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Ki H Chon

Professor and Department Head

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Office: Life Sciences and Bioengineering Center, 4008

Phone: +1-508-831-4114

Fax: +1-508-831-4121

kichon@wpi.edu

Educational Background

- B.S., University of Connecticut
- M.S., University of Iowa
- M.S. University of Southern California
- Ph.D. University of Southern California
- Postdoc MIT

Research & Teaching Interests

My current research and teaching interests include medical instrumentation, biomedical signal processing, and identification and modeling of physiological systems.

IQP Advising Interests

impact of new technologies; hospital based projects

Research Grants

- Nonlinear Analysis-Cardiovascular Regulatory Mechanisms, *National Institutes of Health: Postdoctoral Fellowship Grant*
\$81,200 (direct cost) 1994-1997
PI: K.H. Chon
- Estimation of the Dynamic Characteristics of the Intra- and Inter-Nephron Interactions Between the Myogenic and TGF Mechanisms, *National Kidney Foundation: Young Investigator Award*
\$50,000 (direct cost) 1997-1998
PI: K.H. Chon
- Nonlinear Analysis of Cardiovascular Autonomic Nervous System *The Whitaker Foundation*
\$210,000 (direct cost) 1998-2000
PI: K.H. Chon
- Development of Medical Devices for Heart Failure Monitoring and Data Analysis *C-One Tech*
\$200,000 (direct cost) 03/2000-05/2002
PI: K.H. Chon
- Development of Medical Devices for Heart Failure Monitoring and Data Analysis *C-One Tech*
\$187,729 (direct cost) 06/2002-07/2007



PI: K.H. Chon

- Developing Predictive Methods for Sudden Cardiac Death *National Institutes of Health R21*
\$150,000 (direct cost) 06/2001-05/2003
- Decoupling Dynamics of the Autonomic Nervous Systems *NIH Heart Lung & Blood Institute R21:HL76358*
\$200,000 (direct cost) 04/2004-3/2007
PI: K.H. Chon
- Wireless Health Monitor *Coulter Foundation/ SUNY Stony Brook*
\$112,000 (direct cost) 07/2006-06/2007
PI: K.H. Chon
- Graduate Training in Systems Physiology and Analysis *NIH NIDDK R25:*
\$478,315 (direct cost) 04/2004-03/2009
Co-PI: K.H. Chon
- Continuous glucose monitoring: validation via swine *Ultrascan Diagnostics/NYSTAR Center for Biotechnology*
\$119,852 3/2008-2/2009
PI: K.H. Chon
- Decoupling of the Principal Renal Autoregulatory Mechanisms *NIH Heart Lung & Blood Institute R01:HL069629*
\$900,000 (direct cost) 08/2001-8/2008
PI: K.H. Chon
- Noninvasive diagnosis and real-time evaluation of the effects of hyperbaric dive environments on the autonomic nervous system, utilizing Principal Dynamic Mode Analysis *Office of Naval Research*
\$750,000 10/2007-9/2010
PI: K.H. Chon
- A Novel Method to Assess Cardiovascular Diabetic Autonomic Neuropathy *Juvenile Diabetes Research Foundation*
\$110,000 1/2010-12/2010
PI: K.H. Chon

Recent Publications

- Dash, S., K.H. Shelley, D.G. Silverman, **K.H. Chon**, Estimation of respiratory rate from ECG, photoplethysmogram and piezoelectric pulse transducer signals: a comparative study of time-frequency method. *IEEE Trans BME*, In Press.
- Siu, K.L., J.M. Ahn and **K.H. Chon**, Electrohydraulic pump-driven closed-loop blood pressure regulatory system, *Am. J. Physiol. Renal Physiology*, 296:F1530-F1536, 2009.
- Faes, L., H. Zhao, **K.H. Chon**, and G. Nollo, Time-varying surrogate data to assess nonlinearity in nonstationary time series: application to heart rate variability. *IEEE Trans. BME*, 56:685-695, 2009.
- Faes, L., **K.H. Chon**, and G. Nollo. A method for the time-varying nonlinear prediction of complex nonstationary biomedical signals. *IEEE Trans. BME Letters*, 56:205-209, 2009.
- Bai, Y., R. Mahon, J. White, P. Brink, and **K.H. Chon**, Impairment of autonomic nervous function during decompression sickness in swine.. *J. Appl. Physiol.*, 106:1004-1009, 2009.

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Collaborations

- Drs. Paul Smith & Alexander Gorbach at NIH-NIBIB
- Drs. Kirk Shelley & David Silverman at Yale University
- Dr. Will Cupples at University of Victoria, Canada
- Drs. Leon Moore, Peter Brink and Joseph White at SUNY Stony Brook
- Dr. Richard Mahon at Naval Medical Research Center
- Dr. John Florian at Naval Experimental Dive Unit

Honors & Awards

- 1994-1997 *Individual National Research Service Award, NIH*
- 1997-1998 *Young Investigator Award, National Kidney Foundation*
- 2000-2002 *Harold Shames Faculty Award, City College of New York*
- 2006-Present *Associate Editor, Recent Patents on Engineering*
- 2007-present *Associate Editor, IEEE Trans. Biomedical Engineering*
- 2007-present *Associate Editor, Int. J. Bioelectromagnetism*
- 2008-present *Associate Editor, IEEE Trans. Biomedical Engineering Letters*
- 2009-Present *Associate Editor, Methods of Information in Medicine*

Years of Service at WPI

- 2010 Professor and Department Head

Professional Experience & Activities

- 2009 **Conference Chair**, 6th International Workshop on Biosignal Interpretation, New Haven, CT, June, 2009.
- 2008 **Theme Chair**, for "Biosignal Processing", 30th Annual International Conference of the IEEE - Engineering in Medicine and Biology Society (EMBS), Vancouver, Canada, August, 2008.
- 2008 **Scientific Committee**, European Study Group on Cardiovascular Oscillations, Parma, Italy, April, 2008.
- 2007 **Theme Chair**, for "Biosignal Processing", 29th Annual International Conference of the IEEE - Engineering in Medicine and Biology Society (EMBS), Lyon, France, August, 2007.
- 2006 **Program Co-Chair 28th Annual International IEEE EMBS Conference**, New York, City, NY. September, 2006. Attended by more than 2,000 people and more than 1900 papers submitted.
- 2006 **Theme Chair**, for "Biosignal Processing", 28th Annual International Conference of the IEEE - Engineering in Medicine and Biology Society (EMBS), New York, NY, September 2006.
- 2006 **Scientific Committee**, European Study Group on Cardiovascular Oscillations, Jena, Germany, 2006.
- 2005 **Scientific Committee**, 5th International Workshop on Biosignal Interpretation, Tokyo, Japan, September, 2005.
- 2003 **Theme Chair**, for "Biosignal Processing", 25th Annual International Conference of the IEEE - Engineering in Medicine and Biology Society (EMBS), Cancun, Mexico, August, 2003.
- 2005-2000 **Track Chair** for biosignal processing, Annual International Conference of the IEEE - Engineering in Medicine and Biology Society (EMBS).

Professional Societies/Memberships

- The Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Engineering in Medicine and Biology Society (EMBS)
- Biomedical Engineering Society (BMES)
- EMBS Technical Committee (Signal Processing)

Department of Biomedical Engineering - Worcester Polytechnic Institute

100 Institute Road, Worcester, MA 01609-2280 | Phone: +1-508-831-5447 | Fax: +1-508-831-5541 |

bme-web@wpi.edu