

Alper ŞİŞMAN

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Education

- 2005-2010 Işık University, Istanbul, Turkey
Ph. D. in Electronics Engineering
Thesis: Solid-State Arrays and Beamformers for Side-Looking Intravascular Ultrasonic Imaging.
- 2000-2002 Işık University, Istanbul, Turkey
M.S. in Electronics Engineering
Thesis: Design and Implementation of a Low-cost Telematic Control System.
- 1994-1998 Istanbul Technical University, Istanbul, Turkey
BSc in Electrical Engineering
Graduation Project: Design and Implementation of a PID controller employing feedback circuitry for DC motors. (TMS320C50 Texas instruments Digital Signal Processor was used)
- 1993-1994 Istanbul Technical University, Istanbul, Turkey
English Proficiency Preparation Class

Work Experience

- 2011-2012 **Research Scholar**
Mechanical Engineering Dept., South Florida University, Tampa, FL, USA
- 2010-.. **Asst. Prof. Dr.**
Electrical&Electronics Engineering Dept., Marmara University, Istanbul, Turkey
- 2003-2010 **Research Asistant**
Electronics Engineering Dept., Işık University, Istanbul, Turkey
- 2002-2009 **Founder&Shareholder**
MobiartsCommunication Systems Ltd., Istanbul, Turkey
- Completed Projects:
- Otomubul:** A low-cost Vehicle Navigation System. Patent & Product names are registered to Mobiarts (Patent Number: 2003/02114&2003/30592 Valid only in Turkey). The device includes a custom algorithm to estimate the location of the car. Also user can control some functions of the car using a mobile phone. The project was an extension of the master thesis.
- Mobilarm:** A house/office alarm system which employs a GSM module that sends alarm messages to the authenticated users in case of emergency. Project was supported by TEYDEB (TUBITAK, the Scientific and Technological Research Council of Turkey).
- Mobix:** Fixed Cellular Terminal (FCT). The device was the most purchased FCT by TURKCELL (Leading GSM operator in Turkey) as of September 2008.
- OtomubulGPS:** Several remote vehicle navigation systems including GSM/GPRS module. (firmware platforms are C, Phyton and J2ME)
- 1999-2002 **Senior R&D Engineer**
Mobile Systems Division, Teknobil A.S., Istanbul, Turkey
- Completed Projects:
- Several Accessory Designs for Thuraya Satellite Phones**
- Vehicle kit:* Simply a vehicle kit that enables the satellite phone inside the vehicle. It has noise reduction and echo cancellation module, and a firmware module allows remote navigation system by using satellite phone's internal GPS.
- Indoor kit:* A device that enables the indoor use of satellite phones. It operates like a fixed cellular terminal.

Prepaid or Remote Dischargeable Water/Electrical Meter Designs

A design was implemented for both water and electrical meters. It has a GSM module as server. The clients(meters) in the same building are connected to the server unit via RS-485 network. GSM module uses short message service or Data connection to establish communication between meters and the database PC.

Vehicle Navigation System Designs

Many off-line (Stores the vehicle's location information and some other required analog or digital data to an internal EEPROM module. The stored data can be transferred to server via serial port) and on-line (Device can also send the recorded data via data connection or sends the momentary data on request) systems are designed.

1998-1999

R&D Engineer,

Military Projects Division, Inter Electronics A.S., Istanbul, Turkey

A Radio Control Unit is designed to improve Marconi radios. Voice compression algorithm is studied. Linear Predictive Coding algorithm was implemented using Texas Instruments TMS320C50 Digital signal processor.

Research Projects

Solid-State Arrays and Beamformers for Side-Looking Intravascular Ultrasonic Imaging(PhD Thesis): Existing Side-looking intravascular ultrasonic probes were investigated. New array and probe structures were studied to improve image quality and to use less resources like number of channels, front-end electronics etc. A rotating concentric annular array and 1.5D solid-state arrays were proposed and investigated by computer simulations & experimental studies (Filing an invention disclosure and a provisional patent application are in progress). *The study was realized with our collaborator group in Georgia Institute of Technology.*

Novel Methods for Medical Ultrasonic Endoscopic Imaging:(Funded by The Scientific and Technological Research Council of Turkey, 1001 Project No: 106M333)New synthetic aperture techniques, which reduce the number of firings, were developed for 3D real-time miniaturized ultrasonic imaging systems.

