2004, Vienna, Austria.
42. C.B. Smith, D. Akopian, S. Agaian, "Least squares optimization of a polynomial threshold for wavelet domain denoising", Proceedings of ICSP'04 7<sup>th</sup> International Conference on Signal Processing, 31 Aug.-4 Sept. 2004, Vol. 1, pp. 109-112.
43. D. Akopian, S. Agaian, "Fast matched filter in time domain", IEEE Position Location and Navigation Symposium 2004, April 26-29, Monterey, CA, 2004, pp. 455-460
44. D. Akopian, J. Takala, S. Agaian, "Scalable transform accelerator for multimedia communications", SPIE Electronic Imaging/ Embedded Processors for Multimedia and Communications Conference, January 2004, SPIE Vol. 5309, pp. 70 - 79.
45. D. Akopian, J. Syrjärinne, "A Network aided iterated LS method for GPS positioning and time recovery without navigation message," Proceedings of IEEE PLANS'2002 Conference, April 15-18, 2002, Palm Springs, CA, USA, pp. 77-83.
46. D. Akopian, H. Valio, S. Turunen, "Fine acquisition methods for GPS receivers," ION GPS' 2002 Conference, US Institute of Navigation, September 24-27, 2002, Portland, Oregon, USA.
47. D. Akopian, "Backpropagation optimization algorithm for families of linear-phase filterbanks and block transforms", Proceedings of CSIT' 2001 Conference, Yerevan, Armenia, Sept. 17-20, 2001
48. D. Akopian, "An optimization approach for two-band periodically time-varying perfect reconstruction filterbanks", Proceedings of CSIT'2001 Conference, Yerevan, Armenia, Sept. 17-20, 2001.
49. D. Akopian, "A fast satellite acquisition method", USA Institute of Navigation, ION-GPS'2001 Conference, Salt Lake City, USA, Sept. 11-14, 2001.
50. D. Akopian, J. Parkkinen, T. Jääskeläinen, and J. Astola: Multibase Transform Coding for Multispectral Image Compression. In Proceedings of Algorithms for Multispectral, Hyperspectral, and Ultraspectral Imagery VI, SPIE vol. 4049, Orlando, USA, April 24-26, 2000, pp. 511-520.
51. J. Nikara, J. Takala, D. Akopian, J. Saarinen, J. Astola, "Pipelined architecture for inverse Discrete Cosine Transform," Proceedings of EUSIPCO'2000 Conference, Tampere, Finland
52. K. Balashov, D. Akopian, J. Astola, "Lossless Compression of Natural Images Using Regressive Analysis," Proceedings of EUSIPCO'2000 Conference, Tampere, Finland
53. J. Takala, J. Nikara, D. Akopian, J. Astola, and J. Saarinen, "Pipeline Architecture for 2-D 8x8 Discrete Cosine Transform," in Proc. IEEE Int.Conf. on Acoustics, Speech and Signal Process., Istanbul, Turkey, June 5-9, 2000, vol. VI, pp. 3303-3306.
54. J. Takala, D. Akopian, J. Astola, and J. Saarinen, "Scalable Interconnection Networks for Partial Column Array Processor Architectures," in Proc. IEEE Int. Symp. on Circuits and Systems, Geneva, Switzerland, May 28 - 31 2000, vol. IV, pp. 513-516.
55. J. Takala, T.S. Jarvinen, P.V. Salmela, D. Akopian, "Multi-port interconnection networks for radix-R algorithms". Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing, 2001 (ICASSP '01). Volume 2, 7-11 May 2001 Page(s):1177 - 1180 vol.2
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61. D. Akopian, J. Takala, J. Astola, J. Saarinen, "Multistage interconnection networks for k/n rate Viterbi decoders," IEEE GLOBECOM'98 Conference, Nov., Australia, 1998.
62. D. Akopian, M. Helsingius, J. Astola, "A Combined multibase/wavelet transform coding of still images," Proceedings of IEEE ISPACS'98 Conference, 1998.
63. D. Akopian and J. Astola, "Fast architecture oriented algorithms for trigonometric transforms and their mapping to scalable structures," Proceedings of First International Workshop on Transforms and Filterbanks, TICSP Series-1, June 1998, pp. 433-471.

