

# Khaldon Lweesy

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## EDUCATION

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2000 – 2004	<b>Ph.D., Biomedical Engineering</b> The Pennsylvania State University	University Park, PA, USA
1994 – 1997	<b>M.Sc., Electrical Engineering</b> Jordan University of Science and Technology	Irbid, Jordan
1989 – 1994	<b>B.Sc., Electrical Engineering</b> Jordan University of Science and Technology	Irbid, Jordan

## RESEARCH INTERESTS

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- Diagnostic and Therapeutic Ultrasound
- Biomedical Signal Processing
- Medical Imaging
- Biomedical Instrumentation
- Medical Waste Management

## PROFESSIONAL EXPERIENCE

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Sep. 2010 – Present	<b>Chairman</b> , Department of Biomedical Engineering, Jordan University of Science & Technology ( <b>ABET Accredited Program</b> ). Irbid, Jordan
Sep. 2009 – Aug. 2010	<b>Assistant Dean</b> , Faculty of Engineering, Jordan University of Science and Technology. Irbid, Jordan
July 2005 – Present	<b>Assistant Professor</b> , Department of Biomedical Engineering, Jordan University of Science & Technology ( <b>ABET Accredited Program</b> ). Irbid, Jordan
Sep. 2004 – July 2005	<b>Full-time Lecturer</b> , Department of Biomedical Engineering, Jordan University of Science & Technology. ( <b>ABET Accredited Program</b> ). Irbid, Jordan
Sep. 2003 – Jan. 2004	<b>Lecturer and Lab Instructor</b> , Department of Biongeering, The Pennsylvania State University. University Park, PA, USA
Aug. 2000 – Aug. 2004	<b>Graduate Research Assistant</b> , Department of Biongeering, The Pennsylvania State University. University Park, PA, USA

Jan. 1997 – Aug. 2000 **Maintenance Engineer**, Networks Department, Jordan Telecommunication Company. Irbid, Jordan

Aug. 1994 – Jan. 1997 **Teaching Assistant**, Department of Electrical Engineering, Jordan University of Science & Technology. Irbid, Jordan

#### TEACHING EXPERIENCE

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- Digital Image Processing
- Diagnostic Techniques
- Digital Signal Processing
- Signals and Systems
- Biomedical Electronics I
- Instrumentation Lab II
- Engineering Training
- Seminar in Biomedical Engineering
- Graduation Project I
- Graduation Project II

#### PUBLICATIONS

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- **Lweesy K.**, Fraiwan L., Shatat A., Abdo G., Dawodiah A., and Sameer M., “Design and evaluation of a HIFU transducer and 3D positioner with some preliminary ablation results in ex vivo kidney,” *Medical and Biological Engineering and Computing*, 48(3), 269-276, 2010.
- **Lweesy K.**, Fraiwan L., Bataineh O., Hamdi N., and Dickhaus H., “Optimization of ultrasound array designs for high intensity focused treatment of prostate cancer and benign prostatic hyperplasia,” *Medical and Biological Engineering and Computing*, 47(6), 635-640, 2009.
- **Lweesy K.**, Fraiwan L., Khasawneh N., and Dickhaus H., “New automated detection method of OSA based on artificial neural networks using P-wave shape and time changes,” *Journal of Medical Systems*, Accepted for publications, 2009. DOI 10.1007/s10916-009-9409-z
- **Lweesy K.**, Fraiwan L., Al-Shalabi M., Mohammad L., and Al-Oglah R. “Feasibility study of noninvasive tumor treatment with focused ultrasound,” *Journal of Medical and Biological Engineering*, Accepted for publications, 2009.
- Fraiwan L., **Lweesy K.**, Khasawneh N., Fraiwan M., Wenz H., and Dickhaus H., “Classification of sleep stages using multi-wavelet time frequency entropy and LDA,” *Methods of Information in Medicine*, 49(3), 230-237, 2010.
- Fraiwan L., **Lweesy K.**, Khasawneh N., Fraiwan M., Wenz H., and Dickhaus H., “Time frequency analysis for automated sleep stage identification in fullterm and preterm neonates,” *Journal of Medical Systems*, Accepted for publications, 2009. DOI 10.1007/s10916-009-9406-2

- Fraiwan L., **Lweesy K.**, Owies R., Al- Qublan H., and AL-Hasanat M., “Medical waste management practices in Southern Jordan,” *International Journal of Environmental and Waste Management*, Accepted for publication, 2009.
- **Lweesy K.**, “Design and evaluation of multi-dimensional ultrasound phased arrays for thermal treatment of prostate diseases,” Doctoral Dissertation, Department of Bioengineering, The Pennsylvania State University, University Park, PA, USA, August 2004.
- **Saleh (Lweesy) K.** and Smith N. “Design and evaluation of a 3 x 21 element 1.75 dimensional tapered ultrasound phased array for the treatment of prostate disease,” *Materials Research Innovation*, vol. 10, no. 2, pp. 62-65, 2006.
- **Saleh (Lweesy) K.** and Smith N. “A 63 element 1.75 dimensional ultrasound phased array for the treatment of benign prostatic hyperplasia,” *BioMedical Engineering OnLine*, vol. 4, no. 39, 2005.
- **Saleh (Lweesy) K.** and Smith N. “Two Dimensional Ultrasound Phased Array Design for Tissue Ablation for Treatment of Benign Prostatic Hyperplasia,” *International Journal of Hyperthermia*, vol. 20, no. 1, pp. 7-31, 2004.
- **Saleh (Lweesy) K.** and Smith N. “Recent Research in Therapeutic Ultrasound,” *NIH Transducer Resource Newsletter*, November 2001.

