Keynote Speaker-4

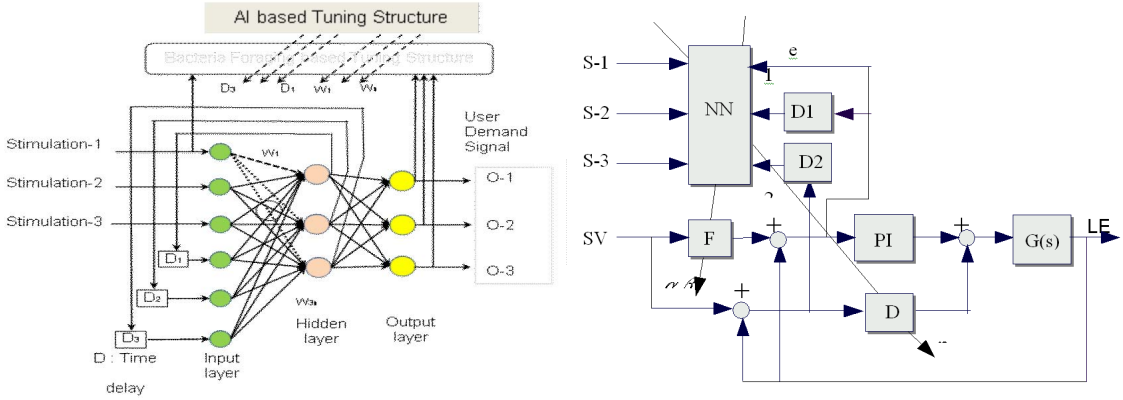
Artificial Intelligence and Emotion Actuator Design

Dong Hwa Kim
Hanbat National University, S.Korea
koreahucare@gmail.com,www.hucare.org

This lecture deals with intelligent method based emotional actuator design approaches. Emotional intelligence has been described as the capacity to monitor and regulate one's own feeling and others' feelings, and to use feelings to guide thought and action by Salovey and Mayer in 1990. In light of the above agent definitions, we may have a different decision because entity whose state includes not only mental components of belief, capabilities, choices, and commitments, but emotional components of mood, preference, attitude, and feeling. Here, technologies for emotionally oriented control strategies or actuator design or programming architectures should be allowed to compute with consistency and appropriate relatedness between emotion and intellect. From the biological information processing view, emotional intelligence may be practically defined as the ability to use "emotional knowledge" in the mapping from percepts to actions. Recently, theoretically or neurologically we have commonly been researching that most artificial intelligences have come from emulating activities in bio areas or mathematical tools.

However, developing speed of ICT is so fast and smart technology is growing up to apply in modern industry areas. Therefore, some of them are going to introduce into ICT or robot. Especially, robots are becoming more and more ubiquitous in human environments. The time will decided by our ability to express effectively human's mind such as intelligence and emotion. That is, emotion-inspired mechanisms will deal with importance for autonomous robots in a human environment, and also related works may be studied. The cognitive component is also important for perceiving and interpreting events.

To implement emotion function in robot, there are several approaches to soft computing and control algorithm to control effectively robot. However, many of them do not deal with emotion function in their soft computing algorithm. So, at this point, emotion actuator based on Fusion of Soft Computing and Emotional function should be introduced into the research method and real control system such as, robot, ICT, design, and so on. Herein, we are going to develop actuator design and the corresponding fusion algorithms or models with learning algorithms including emotion function. Next, applications of these soft computing-based AIS (Artificial Intelligence Soft computing) in driver and expression system should be considered as well as analyzed. Performance comparisons between the conventional methods and new solutions should be made for safety and real artificial intelligence.
First, this lecture describes research background about emotional actuator by using several examples and secondly illustrates emotion actuator design by using hybrid system and vector control method. The vector control system has been widely used to operate in a wide speed range and this paper introduce into emotion controller. Next description is actuator design for emotion control by disturbance acceptance of classical controller and bacterial foraging. Conclusion suggests many possible approaches and why it is important at this point to introduce emotion in industry and how we can obtain a good idea for emotion.