64. D. Akopian, M. Helsingius, J. Astola, "Multibase/Wavelet transform coding without blocking artifacts," Proceedings of 32<sup>nd</sup> Asilomar Conference on Signals, Systems, and Computers, November 1-4, 1998, Pacific Grove, CA, USA.
65. D. Akopian, J. Takala, J. Astola, J. Saarinen, "A Multistage interconnection network for parallel Viterbi decoders," Proceedings of IEEE ISPACS'97 Conference, 11-13 Nov., Malaysia, pp. S16.6.1-S16.6.5, and FINSIG'97 Conference, May 22, Pori, Finland, 1997.
66. D. Akopian and J. Astola, "An optimal nonlinear extension of linear filters," Proc. of CSIT'97 Conference, 26-29 Sept., 1997, Yerevan, Armenia, pp. 141-144.
67. D. Akopian and J. Astola, "An optimal extension of linear filters based on distributed arithmetic," Proc. of SPIE Statistical and Stochastic Methods in Image Processing II Conference, 27 July-1 August, 1997, San Diego, CA.
68. J. Astola and D. Akopian, "Fast regular 2-D algorithms for a class of trigonometric transforms," Proc. of IS&T/SPIE's Symp. on Electronic Imaging, Sc. and Technology, Visual Com. and Image Proc., February, 1997.
69. O. Vainio, D. Akopian, J. Astola, "A Synthesizable stack filter ASIC macro," Proc. of IEEE Int. NORCHIP'96 Conference, pp. 172-178, November 1996.
70. M. Helsingius, S. Atourian, D. Akopian and J. Astola, "Multibase transform coding of images," Proc. of IEEE Int. NORSIG'96 Conference, pp. 255-258, September 1996.
71. D. Akopian and J. Astola, "Processor architecture for Extended Lapped Transform," Proc. of EUSIPCO'96 Conference, pp. 1459-1462, 1996.
72. I. Dhaou, D. Akopian, P. Kuosmanen and J. Astola, "Fault detection in stack filters based on sample selection probabilities," Proc. of IEEE Int. Conf. on Image Processing, pp. 765-768, 1996.
73. D. Akopian and J. Astola, "Pipeline processor for fast architecture oriented regular DCT-IDCT algorithm," Proc. of IEEE Int. Conf. on Acoust. Speech and Sign. Processing, pp.1319-1322, May 1996, Atlanta, USA.
74. J. Astola and D. Akopian, "Architecture oriented regular algorithms for discrete sine and cosine transforms," Proc. of IS&T/SPIE's Symp. on Electronic Imaging, Sc. and Technology, pp. 9-20, 28 Jan.-2 Feb., 1996.
75. J. Astola, P. Kuosmanen, D. Akopian, D. Gevorkian, "Fibonacci P-Code method for generalized stack filtering," Proc. of IEEE Int. Symp. on Circuits and Systems, pp. 1900-1903, 1995.
76. Jaakko Astola, David Akopian, and Karen Egiazarian, "New processor architecture for running threshold Boolean filters," Proc. of SPIE Meeting on Visual Communications and Image Processing'95, pp. 366-377, Taiwan, May 1995.
77. Karen Egiazarian, David Akopian, and David Gevorkian, "Threshold Boolean filtering based on pattern classification," Proc. of IEEE Workshop on Nonlinear Signal and Image Processing, pp. 879-882, June 1995, Greece.
78. O. Vainio, D. Akopian, J. Astola, "Systematic design of encoder and decoder networks with applications to high-speed signal processing," Proc. of IEEE Int. Symp. on Industrial Electronics, Athens, Greece, July 1995, pp. 172-175.
79. J. Astola, D. Akopian, S. Agaian, O. Vainio, "A Unified approach to implementation of stack filters," Proc. Of Twenty-Eight Asilomar Conf. on Signals, Systems and Computers, Nov. 1-3, pp. 329-334, 1994, Pacific Grove, California.
80. D. Akopian, O. Vainio, S. Agaian, and J. Astola, "SBNR processor for stack filters," Proc. of Twenty-Eight Asil. Conf. on Signals, Systems and Computers, pp. 335-339, Nov. 1-3, 1994.
81. D. Akopian, K. Egiazarian, S. Agaian, J. Astola, "Pipeline processors for fast trigonometric transforms," Proc. of Twenty-Eight Asilomar Conf. on Signals, Systems and Computers, pp. 1031-1035, Nov. 1-3, 1994, Pacific Grove, California.
82. S. Agaian and D. Akopian, "Fibonacci processors for digital signals transform," Proc. of First USSR Conf. on Pattern Recognition and Image Analyses: New informative technologies (ROAI-1-91), Part III, Section 3, pp. 13-15, Minsk (USSR), October 14-18, 1991.
83. D. Akopian and J. Astola, "Pipeline processor for DCT-IDCT algorithm," Proc. of FINSIG'95 Conf., 1995.
84. D. Akopian, O. Vainio, J. Astola, "Parallel multi-threshold circuit and stacked signals adder," Proceedings of the First TUT Symposium on Signal Processing, pp. 23-26, May 20, 1994.

