

# Samer I. Awad

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## **Summary:**

Background in medical imaging, biomedical image processing (DIP), biomedical signal processing (DSP), 2-D and 3-D quality assurance of x-ray radiotherapy, prediction of 3-D structures of nucleic acids, 3-D ultrasound imaging, ultrasonic elasticity imaging, software engineering, data acquisition, and electronics.

## **Education:**

**University of Southern California, Los Angeles, CA** **May 2009**

**Ph.D. in Biomedical Engineering**

Thesis title: “Lesion Enhancement for Three Dimensional Rectilinear Ultrasound Imaging”

**University of Jordan, Amman, Jordan** **May 2000**

**B.S. in Electrical Engineering**

## **Research Experience:**

**University of Southern California, Los Angeles, CA** **May 2004 – May 2009**

**Research Assistant**

- Implemented 3-D spatial compounding to enhance contrast and reduce speckle noise in 3-D ultrasound images using MATLAB
- Implemented 3-D strain imaging, a technique that detects variation in tissue stiffness in medical ultrasound images. Signal processing was done using MATLAB and C language
- Interfaced prototype ultrasound transducers with a commercial ultrasound system and acquired 3-D RF data using C++
- Fabricated tissue mimicking phantoms for testing contrast and resolution of images acquired using new prototype transducers and/or new imaging techniques

## **Academic Experience:**

**The Hashemite University, Zarqa, Jordan** **Sep 2009 – present**

**Assistant Professor**

Courses taught: Biomedical Digital Image Processing, Medical Imaging, Biomedical Signal Analysis, Digital Signal Processing, Biomedical Instrumentation (1), Applied Mathematics, Fundamentals of

Electric Circuits Engineering Drawing, Technical Writing, Ethics and Communication Skills.

**University of Southern California, Los Angeles, CA**

**Aug 2007 – May 2008**

**Teaching Assistant**

Courses taught: Linear Signals and Systems and in Biomedical Measurement and Instrumentation graduate courses.

**Work Experience:**

**Telaterra Software LLC, Amman, Jordan**

**May 2002 – Jul 2003**

**IT Business Systems Analyst**

- Analyzed systems requirements
- Wrote use cases, documents that describe system behavior as it responds to requests that originates from outside of that system
- Wrote supplementary design documents and created Microsoft Visio workflows that describe system specifications in more details
- Performed design documents and use cases reviews with clients over the phone, email and in person until an approval is received

**European IT Center, Amman, Jordan**

**Feb 2002 - May 2002**

**Software Programming Instructor**

- Delivered interactive lessons about the basics of Java and web development using ASP and Java servlets

**Software Horizons Ltd., Amman, Jordan**

**Jun 2000 - Nov 2001**

**Software Testing Engineer and Web Developer**

- Applied software testing to pieces of code written in C language embedded in Telecommunication systems using advanced testing tools
- Developed Web pages using ASP, HTML and Java servlets

**Publications:**

**Awad SI**, Mofteh B, Basfer A, Almousa AA, Al Kafi MA, Eyadeh MM, Rabaeh KA, “3-D Quality Assurance in CyberKnife Radiotherapy Using a Novel N-(3-methoxypropyl) Acrylamide Polymer Gel Dosimeter and Optical CT,” *Radiation Physics and Chemistry* 161, 34–41 (2019).

**Awad SI**, “Mathematical Prediction of Nucleic Acids 3-D Structures Using Inter-Spin Distances and Nonlinear Least Squares Analysis,” *Jordan Journal of Biological Sciences* 12 (1), (2019).

**Awad SI**, Abdallat R, Smadi O, AlMomani T, “Automated Identification and Counting of Proliferating Mesenchymal Stem Cells in Bone Callus,” *International Journal of Computational Vision and Robotics* 9 (1), (2019).

Thakir TD, Bani Hani S, **Awad SI**, Al-Abed M, AlMomani H, Ababneh M, “Pulsatile Flow, Micro-Scale Erythrocyte-Platelet Interaction,” *International Journal of Biomedical Engineering and Technology*, Accepted Sep 2018.

Eyadeh MM, Rabaeh KA, Hailat TF, Al-Shorman MY, Aldweri FM, Kanan HM, **Awad SI**, “Investigation of a novel chemically cross-linked fricke-Methylthymol blue-synthetic polymer gel dosimeter with glutaraldehyde cross-linker,” *Radiation Measurements*, doi:10.1016/j.radmeas.2018.09.013 (2018).

Thakir TD, Bani Hani S, Bdour A, Alsaraira AA, Smadi O, Al-Jarrah A, Abdallat R, **Awad SI**. “Influence of erythrocyte shape on platelet scattering towards vessel wall,” *International Journal of Biomedical Engineering and Technology* 21 (3), (2016).

**Awad SI**, Yen JT. “3-D Spatial Compounding Using a Row-Column Array,” *Ultrasonic Imaging* 31, 120–130 (2009).

Yen JT, Seo C, **Awad SI**, Jeong J. “A Dual-Layer Transducer Array for 3-D Rectilinear Imaging,” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 56, 204-212 (2009).

**Awad SI**, Yen JT. “3D strain imaging using a rectilinear 2D array,” *Ultrasonic Imaging* 29, 220-230 (2007).

#### **Conference Proceedings:**

**Awad SI**, Al-Abed M, Al Saraira A, “A Comparison of Time Delay Estimation Methods and Interpolation Methods in Signal-Averaged ECG: Preliminary Results,” *2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT)*.

Yen JT, Mung J, Nguyen M, **Awad SI**. “Fresnel beamforming for compact portable ultrasound array system,” *2009 IEEE Ultrasonics Symposium*.

Yen JT, Seo CH, **Awad SI**, Jeong JS. “A PZT-P[VDF-TrFE] dual-layer transducer for 3-D rectilinear imaging,” *2008 IEEE Ultrasonics Symposium*.

Yen JT, Seo CH, **Awad SI**, Jeong JS. “A dual-layer transducer for 3-D near-field imaging,” *33rd International Symposium on Ultrasonic Imaging and Tissue Characterization, 2008*.

**Awad SI**, Yen JT. “3-D Strain Imaging Using a Sparse Rectilinear 2-D Array,” *2007 IEEE Ultrasonics Symposium*.

**Awad SI**, Lye Y, Yen JT. “Strain Imaging Using a Rectilinear 2-D Array: Preliminary Results,” *2006 IEEE Ultrasonics Symposium*.

#### **Awards:**

“**The Best Program Award**” for the year 2015 sponsored by Philadelphia University, Amman, Jordan. Title of the project: Mathematical Prediction of 3-D Structures of Nucleic Acid Molecules Based on Inter-Spin Distances.

### **Technical Skills:**

- **Programming Languages:** Experienced with MATLAB. Good knowledge of low level and high level programming language and database engines including: Assembly, C/C++, Java, Java servlets, ASP, HTML, Oracle, MS SQL server 7 and MS Access
- **Applications:** Proficient with MS Office. Good knowledge of MS Visio and MS Project
- **Ultrasound Imaging:**
  - Carried out several signal processing techniques for contrast enhancement, artifact reduction and increasing small target detectability in ultrasound images using Field II simulations and RF data acquired using 1-D commercial arrays
  - Carried out several ultrasound transducer array tests including: electrical impedance, pulse echo, cross talk and beam profile
  - Knowledge of ultrasound transducer design and fabrication
- **Electronics:** Knowledge of circuit design, circuit interface, programming microcontrollers, PSpice and Multisim, use of electric circuit testing devices