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Biography

Dong Hwa Kim, Ph.D.
Professor. Dept. of Instrumentation and Control Engineering Hanbat National University
Dept. of Instrumentation and Control Engineering, Hanbat National University, 16-1 Duckmyong dong Yuseong gu Daejeon, South Korea 305-719.
Contact:
Office Phone: 82-42-821-1170, Cell phone: 82-10-8958-1175, 82-10-4899-1170
Fax: 82-42-821-1164, Department Office: 82-42-821-1165
Homepage: http://hucare.org, E-mail: koreahucare@gmail.com, kimdh@hanbat.ac.kr, worldhucare@yahoo.com

Education
Ph.D: Dept. of Electronic Engineering, Ajou University in Korea
Ph.D: Dept. of Computational Intelligence and Systems Science, TIT (Tokyo Institute of Technology, K. Hirota Lab.), Tokyo, Japan. (Thesis Title: Genetic Algorithm Combined with Particle Swarm Optimization/Bacterial Foraging and Its Application to PID Controller Tuning)
Advanced Program for International Conference (Fall Semester, 2006), Hallym Institute of Advanced International Studies
Ph.D course, Graduate School International, Korea University, Sept. 2007-

Work Experience
Prof., Dept. of Instrumentation and Control Eng., Hanbat National University, March 2, 1993- Now
President, Institute of Korea HuCARE (President of Hu-CARE (Human-Centered Advanced Technology Research/Education), Nov. 2009-
EU-FP NCP (ICT) in Korea, April 29,2011-
Korea Atomic Energy Research Institute, Nov., 1977-March, 1993.
Korea-Hungary Joint Work : Aug.1,2010-Feb.28,2011, Participation in the research of Robot motion related topics of the ETOCOM project(TAMOP4.2.2-08/1/KMR-2008-2007) including consultation with research staff members and giving related lectures)
President, Daedeok Korea-India Forum, March 1, 2010 – Now.
Vice President, Daedeok Korea-Japan Forum, March 1, 2010 – Now.
President of Science Culture Research Institute, Korea Science Foundation, Sept. 8, 2006 - Jan. 31, 2008.
Vice-president of the recognition board of the world congress of arts, sciences and communications, IBC, Sept. 1, 2007, UK.
Marquis Who's Who selected great minds in 21 Century, Aug. 2007/2008/2009.
ABI 200 International Scientist, Publishing in 2008.
Great minds of 21 Century to dedication in IBC, 2008.
UNESCO-APEC Asia Region Forum Held, Nov. 21, 2007.
Korean Science Forum Held, Oct. 22, 2007.
Science and Technology forum of the deputy Prime Minister of Korean Science and Technology, Operation, Aug. 1, 2006 – Nov. 30, 2007. (8 -round)

Committees
ANNIE04 conference (Nov. 7-10, 2004), Nov. 10, 2003- Nov. 10, 2004. St. Louise, MO, USA.
ISCIA2004 conference, Dec. 20, 2003-Dec. 20-22, 2004, Haikou, China
AFSS2004 conference, Dec. 19, 2003-Dec. 18-19, 2004, Hue city, Vietnam.
ISCIIA2004 conference, Dec. 10, 2003-Dec. 20-22, 2004, China
ICS2004 conference, Dec. 10, 2003-Dec. 15-17, 2004, Taiwan
Korea Institute of Industrial Technology Evaluation and Technology, Expert committee, 2006.12.-
KASAS(Korea Automation Standard Association Society: Expert Committee, 2004, 10-2006, Now
Society of Korea Robot and Automation (2004-2006)
Daejeon City Committee for Construction, 2004. 1.-2012.12
Korea Information Technology Director, 2004.1.1- 2008.12.31.
KES2005 (Special session), Sept. 12-15, 2005, Australia.
IASTED2005-ACIT (Special session), June 20, 2004-June 20-24, 2005, Russia,
IASTED2005-CI (Special session), July 2, 2004-July 2-6, 2005, Canada,
KES2006, Oct. 11, 2005-Oct. 9-11, Bournemouth International Centre, Bournemouth, 2006, UK.
EME2006, Oct. 11, 2005-Oct. 9-11, Bournemouth International Centre, Bournemouth, 2006, UK.
Committee of Korea Engineering Award 7th, 2007. ISIIA2007, Dec. 10, 2005-Dec. 18-20, 2007, India.
The International Program Committee for the IASTED International Conference on Computational Intelligence (CI), Nov. 25, 2006 - July 4, 2007.
President, Society of Korea Science and Technology, Dec. 1, 2008.
Co-editor, Japan Society for Fuzzy Theory and Intelligent Informatics, executive committees, June 2, 2007 -2009.
Co-editor, "Journal of Advanced Computational Intelligence and Intelligent Informatics(JACIII)",2006-Now, Fujii press, Japan.
Editor, IJCIR (International Journal of Computational Intelligence), 2007-, Helsinki, University of Technology, Filand.
SACI2009 (5th International Symposium on Applied Computational Intelligence and Informatics), Timişoara, Romania, May 28-29, 2009.