### **3b. Submitted/Under Preparation**

1. D. Akopian, P. Sagiraju, P. Chen, "Performance analysis of time and frequency domain correlators for GPS receivers," conference paper and book chapter in preparation

2. P. Sagiraju, D. Akopian, P. Chen, "A step-by-step software GPS receiver design in Matlab," conference paper and book chapter in preparation

#### 4. **Book Reviews**

#### 5. **Other Articles**

#### B. **Lectures, Seminars**

(Chronologically, NOT INCLUDING presentations given at conferences as shown in 3a)

##### 1. **Scientific Lectures, Seminars**

1. Summer 2007. Scientific presentation, "Satellite positioning systems," presented at American University of Armenia, and the Institute of Problems of Informatics and Cybernetics, Yerevan Armenia.
2. September 1997. Scientific presentation, "Nonlinear signal processing for communications" Institute of Problems of Informatics and Cybernetics, Yerevan Armenia.

##### 2. **Other Lectures, Seminars, Briefings, Short courses**

Short Course: D. Akopian "Mapping of fast transform algorithms to scalable structures," Short Course, Summer School on Multimedia and Computer Networking, Mangalia, Romania, 2-9 Aug. 1998.

#### C. **Areas of Research Interest**

**General interests:** Development of scientific computing methods applicable to the theory and practice of engineering, Formulation and solution of technical problems, Algorithm development and analysis, Model development, Simulation and implementation.

**Focus areas:** (1) Positioning and Navigation Algorithms and Systems (GPS, Galileo, INS), (2) Signal Processing for Communications including receiver design, spread spectrum signaling, CDMA acquisition techniques, (3) general digital signal and image processing including orthogonal (KLT, DFT, DCT, etc.) and wavelet transforms, filterbanks, their applications and dedicated hardware architectures. (4) wireless application development.

#### D. **Research Support**

##### 1. **National/International**

Agency: NSF

Title: CRI: Experimental Research in High-Performance Computing and Wireless Networking

Peer Reviewed (Y):

Date (start-end): May 2006 - May 2009

Total amount: \$500K

Role (Principal Investigator/Co-investigator): Senior Investigator

NSF Award #0833852

Title: IP-Assisted GPS positioning

Date (start-end): Nov 2008- Nov 2009

Total amount: \$72K, Share 100%

Role: Principal Investigator

##### 2. **State**

Agency: THECB

Title: Engineering Core Curriculum Redesign for Increasing Preparedness and Retention

Peer Reviewed (Y):

Date (start-end): Fall 2007

Total amount: \$280K

Role (Principal Investigator/Co-investigator): Co-PI

##### 3. **Companies**

Agency: NI

Title: Data Analysis of NI GPS simulator

Peer Reviewed (Y/N): N

Date (start-end): Dec 2007-open  
Total amount: \$4K + \$3K software donation  
Role (Principal Investigator/Co-investigator): PI

**4. Other including sub-contracts, internal UTSA funding through earmarks, institutional grants etc.**

Agency: AFRL  
Title: Using advanced wireless and positioning technologies for intrusion detection and preventive security information systems  
Peer Reviewed (Y):  
Date (start-end): Dec 2006 – Dec 2007  
Total amount: \$92K  
Role (Principal Investigator/Co-investigator): PI

Agency: UTSA Faculty Research Award  
Title: Advanced positioning systems  
Peer Reviewed (Y):  
Date (start-end): 2005  
Total amount: \$5K  
Role (Principal Investigator/Co-investigator): PI

Agency: Course Redesign Award, UTSA College of Engineering  
Title: Internet-based teaching of communication systems  
Peer Reviewed (NA):  
Date (start-end): Aug 2008 - Dec 2008  
Total amount: \$7K, Share 100%  
Role: Principal Investigator

**5. Pending with funding agency**

**NSF SGER**

1. (PI) Low-power GPS Receiver, \$90K

**Navy SBIR**

2. (Co-PI) Software GPS Receiver, \$100K Phase I, \$750K Phase II.