## CONFERENCES

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- **Lweesy K.**, Fraiwan L., Al-Shalabi M., Mohammad L., and Al-Oglah R., “Design and ex vivo evaluation of a 3D high intensity focused ultrasound system for tumor treatment with tissue ablation,” *IFMBE Proceedings* 32, pp. 556 – 559, College Park, MD, USA, 2010.
- **Lweesy K.**, Fraiwan L., Hadarees D., Jamil A., and Ramadan E., “Design, construction, and evaluation of an electrical impedance myograph,” *IFMBE Proceedings* 32, pp. 508 – 511, College Park, MD, USA, 2010.
- **Lweesy K.**, Fraiwan L., Maier C., and Dickhaus H., “Extraction of fetal heart rate and fetal heart rate variability from mother's ECG signal,” *Proceedings of the International Conference of Medical Informatics and Biomedical Engineering*, Waset: ICMIBE-Paris 2009, Vol. 54, pp. 704-708.
- **Lweesy K.**, Fraiwan L., Shatat A., Abdo G., Dawodiah A., and Sameer M., “Design and Evaluation of a Three Dimensional Ultrasound System for Tissue Ablation for Treatment of Kidney Tumors,” *IFMBE Proceedings of the 25<sup>th</sup> Southern Biomedical Engineering Conference*, Miami, FL, USA, 2009, Vol. 24, pp. 19-20.
- Fraiwan L., Khasawneh N., and **Lweesy K.**, “Automatic Sleep Stage Scoring with Wavelet Packets Based on Single EEG Recording,” *Proceedings of the International Conference of Medical Informatics and Biomedical Engineering*, Waset: ICMIBE-Paris 2009, Vol. 54, pp. 513-516.

- Seip R., Chen W., Carlson R., Frizzell L., Warren G., Smith N., **Saleh (Lweesy) K.**, Gerber G., Shung K., Guo H., and Sanghvi N. “Annular and Cylindrical Phased Array Geometries for Transrectal High-Intensity Focused Ultrasound (HIFU) using PZT and Piezocomposite Materials,” *4th International Symposium on Therapeutic Ultrasound*, Kyoto, Japan, 18-20 September 2004.
- **Saleh (Lweesy) K.** and Smith N. “Design and evaluation of a 63 element 1.75-D ultrasound phased array for treating benign prostatic hyperplasia,” *The 146<sup>th</sup> Meeting of the Acoustical Society of America (ASA)*, Austin, TX, 10–14 November 2003.
- **Saleh (Lweesy) K.** and Smith N. “Design and evaluation of a 64 elements two dimensional Ultrasound phased array for the treatment of benign prostatic hyperplasia,” *Ultrasonics International Conference*, Granada, Spain, 30 June – 3 July 2003.
- **Saleh (Lweesy) K.** and Smith N. “Two Dimensional Array Design for Tissue Ablation for Treatment of Benign Prosthetic Hyperplasia,” *Workshop on MRI Guided Focused Ultrasound Surgery*, Cambridge, MA, 19–21 June 2002.
- **Saleh (Lweesy) K.** and Smith N. “Two Dimensional Ultrasound Phased Array for Thermal Treatment of Prostate Cancer,” *Ultrasonic Transducer Engineering Conference*, University Park, PA, 17–19 August 2001.
- **Saleh (Lweesy) K.** and Smith N. “Two dimensional ultrasound phased array design for thermal treatment of prostate cancer,” *Second Annual Materials day*, The Pennsylvania State University, University Park, PA, 15 April 2003.
- **Saleh (Lweesy) K.** and Smith N. “Design and evaluation of a 64 elements two dimensional ultrasound phased array for treating prostate cancer,” *Eighteenth Annual Graduate Exhibition*, Pennsylvania State University, University Park, PA, 29 March 2003.
- Ghareeb I. and **Saleh (Lweesy) K.** “The Performance Analysis of Frequency Hopped / M-ary PSK under Multitone Jamming and AWGN Channels,” *Jordan International Electrical and Electronic Engineering Conference*, Amman, Jordan, 27-29 April 1998.

## SENIOR DESIGN PROJECTS

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Supervised more than 30 graduation (senior) design projects for Biomedical Engineering Students with BME related topics.

## COMPUTER SKILLS

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- Packages: Matlab-Simulink, Mathcad, LabView, and SPSS
- Finite Element Softwares: PZFLEX and ANSYS
- Languages: Visual Basic and Fortran

## COMMITTEE MEMBERSHIP

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Served as a member of various scientific and educational councils and committees:

- BME Department Council
- Engineering Faculty Council
- ABET Accreditation Committee
- BME Curriculum Committee
- Community Outreach Committee
- Strategic Planning Committee
- Scientific Research Committee
- Conferences and Symposia Committee
- BME Practical Training Committee

#### LEADERSHIP ACTIVITIES AND AWARDS

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- 2003 Graduate Exhibition Award, “Design and evaluation of a 64 elements two dimensional ultrasound phased array for treating benign prostatic hyperplasia,” The Pennsylvania State University, University Park, PA, March 2003 (third place).
- Doctoral Scholarship from Jordan University of Science and Technology to obtain the Ph.D degree in Biomedical Engineering from the Pennsylvania State University (2000–2004).
- Four summer research visits to the University of Heidelberg/Germany funded by the German Research Foundation (Deutsche Forschungsgemeinschaft – DFG)
- Acting chairman of the BME department during the absence of the department's chairman.
- Is a member of the BME department ABET committee which led to obtaining the ABET accreditation.
- Respresented JUST in a TEMPUS project that led to the establishment of a new Biomedical Engineering Department at Yarmouk University, Irbid, Jordan.

#### REFERENCES

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Available upon request.