Membership
IEEE (Fuzzy, Neural network, Evolutionary, Industrial application, Control technology, Automatic control, System and man, cybernetic)
ISA (The Instrumentation, Systems, and Automation Society)
IEEJ (Institute Electrical Engineering of Japan)
JROS (Japan Robotic Society)
SOFT (Society of Fuzzy Theory and Intelligent Informatics, Japan)
INNS (International Neural Network Society)
SICE (Society of Instrument and Control Engineering, Japan)
KIEE (Korea Institute of Electrical Engineering)
ICASE (Institute of Control Automation and System Engineering, Korea)
KFLIS (Korea Fuzzy Logic and Intelligent System)

Paper review
IJSSST Review for 1569285494: Genetic Algorithm Approach for Scaling Factors Optimization of The Modular Fuzzy Logic Control for Two-wheeled Wheelchair, March 15, 2010. Etc 180 papers

Book Author
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Published Papers

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Plus around 200 papers published in international Journal

Conference Paper
Dong Hwa Kim, Peter Baranyi, "Novel emotional dynamic express for robot", SAMI2011, Jan. 26-31, 2011, Slovakia.
Etc. 150 papers.

Report and Project
- 2009.06.30, Korea-Hungary bilateral seminar.
- Dong Hwa Kim, Development of Intelligent Control through study of Bacteria foraging Characteristics, 2006. 8.1-2007. 7. 31.
- Korea-Hungary Joint Work : Aug.1,2010-Feb.28,2011(6-Month), Participation in the research of Robot motion related topics of the ETOCOM project(TAMOP4.2.2-08/1/KMR-2008-2007) including consultation with research staff members and giving related lectures)
- Several reports and projects have been published.

Awards
Best paper award, "Robust PID controller tuning using multiobjective based on clonal selection of immune algorithm," KES2004 International conference, Sept. 20-25, 2004, Newzealand.
Best paper candidate, "Dong Hwa Kim, "Robust tuning of embedded intelligent PID controller for induction motor using bacterial foraging based optimization," Lecture Notes in Computer Science Proceeding of Springer (SCI)–LNCS, ICESS2004, Dec. 9-10, 2004, Zhejiang University, Hanzhou, China.
Best researcher award: 2005 SCI paper of the Hanbat National University July, 19, 2006.
Registered, Marquis Who's Who, Jan. 1, 2007
2007. 4, IBC (International Biographical Centre) 2007. 4 and Award Metal
2007. 7, Cambridge Blue Book, Great lives, Dictionary of International Biography, 2000 Outstanding Intellectuals of the 21st Century
2007. 4, ABI (the American Biographical Institute) 2007/2008, Registered, (2007/2008).
2008 Universal Award of Accomplishment, Jan. 25, 2008, ABI (USA)
Great Minds of the 21st Century 2007/2008, Feb. 8, 2008, ABI (USA)
Lifetime of Scientific Achievement Award, Feb. 8, 2008, IBC (UK)
One World – Diverse Yet Intertwined Gold Medal For Korea2008, Feb. 2008, ABI (USA)
2000 Outstanding Intellectuals of the 21st Century Awards, Feb. 15, 2008.
Top 100 Engineers 2008, Feb. 29, 2008, IBC (UK)
International Einstein Award for Scientific achievement, 2010.5.4, IBC.