**National Instruments**

3. (PI) Data analysis of NI simulator, \$10K

**6. Proposals Rejected**

**NSF**

1. (PI) CT-ISG: Enhanced Authentication Capability through Indoor Software A-GPS Receivers in Cyberinfrastructure; \$499,975.00
2. (PI) OCI: Globally Locating Computing Devices for Cyberinfrastructure Applications, \$442,405.00
3. (Co-PI) CNS: CRI: IAD Computing Infrastructure for Integrative Positioning and Imaging Based Security Research in Networks, \$504,794.00.
4. (PI) DMS: Optimization and linear-phase capability of time-varying two-band paraunitary filterbanks for compression applications, \$263,520.00
5. (PI) HCC-Small: Electrical Engineering Education on Cell Phone Platforms, \$378K
6. (Co-PI) REESE: Research and Evaluation of Best Strategies in Education for Electrical and Computer Engineering Program at a Minority Institution: Transition to a Research Intensive Status; \$788,197.00
7. (PI) ECCS: Advanced, Novel, and Open-Source Software A-GPS Positioning Methods, \$267,739.00
8. (Co-PI) CMMI: Development of Ultra Sensitive Pressure Sensors with Signal Processing and Communication Suite for Fossil Fuel Deep Drilling, \$528,778.00
9. (PI) IIS: Cell-phone based signal processing education using field data, \$399,842.00
10. (Co-PI) CNS: BPC-DP: Broadening Participation in Computing at a Minority Institution through "Hands-on Computing Design Database" and Best Practices, \$599,747.00
11. (PI) HCC: Enhancing education of under-represented groups using cell-phone platforms, \$377,429.00

12. (PI) Optimization and linear-phase capability of time-varying two-band paraunitary filterbanks for compression applications, \$249,305.00
13. (PI) Development of New Generation Positioning Algorithms for Robust Operation in Difficult Environments, \$199,179.00
14. (Co-PI) Development of Ultra Sensitive Pressure Sensors with Signal Processing and Communication Suite for Fossil Fuel Deep Drilling, \$528,779.00
15. (PI) CAREER: Advanced and Novel Wireless Positioning Technology Development \$419,602.00
16. (PI) Optimization and linear-phase capability of time-varying two-band paraunitary filterbanks for compression applications; \$249,305.00
17. (PI) Enhancing Undergraduate Engineering Education Using Widely Available Cellphones; \$148,559.00
18. (PI) Cell-phone based signal processing education based on field data; \$321,766.00
19. (PI) CT-ISG: Enhanced Authentication Capability through Indoor Software A-GPS Receivers in Cyberinfrastructure; \$499,894.00
20. (PI) Wireless Positioning Technology Development for High Density Urban and Indoor Environments \$199,932.00

#### **NASA**

21. (Co-PI) Development of High Temperature Ferroelectric Thin-Film Sensors for Engine Health Monitoring; \$383,975

#### **DOD**

22. (PI) AF: DURIP, "New Instrumentation for the Enhancement of Research and Education Capabilities in Satellite Positioning at UT San Antonio"; \$145,500
23. White Papers to Navy, DARPA
24. (Co-PI) AFRL: Location Based Suspicious Phone Tracking for Improvised Explosive Device Detection, \$1M

#### **DOE**

25. (Co-PI) Development of Ultra Sensitive Pressure Sensors with Signal Processing and Communication Suite for Fossil Fuel Deep Drilling; \$199,383

#### **TEXAS STATE**

26. (Co-PI) Active Learning in Emerging Technologies for Improving Electrical and Computer Engineering Student Recruitment and Retention through Best Practice Approaches, TETC \$90K
27. (PI) ARP/ATP: Advanced Open-Source GPS Toolkit Development, \$150K

#### **SAN ANTONIO AREA FOUNDATION**

4. (PI) Implementation and dissemination of open access hands-on engineering design library for higher education and K-12 students in San Antonio area. \$24,979

**IV. SERVICE****A. Professional Activities:**

**1. Current Professional and Scientific Organizations/Societies** If election/nomination required then mark with \*

Years (from-to)	Name of Organization
1997-2003	<b>IEEE</b> Member
2003-2008	Senior IEEE Member*
2004-2005	<b>ASEE</b> Member
2007-2010	<b>SPIE</b> Member
2004-2008	US Institute of Navigation ( <b>ION</b> ) Member

**2. Past and Current Positions and/or Offices Held in Professional Organizations**

Years (from-to)	Name of Organization	Position held
2006-2008	Technical Committee Member on Information Assurance & Intelligent Multimedia-Mobile Communications, IEEE Systems Man Cybernetics Society	Member
2005-2008	Local chapter of IEEE Systems Man Cybernetics Society	Various positions

**3. Other Professional Activities** (e.g., National and State Consultantships, Review Panels and Committees, Editorial Boards, Continuing Education Lectures Presented, etc.)

