AFŞAR SARANLI

Department of Electrical and Electronics Engineering
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Objective:

To achieve the highest standards of teaching and research as part of the academic staff in Middle East Technical University. My current research interests include pattern recognition, machine intelligence and autonomous robotics; real-time automation and machine vision systems; development, simulation and modeling of control systems; stochastic and adaptive image and signal processing.

Professional Experience:

Assistant Professor (January 2005 - Present)
Middle East Technical University - Department of Electrical and Electronics Engineering, Ankara, Turkey.

Computer Scientist – Software Engineer (June 2000 - November 2004)
Photon Dynamics Canada Inc. (formerly named Image Processing Systems (IPS) Automation Inc.), Toronto, Canada.

- Algorithm and software development for the real-time control of a multiple moving camera, glass edge automated optical inspection sub-system,
- Modeling and simulation of optical imaging channels and Fourier analog optical image processing for a flat panel LCD automated optical inspection system,
- Algorithm development and dynamic behavioral modeling of a multi-camera microscopic defect review sub-system of a flat panel LCD automated optical inspection system,
- Development of experimental plans and testing strategies for automation systems,
- Extensive experience in advanced MATLAB modeling/simulation/programming,
- Finite Elements Modeling (FEM) of physical phenomena using FEMLAB and ANSYS,
- Visual C/C++ Programming using MS Visual Studio, National Instruments Measurement Studio – LabWindows / CVI, Imaq Vision Builder.

Technical Advisor to the President (September 1995 – November 1999) – Part Time
STFA Savronik Defense Electronics Inc., Ankara, Turkey.

- Contribution in the revision and improvement of the Company's business processes.
- Contribution in Quality Assurance and Planning.
- Development of a Business Development and Marketing Database System.

Research-Teaching Assistantship (February 1995 – February 2000)
Middle East Technical University - Department of Electrical and Electronics Engineering, Ankara, Turkey.

- Founding and Management of the Digital Speech Processing Laboratory,
- Development of the C++ object-oriented speech processing and automatic speaker identification package METU-OASIS (Open-Architecture Speech Information System)
- Research and development activities in digital speech processing and automatic speaker identification (The Laboratory is a Member of the European COST-250 Project Group),
- Teaching in Digital Signal Processing by the design and assignment MATLAB projects.

Part-Time Researcher (September 1992-February 1993)

TUBITAK, *Scientific and Technological Research Council of Turkey* - Institute of Electronic Research and Development -VLSI Laboratories, Ankara, Turkey.

- Took part in VLSI system design and development activities.

Development Oriented Internship (August-September 1992)
TUBITAK, *Scientific and Technological Research Council of Turkey* - Institute of Electronic Research and Development -VLSI Laboratories, Ankara, Turkey.

- Design, prototype implementation and testing of a DTMF dial-tone generator sub-system. Experience in UNIX operating system on SUN Sparc workstations. Experience in VLSI design and simulation software tools.

Development Oriented Internship (July-September 1991)
ASELSAN, *Military Electronics Industries*, Ankara, TURKEY.

- Design and prototype implementation of a Microprocessor Controlled 8-Bit , 8 Channel Multiplexed Data Acquisition Card for IBM-Compatible Personal Computers, using INTEL 80c51 Microcontroller and peripheral circuitry. Experience in microprocessor based digital system design.

Education:

Ph.D. Degree in Electrical and Electronics Engineering (January 2000)
Middle East Technical University, Ankara, Turkey.

- Development the open architecture speech information system (OASIS). Development of a unifying theory for rank-based multiple classifier decision systems for pattern recognition problems. Investigation of applications in automatic speaker identification and speech recognition.

M.Sc. Degree in Communications and Signal Processing (with Distinction, October 1994)
Imperial College of Science, Technology and Medicine, University of London, UK.

- Development of new Cubic B-Spline Basis Functions in Adaptive Radial-Basis Function Networks. Investigation of possible uses in the digital signal processing problems of real time system identification and time-series prediction.

B.S. Degree in Electrical and Electronics Engineering (with Honors, June 1993)
Middle East Technical University, Ankara, TURKEY.

- With course load specialization in Communication and Computer Systems.

Technical Skills:

- Solid background in Digital Signal Processing, Optimization, Optimal and Adaptive Systems, Telecommunications, Dynamic Control Systems and Object Oriented Software Design
- Excellent knowledge of real-time imaging and dynamic control systems including design, simulation and implementation.
- Moderate experience with system level design, design and implementation of experimental and testing strategies, troubleshooting and diagnostics of complex dynamic control systems.
- Moderate experience in modeling of physical phenomena using Finite Element Modeling (FEM) packages FEMLAB and ANSYS.
- Excellent knowledge of MATLAB Numerical Analysis, Modeling and Visualization Suite as an algorithm design and prototyping tool as well as a programming language.
- Excellent knowledge of hybrid C/C++ and MATLAB Programming.

