

## **Hwang, Il-Kyu**

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### **Education**

- Ph. D in Dept. of Mechanical Engineering, University of Wisconsin-Milwaukee, USA
- M.S. in Dept. of Industrial Engineering, Korea Advanced Institute of Science and Technology, Seoul, Korea
- B.S. in Dept. of Naval Architecture, Seoul National University, Seoul, Korea

### **Work Experience**

- Professor in Dongyang Mirae University (present)
  - Teaching AI programming
  - Teaching data structure and computer graphics
  - Teaching creative engineering design
  - Developing process automation system
  - Developing digital door lock based wireless access monitoring and control system
  - Director of Business Incubation Center (Mar. 2005 – Feb. 2007)
  - Director of the Association of Seoul Business Incubation Center (Mar. 2005 – Feb. 2007)
  - Head, Dept. of Robot Engineering (present)
  - Dean, School of Robot and Automation Engineering (present)
- Research Consultant in CAD/CAM Center of Korea Institute of Science and Technology
  - Consulting CAM software development
  - Developing pocketing algorithm and implementing
  - Interface between feature-based CAD system and NC programming
- Research Engineer in Samsung Advanced Institute of Technology
  - Planning and consulting in CAD/CAM area
  - Developing in-house software
  - Teaching CAD/CAM programming
  - Developing commercial CAD system (UniCAD)
- CEO in PriVia Co. Ltd. (Oct. 2004 – Jul. 2009)
- Special Consultant in Busung PriVia Co. Ltd.
  - Director of Research Institute of Technology

### **Honors**

- Project Assistant and Teaching Assistant of Dept. of Mechanical Engineering in University of Wisconsin-Milwaukee (Oct 1999 – Dec 2002)
- Good Technology Award of Samsung Advanced Institute of Technology (1992)
- Full scholarship by government at KAIST (March 1988 - Feb 1990)

## Journal Papers

- Implementation of GUI-based Physical Computing System with Arduino for the Novice Education, *Journal of Korean Institute of Information Technology*, Vol.20, No.8, pp.29-39 (DOI : 10.14801/jkiit.2022.20.8.29)
- AI-based Infant State Recognition Using Crying Sound, *Journal of Korean Institute of Information Technology*, Vol.17, No.7, pp.13-21 (DOI : 10.14801/jkiit.2019.17.7.13)
- A Study on the Reliability Improvement for the Course Evaluation System, *Journal of Engineering Education Research*, Vol. 17, No. 2, pp. 35-41 (ISSN: 17386454)
- The Implementation of Unmanned Patrol Vehicle with Multi-sensors Controlled by Smartphone, *Journal of Korean Institute of Information Technology*, Vol. 11, No. 12, pp. 1-11, Dec. 31, 2013.
- The Implementation of Electric Heating System Controlled by Smart Phone, *Journal of Korean Institute of Information Technology*, Vol. 10, No. 11, 2012, pp. 1-8 (ISSN: 1598-8619)
- Development of Dual Stage Profile Shifted Gear System with Bearing-Integrated Structure for High Reduction Ratio, *Transactions of the Society of CAD/CAM Engineers*, Vol. 17, No. 5, 2012, pp. 312-323 (ISSN: 1226-0606)
- Power Line Communication Method with Splitting of Power Transmission Interval, *The Transactions of the Korean Institute of Power Electronics*, Vol. 17, No. 3, 2012, pp.252-258 (ISSN: 1229-2214)
- Novel input and output mapping-sensitive error back propagation learning algorithm for detecting small input feature variations, *Neural Computing and Applications*, 2012, Vol. 21, No. 4, pp.705-713
- A Study on the Faculty Evaluation Model with Considering the Characteristics of Education-Based Colleges, *The Journal of Vocational Education Research*, , Vol.30, No.4, pp.23-49, 2011 (ISSN: 1225-4762)
- Home network configuring scheme for all electric appliances using ZigBee-based integrated remote controller, *IEEE Transactions on Consumer Electronics*, Vol. 55, No. 3, August 2009, pp.1300-1307 (ISSN: 0098-3063)