**Editor/Editorial Board Member**

*Associate Editor: Computers and Engineering Engineering, Autosoft Journal*

**International Conference/Meeting/Symposium Organizer/Chairmanship**

- Conference Chair**, SPIE Electronic Imaging, Multimedia on Mobile Devices, San Jose, CA, January 2009.
- Local Arrangements Chair**, Organizing Committee Member, IEEE SMC Conference, October 2009, San Antonio, TX
- Local Arrangements Chair**, Organizing Committee Member, IEEE SoSE Conference, April 16-18 2007, San Antonio, TX
- Chair of undergraduate paper contest**, Program committee member, IEEE Region 5 2006, San Antonio, TX Conference, San Antonio, TX, April 8-9, 2006

**Session Chair/Organizer**

- Session Chair, ION GNSS 2009 Conference
- Session Chair, ION GNSS 2008 Conference
- Session Chair, Mobile Multimedia/Image Processing for Military and Security Applications, Defense and Security Symposium, April, 2008, Orlando, Florida
- Program Committee Member, SPIE Electronic Imaging, Multimedia on Mobile Devices, San Jose, CA. **2006, 2007, 2008**
- Program Committee Member, Mobile Multimedia/Image Processing for Military and Security Applications, Defense and Security Symposium, in **2006, 2007, 2008**, Orlando, Florida
- Session Chair, Program Committee Member, Multimedia on Mobile Devices, SPIE Electronic Imaging Conference, San Jose, CA, 15-19 January 2006.
- Session Chair, IEEE/ION PLANS'2006 Conference, Session Chair,
- Session Chair, ION GNSS 2006 Conference
- Workshop coordinator, "TUT/Nokia Research Center Cooperative Meeting," 1999.

**Reviewer for Journals**

Reviewed tens of scientific papers for IEEE Transactions on Signal Processing, IEEE Transactions on Circuits and Systems, EURASIP Signal Processing journal, IEEE Transactions on Communications, IEEE Transaction Vehicular Technology, IEE Proceedings Radar, Sonar and Navigation.

### **Review Panels (for grants)**

Year, Agency, Panel Name  
Spring 2007, NSF, PIRE Program  
(Repeat as necessary)

### **Continuing Education Seminars Given**

Date, Seminar name

#### **4. Community Service**

2003-2007: Armenian Church of San Antonio

### **B. Committees:**

#### **1. Department** (*specify if Chair*)

1. Member of Graduate Advisory Committee (2007-2008)
2. Member of the Graduate Faculty committee (2003-2008)
3. Senior Design Committee Member (2005-2007)
4. Tenure-Track Faculty Search Committee (2006-2007)
5. EE Space Search Committee (2004)
6. Coordinator and Member of Communication/DSP Lab Equipment Acquisition Committee
7. Hooder, Spring 2007
8. Greeter, Fall 2007
9. Member of **5 PhD** and **24 MS** thesis committees at the UTSA

#### **2. College of Engineering** (*specify if Chair*)

1. 2007-2009 COE Leave Committee (just started)
2. Member of AT&T iTEC Center

#### **3. University** (*specify if Chair*)

1. UTSA Graduate Council (once per month, 2006-2007)
2. University Curriculum Committee (just started, 2007 - )
3. UTSA Grievance Committee (2006-2008)

#### **4. Other**

### **C. Administrative Responsibilities:**

#### **1. Department**

#### **2. College**

#### **3. University**

#### **4. Staff Currently Supervised (not including students):**

### **V. OTHER INFORMATION**

#### **A. Patents Pending/Issued:**

1. S. Aghaian, R. Cherukuri, Ben Rodriguez, D. Akopian, "Steganography algorithms" patent pending
2. D. Akopian, P. Chen, "PreNotiS: Preventive Notification System," in filing.

