

Gunhee Kim

CONTACT INFORMATION	Smith hall 200 The Robotics Institute 5000 Forbes Avenue Pittsburgh, PA 15213 USA	<i>Tel:</i> (412) 523-2209 <i>Fax:</i> (412) 292-7596 <i>E-mail:</i> gunhee.kim@gmail.com <i>WWW:</i> www.cs.cmu.edu/~gunhee
RESEARCH INTERESTS	Computer vision, Machine learning, Data mining, Robotics	
EDUCATION	Carnegie Mellon University , Pittsburgh, PA USA	
	M.S. in Robotics, School of Computer Science, Aug.2006 – May 2008 (expected)	
	<ul style="list-style-type: none">• Thesis: Link analysis techniques for object modeling and recognition• Advisor: Prof. Martial Hebert• Committee members: Prof. Christos Faloutsos and Marius Leordeanu	
	Korea Advanced Institute of Science and Technology , Taejon, Korea	
	M.S., Mechanical Engineering,	Mar.1999 – Aug.2001
	<ul style="list-style-type: none">• Thesis: Formation Control of Multiple Autonomous Mobile Robots with Limited Sensor Information• Advisor: Prof. Doo Yong Lee	
	B.S., Mechanical Engineering,	Mar.1995 – Feb.1999
	<ul style="list-style-type: none">• Thesis: 3-D Modeling of Human Organs for Virtual Laparoscope Surgery Using OpenGL• Advisor: Prof. Dong-Soo Kwon	
RESEARCH EXPERIENCE	Vision & Mobile Robotics Lab, The Robotics Institute , Pittsburgh, PA, USA	
	<i>Graduate Research Assistant</i>	Aug.2006 – Current
	<ul style="list-style-type: none">• Statistical Modeling and Recognition of Object Categories• Unsupervised Modeling of Object Categories using Graph Mining Techniques• Ground-based Detection of Stationary Vehicles using LADAR and Imagery	
	<i>Visiting Researcher</i>	Apr.2005 – Jul.2006
	<ul style="list-style-type: none">• Object Recognition for Mobile Robot Navigation	
	Intelligent Robotics Research Center, Korea Institute of Science and Technology(KIST) , Seoul, Korea	
	<i>Research Scientist</i>	Aug.2001 – Jul.2006
	<ul style="list-style-type: none">• Object recognition for indoor mapping and navigation using a stereo vision• A behavior selection using Generalized Stochastic Petri Nets (GSPN's)• Robot navigation in a highly populated environment• An optimal path planning for tangible agents in a dynamic environment• Development of Science Museum Guide Robots	

**Robotics and Simulation Lab,
Korea Advanced Institute of Science and Technology (KAIST) ,** Taejon, Korea

Graduate Research Assistant

Mar.1999 – Oct.1999

- Formation Control of Multiple Mobile Robots
- Development of the Supervisory Controller of the High-Speed Train Car

AWARDS

Graduate Fellowship (Full Financial Support) for the entire course of MS study from the Robotics Institute, Aug. 2006 - May 2008

Outstanding paper award, 2003 International Conference on Control, Automation and System (ICCAS2003), Oct. 24, 2003 (Four papers awarded among 540 papers)

The Citation from Taejon Welfare Center for the Disabled, Dec. 31, 1996

Full Scholarship for the entire course of BS and MS study from KAIST, Mar. 1995 - Feb. 2001

Merit-based Scholarship, KAIST, Mar. 1996 - Feb. 1999

INDUSTRIAL-
IZATION

Guide Service Robot *Jinny*. Technology transfer agreement with Hyundai Heavy Industry. Dec. 2003. (The first prototype is working at the National Science Museum of Korea)

PUBLICATION AT
CMU

Gunhee Kim, Christos Faloutsos, and Martial Hebert, "Modeling and Recognition of Object Categories with Combination of Topic Contents and Geometric Similarity Links", *European Conference on Computer Vision (ECCV 2008)*, Marseille, France, October 12-18, 2008. (**Submitted**)

Gunhee Kim, Christos Faloutsos, and Martial Hebert, "Unsupervised Modeling of Object Categories Using Link Analysis Techniques", *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2008)*, Anchorage, USA, June 24-26, 2008. (**Oral**) (**Oral Acceptance = 63/1593 ~ 4%**)