- New Scheme for Intelligent Voyage Data Recorder Analysis System and Development of Visualization Module of the VDR, 2008. *The Journal of the Korean Society of Ocean Engineers*, Vol. 22, No. 5, pp.126-131
- “A Study on Implementation of ZigBee Module for the Home Networking”, 2008. *Journal of The Korea Society of Computer and Information*, Vol. 13, No. 2, pp.203-210
- “Wireless Access Monitoring and Control System based on Digital Door Lock”, (2007). *IEEE Transactions on Consumer Electronics*, Vol. 53, No. 4, pp.1724-1730
- “PREDICTION OF RESONANCE CHARACTERISTICS OF THE FOREARM BONES USING FINITE ELEMENT ANALYSIS”, *Journal of Musculoskeletal Research* (2006), Vol. 10, No.4, pp.205-21
- “Biomechanical Efficiency of Wrist Guards as a Shock Isolator”, *Journal of Biomechanical Engineering-Transactions of the ASME* (2006), Vol. 128, pp. 229-234
- “CONSTRUCTION OF A 3-D FINITE ELEMENT MODEL OF THE HUMAN FOREARM COMPLEX USING A SERIES OF 2-D COLOR IMAGES”, *Journal of Musculoskeletal Research* (2005), Vol. 9, No. 3, pp. 103-111
- “SHOCK-ABSORBING EFFECTS OF VARIOUS PADDING CONDITIONS IN IMPROVING EFFICACY OF WRIST GUARDS”, *Journal of Sports Science and Medicine* (2004) 3, pp. 23-29
- “Integrated machining tool path planning using feature free space”, *International Journal of Production and Research* (2003), Vol. 41, No. 14, pp. 3237–3255
- “Development of a Quantitative Reflex Hammer for Measurement of Tendon Stretch Reflex”, *IEEE Transactions on Neural Systems and Rehabilitative Engineering* (2002), Vol. 10, No. 3, pp. 165-169
- “Development of Automatic Design System for Pneumatic Circuit Using AutoCAD”, *Journal of Industrial Technology Research of Dongyang Technical College*, No. 5, pp.345-360, 1996
- “Representing the Voronoi diagram of a simple polygon using rational quadratic Bezier curves”, *Computer-Aided Design*, Vol. 27, No. 8, pp. 605-614, 1995

## Conference Proceedings

- “Measurement and Evaluation of the VCA Module for Quality Control”, 2009. 6.The 3rd International Conference on Manufacturing, Machine Design and Tribology, Jeju Island, Korea, 25-26 June 2009
- “Biomechanics of Wrist Guards during Fall Arrests”, BED-Vol. 50 (2001), Bioengineering Conference, *ASME 2001*, June 27 - July 1, 2001, Snowbird, Utah, USA.
- “Analysis of Impact Loading during Fall Arrests”, *Midwest Graduate Student Biomechanics Symposium 2001*, Milwaukee, WI, p2.
- Integrated Local and Global Tool Path Planning for Feature-Based Machining”, DETC00/CIE-14646, Proceedings of *DETC2000*, 20th Computers and Information in Engineering Conference, September 10-13, 2000, Baltimore, Maryland, USA.
- “Feature-based, Automatic Generation of Machining Tool Paths”, *FORUM 2000*, Canadian Society of Mechanical Engineers (CSME), May 16-19, 2000, Montreal, Canada.
- “Divide and Conquer Algorithm for a Voronoi Diagram of Simple Curves”, *Korea Association of Industrial Engineering '94 Conference*, pp.691-700
- “C++ for CAD/CAM”, *Korea Association of Industrial Engineering '94 Conference*, pp.58-66
- “Development of Toolpath Generation Program for Photoplotter”, '93 *Samsung Group CAD/SUPERCOM User Conference*
- “Generalized Voronoi Diagram and It's Applications”, *Korea Association of Industrial Engineering '92 Conference*
- “Development of 2.5 Dimensional Pocketing Program“, '91 Samsung Group CAD User Conference

## **Publications**

- Translated into Korean, "Programming and Problem Solving with C++", Dale, Weems, and Headington, published by Jones and Bartlett Publisher, Inc., 1996. The Korean edition was published by Seong An Dang, Inc., 1998.

## **Project Experienced**

- Inspection Process Automation for Driving Test of Hybrid Type Image Sensor Module (Small and Medium Business Administration of Korea, 2012)
- Measurement and Evaluation of the VCA Module for Quality Control (Small and Medium Business Administration of Korea, 2007)
- Container Door Lock with Electronic Seal and GPS Path Tracking (Small and Medium Business Administration of Korea, 2006)
- Digital Door Lock-based Wireless Access Monitoring and Control System (City of Seoul, 2005-2006)
- High Performance Oil Extractor for the Ship (Small and Medium Business Administration of Korea, 2005)
- Visualization of the Voyage Data Recorder (Dongyang Technical College, 2004)
- Feature-based Automatic Process Planning System (Korea Institute of Science and Technology, Sep 1999 - 2000)
- Development of Knowledge-based Process Monitoring and Control System for Roll Coating Machine (Small and Medium Business Administration of Korea, 1998)
- Development of Graphic Library for Robot Simulation (DYTC, 1995)
- Development of Toolpath Generation Program for Photoplotter (SAIT, 1993)
- Design for Manufacturing (SAIT, 1991-1992)
- Machining of Sculptured Surface Using CAM-5-S (SAIT, 1990)

## **Patents**

- Multi-Mode Cleaning Robot (South Korea, 0365142)
- Digital Door Lock with Control Function of the Internal Devices (South Korea, 0381032)
- Cleaning Robot Using the Existing Vacuum Cleaner (South Korea, 0386218)
- Collision Avoid Device Using the IR Sensor (South Korea, 0387448)
- Position Recognition Device for the Mobile Robot (South Korea, 0392635)
- Sensor Network Device with Contained Power and Self Attachment (South Korea, 0399810)

## **Computer Skills Experienced**

- Computer languages: Python, C, C++ (Unix, MFC), PASCAL, FORTRAN
- CAD/CAM S/W: AutoCAD, ME-10, SolidWorks, CAM-5-S, KAPT/SWEEP, OMEGA
- Expert system development tool: ART-IM
- System simulation system: SLAM-II

- Etc: MATLAB, Open-GL