3. C. Lacatus, D. Akopian, M. Shadaram, "Adaptive interference mitigation for GPS receivers in weak signal conditions", in filing.
4. D. Akopian, S. Turunen, S. Pietila, H. Valio, "Acquisition of a code modulated signal," US Patent 7,336,696. Filed: Dec. 12, 2003. Issued: Feb. 26, 2008.
5. D. Akopian, "Determination of the correlation phase between a signal and a replica sequence," US Patent 7,286,594. Filed: Oct. 23, 2003, Issued: Oct. 23, 2007.
6. D. Akopian, H. Valio, S. Pietila, J. Syrjarinne, "Validation of beacon signals," US Patent 7,064,708. Filed: Oct. 24, 2003, Issued: June 20, 2006.
7. D. Akopian, H. Vallio, J. Syrjarinne, "Position estimation," US Patent 6,894,645. Filed: Dec. 11, 2003; Issued: May 17, 2005.
8. D. Akopian, H. Valio, "Tracking a code modulated signal," US Patent 7,124,352. Filed: Dec.12, 2003; Issued: Oct. 17, 2006.
9. D. Akopian, "Determining the correlation between received samples and available replica samples," US Patent 7,277,476, Oct. 2, 2007
10. D. Akopian, "Determining the correlation between received samples and available replica samples," US Patent 7,272,168, Sep. 18, 2007.
11. D. Akopian, "Method and apparatus for acquiring a ranging signal of a positioning system," US Patent 7,120,191. October 10, 2006.
12. D. Akopian, K. Ilkka, H. Valio, S. Turunen "Method in a receiver and a receiver," US Patent 6909738, Jun. 21, 2005.
13. D. Akopian, H. Valio, S. Turunen "System for method for fine acquisition of a spread spectrum signal," US Patent 6909736, Jun. 21, 2005.
14. D. Akopian, J. Syrjarinne, "Position Estimation," US Patent 6894645, May 17, 2005.
15. D. Akopian, H. Valio, S. Pietila, J. Syrjarinne, "Validation of Beacon signals," EU Patent EP 1554598, July 20, 2005
16. D. Akopian, J. Syrjarinne, "Method, receiver and system for determining the time of reception of a beacon signal," US Patent 6833813, Dec. 21, 2004.
17. D. Akopian, "System for acquiring spread spectrum signals," US Patent 6,810,072, Oct. 26, 2004
18. D. Akopian, H. Valio, "Determination of the transmission time of a signal part in a positioning system," US Patent 6,771,215, August 3, 2004.
19. D. Akopian, J. Syrjarinne, "Method for determining the correlation between a received beacon signal and a reconstructed signal," US Patent 6,768,451, July 27, 2004.
20. D. Akopian, "Method, apparatus and system for fast acquisition of a spread spectrum signal," US Patent 6,735,243, May 11, 2004.
21. D. Akopian, "Method for providing time using multiple-clock model and a clock system using such a model", US Patent 6,651,031, November 18, 2003.
22. D. Akopian, "Clock system and corresponding method for providing a clock time accounting for systematic error", US Patent 6,573,799, June 3, 2003.
23. D. Akopian, J. Syrjarinne, "Method, apparatus and system for estimating user position with a satellite positioning system in poor signal conditions", US Patent 6,473,694, October 29, 2002.
24. D. Akopian, J. Syrjarinne, "Method and apparatus for calculating pseudorange for use in ranging receivers", US Patent 6,466,164, October 15, 2002.
25. D. Akopian, J. Syrjarinne, "Cross-correlation system for time recovery in network-assisted GPS positioning", US Patent 6,459,407, October 1, 2002.
26. D. Akopian, J. Syrjarinne, "A method and apparatus for calculating pseudorange for use in ranging receivers," EU Patent EP 1291666, March 12, 2003
27. D. Akopian, J. Syrjarinne, "Cross correlation system for time recovery in network-assisted GPS positioning" EU Patent EP1291665, March 12, 2003
28. D. Akopian, H. Valio, "System and method for fine acquisition of a spread spectrum signal" EU Patent EP1215824, June 19, 2002
29. D. Akopian, "Method, apparatus and system for fast acquisition of a spread spectrum signal" EU Patent EP1205764, May 15, 2002

## B. Media Coverage

Finalist, ATT National Big Mobile on Campus Challenge, Honorary Mention, 4<sup>th</sup> place.

<http://higheredcontest.wireless.att.com/>

## C. Other