Design and Implementation of a Low cost Telematic Control System (Graduate Thesis): The communication protocol between Ericsson A-1018 GSM phone and a PCMCIA modem was decrypted. The GSM phone was used as a GSM modem to reduce the system cost. The decrypted protocol was implemented on a custom-design prototype circuit.

- Implementation of computer software and its algorithm for Impedance Matching Circuitry Design. Used tools are Matlab and Matlab Graphical User Interface.

- Implementation and Design of the Simulation Algorithm, which derives the point spread function for a defined aperture. The tools: Matlab Graphical User Interface and C++.

Assisted Undergraduate Thesis

- Serial Port to TCP/IP converter:The device connects a serial port and a pre-defined IP number. A proper hardware was designed and TCP/IP stack was realized

- GSM based gate control and automation system

- GSM based general purpose telematic control system

- GPS data logger device, design & implementation

Patents

- Otomubul: A low-cost Vehicle Navigation System: Patent Number: 2003/02114&2003/30592 Valid only in Turkey.
- A novel design for solid-state side-looking IVUS: Filing an invention disclosure and a provisional patent application are in progress

Publications

- Journal Papers,

1. A. Sisman, M. Karaman, F. L. Degertekin, "Solid-state arrays for side-looking intravascular ultrasound imaging," IEEE Trans. Ultrason., Ferroelect., Freq. Contr.
2. J. Zahorian, G. Gurun, Rasim O. Guldiken, Mujdat Balantekin, F. Levent Degertekin, Mustafa Karaman, Alper Sisman, M. Shakeel Qureshi, Paul Hasler and Stephane Carlier, "Annular CMUT Arrays for Side-Looking Intravascular Imaging," prepared to submit to IEEE Trans. Ultrason., Ferroelect., Freq. Contr.

- Presentations at International Conferences

1. A. Sisman, M. Karaman, G. Gurun, F. L. Degertekin, "Solid-state SL-IVUS Arrays Based on Non-uniform Aperture Sampling," IEEE International Ultrasonics Symposium, USA, San Diego, 2010.
2. A. Sisman, J. Zahorian, G. Gurun, M. Karaman, M. Balantekin, F. L. Degertekin, P. Hasler, "Evaluation of CMUT Annular Arrays for Side-looking IVUS," Proc. IEEE Ultrason. Symp., pp. 2774-2777, Rome, Italy, 2009. (Selected as one of the finalists in the Student Paper Competition)
3. G. Gurun, A. Şişman, M. Karaman, P. Hasler, F. L. Degertekin, "A Tunable Analog Delay Element for High-Frequency Dynamic Beamforming," Proc. IEEE Ultrason. Symp., pp. 345-348, Rome, Italy, 2009.
4. J. Zahorian, G. Gurun, M. Hochman, S. Satir, A. Sisman, P. Hasler, M. Karaman and F.L. Degertekin, "Annular CMUT arrays and integrated electronics for intravascular ultrasound imaging," MUT 2009 Workshop, Besancon, France, May 28-29, 2009.
5. J. Zahorian, R. Guldiken, G. Gurun, S. Qureshi, M. Balantekin, S. Carlier, A. Şişman, M. Karaman, F. L. Degertekin, "Annular CMUT Arrays for Side Looking Intravascular Ultrasound Imaging," Proc. IEEE Ultrason. Symp., pp. 723-727, New York, USA, 2007.
6. R. Guldiken, J. Zahorian, M. Balantekin, F. L. Degertekin, C. Tekeş, A. Şişman, M. Karaman, "Dual-Annular-Ring CMUT array for forward-looking IVUS imaging," Proc. IEEE Ultrason. Symp., pp. 698-701, Vancouver, Canada, 2006.

- Presentations at National Conferences

1. A. Sisman, M. Karaman, "Analysis of Catheter-based Imaging Devices for Side-looking IVUS," BİYOMUT, 14th National Biomedical Engineering Meeting, pp. 1-4, Dokuz Eylül Üniversitesi, 2009
2. A. Sisman, M. Karaman, "Array Processing for 3D Ultrasound Imaging," BİYOMUT, 12th National Biomedical Engineering Meeting, Boğaziçi Üniversitesi, 2007

Memberships

- IEEE Member