- Excellent knowledge of C, C++, Pascal, Visual Basic and Fortran programming languages.
- Excellent knowledge of the Linux and MS Windows (NT/2000/XP) operating systems.
- 10+ years of experience in C language programming on UNIX/Windows Operating Systems.
- 8+ years of experience in object-oriented software design and implementation using the C++ language.
- Excellent knowledge of version control systems (RCS-CVS / Visual Source Safe).
- Moderate experience in SQL database programming and database design.
- Moderate experience in UNIX System Administration and Network Programming.
- Moderate knowledge of Computer Security and Cryptography.
- Experience in Microprocessor / microcontroller based system design.
- Experience in DSP processor programming.
- Familiarity with the Java Language, ActiveX Controls, CORBA Architecture and the Universal Modeling Language (UML).
- Excellent knowledge of MS Office tools (Word / Excel / Access / PowerPoint).

Languages:

- Turkish as the native language.
- Excellent written and spoken knowledge of English and French.
- Intermediate level written and spoken Spanish.
- Beginner level German.

Personal Interests:

- Amateur Photography: Nature, Landscape and Experimental
- Camping, Hiking, Skiing, Swimming and Sailing.
- Reading in Engineering, Science, Science-Fiction, Fantasy and History.

International Patents

- Weiss, A., Saranli, A., *Improved Inspection of TFT LCD Panels using On-Demand Automated Optical Inspection Sub-System*, application in progress, US Patent, Application, Also filed in Japan, Taiwan, Korea.

- Weiss, A., Saranli, A., *Method and Apparatus for Flat Patterned Media Inspection*, application in progress, US Patent, App. No. 10/439991. Also filed in Japan, Taiwan, Korea.

- Weiss, A., Saranli, A., Lopatin, O., Obotnine, A., *Method and Apparatus for High-Throughput Inspection of Large Patterned Media Using Dynamically Programmable Optical Spatial Filtering*, application in progress, US Patent, App. No. 10/396760. Also filed in Japan, Taiwan, Korea.

- Weiss, A., Saranli, A., Ghelman, E., Baldwin, D., *High Precision Gas-Bearing Split-Axis Stage for Transport and Constraint of Large Flat Flexible Media During Processing,* application in progress, US Patent, App. No. 10/637215. Also filed in Japan, Taiwan, Korea.

Selected Publications:

- Saranlı, A., Demirekler, M., "On Output Independence and Complementariness in Rank-Based Multiple Classifier Decision Systems", *Pattern Recognition*, 34 (2001) pp. 2319-2330.

- Saranlı, A., Demirekler, M., "Rank-Based Multiple Classifier Decision Combination: A Theoretical Study", Journal of Advanced Computational Intelligence and Intelligent Informatics, Vol.5, No.1, February 2001, pp. 37-43.

- Saranlı, A., Demirekler, M., "A Statistical Unified Framework for Rank-Based Multiple Classifier Decision Combination", *Pattern Recognition*, 34 (2001) pp.865-884.

- Saranlı, A., A *Unifying Theory for Rank-Based Multiple Classifier Systems, with Applications in Speaker Identification and Speech Recognition*, Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, January 2000.

- Saranlı, A., Baykal, B., "Complexity Reduction in Radial Basis Function (RBF) Networks by Using Radial B-Spline Functions", *Neurocomputing* 18, 1998, pp. 183-194.

- Demirekler, M., Saranli, A., "A Study on the Convergence Properties of Evolution Strategies(ES) with a Case Study on Finding the Global Optimum Solution of the Multi-Pulse Excitation Problem", *ELEKTRIK, Turkish Journal of Electrical and Electronics Engineering*, Vol. 5, No. 3, 1997.

- Demirekler, M., Saranlı, A., "A Study on Improving Decisions in Closed-Set Speaker Identification," in *Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing(ICASSP'97)*, April 1997, Munich, Germany.

- Saranlı, A. Baykal, B., "Chaotic Time-Series Prediction and the Relocating-LMS(RLMS) Algorithm for Radial Basis Function Networks*", Proceedings of The European Signal Processing Conference(EUSIPCO'96)*, September 1996, Trieste, Italy.

- Saranlı, A., *Investigation of and Alternative B-Spline Basis in Adaptive RBF Networks, with Applications to System Identification and Time-Series Prediction,* M.Sc. Thesis, Imperial College, London, September 1994.

Awards:

- M.Sc. Degree with Distinction Award (October 1994).
- The British Council Fellowship (October 1993).
- Third Prize in a nationwide essay contest "The Importance of Standardization in Our Lives." organized by *Turkish National Standards Institute* (September 1989).

Affiliations:

- Member of The Institute of Electrical and Electronics Engineers (IEEE), Computer Society and Signal Processing Society.
- Former Chairman, founding member of IEEE - Middle East Technical University - Student Branch.
- Member of International Association for Pattern Recognition.
- Member of Turco-British Fellowship Club.

References:

- Reference letters and/or reference contact information is available upon request.