Gunhee Kim, Daniel Huber, and Martial Hebert, "Segmentation of Salient Regions in Outdoor Scenes using Imagery and 3-D Data", *IEEE Workshop on Application of Computer Vision (WACV 2008)*, Colorado, USA, January 7-9, 2008. (**Oral**)

Gunhee Kim, Martial Hebert, and Sung-Kee Park, "Preliminary Development of a Line Feature-based Object Recognition System for Textureless Indoor Objects", *Springer-LNCIS Publication "Recent Progress in Robotics: Viable Robotic Service to Human"* S. Lee, I. Hong Suh, M. Sang Kim (eds.) (One of 30 Selected papers from the 2007 International Conference on Advanced Robotics (ICAR 2007)), 2008.

REFEREED
JOURNAL

Gunhee Kim and Woojin Chung, "Navigation Behavior Selection Using Generalized Stochastic Petri Nets (GSPN) for a Service Robot," *IEEE Transactions on Systems, Man and Cybernetics Part C (SCI)*, vol.37, no.4, July 2007.

Woojin Chung, **Gunhee Kim**, and Munsang Kim, "Development of Multi-Functional Indoor Service Robot PSR Systems," *Autonomous Robots* (SCI), vol.22, no.1, pp. 1-17, January 2007.

Gunhee Kim and Woojin Chung, "Tripodal Schematic Control Architecture for Integration of Multi-Functional Indoor Service Robots," *IEEE Transactions on Industrial Electronics* (SCI), vol.53, no.5, pp. 1723-1736, October 2006.

Gunhee Kim, Woojin Chung, and Munsang Kim, "Development of Range Sensor Based Integrated Navigation System for Indoor Service Robot", *Journal of Control, Automation, and Systems Engineering*, vol.10, no.9, pp.785-798, October, 2004. (in Korean)

Gunhee Kim, Doo Yong Lee, and Kyungno Lee, "Formation of Mobile robots with Inaccurate Sensor Information", *Transactions on Control, Automation and Systems Engineering*, vol.3 no.4 pp.203-209, 2001.

REFEREED
CONFERENCE
(SELECTED)

Gunhee Kim, Woojin Chung, Sung-Kee Park, and Munsang Kim, "Experimental Research of Navigation Primitive Selection Using Generalized Stochastic Petri Nets (GSPNs) for a Tour-Guide Robot", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2005)*, pp.1392-1398, Alberta, Canada, August 2-6, 2005.

Gunhee Kim, Woojin Chung, and Munsang Kim, "A Selection Framework of Multiple Navigation Primitives Using Generalized Stochastic Petri Nets", *IEEE International Conference on Robotics and Automation (ICRA 2005)*, pp.3801-3806, Barcelona, Spain, April 18-22, 2005.

Gunhee Kim, Woojin Chung, Sangmok Han, Kyung-Rock Kim, Munsang Kim, and Richard H. Shinn, "The Autonomous Tour-Guide Robot Jinny", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2004)*, pp.3450-3455, Sendai, Japan, September 28 - October 2, 2004.

Gunhee Kim, Woojin Chung, Munsang Kim, and Chongwon Lee, "Implementation of Multi-Functional Service Robots Using Tripodal Schematic Control Architecture", *2004 IEEE International Conference on Robotics and Automation (ICRA 2004)*, pp.4005-4010, New Orleans, LA, USA, April 26-May 1, 2004.

Woojin Chung, **Gunhee Kim**, Munsang Kim, and Chongwon Lee, "Integrated Navigation System for Indoor Service Robots in Large-scale Environments", *IEEE International Conference on Robotics and Automation (ICRA 2004)*, pp.5099-5104, New Orleans, LA, USA, April 26-May 1, 2004.

Gunhee Kim, Woojin Chung, Munsang Kim, and Chongwon Lee, "Tripodal Schematic Design of the Control Architecture for the Service Robot PSR", *IEEE International Conference on Robotics and Automation (ICRA 2003)*, pp.2792-2797, Taipei, Taiwan, September 15-18, 2003.

Gunhee Kim, Woojin Chung, Munsang Kim, and Chongwon Lee, "Design and Implementation of Tripodal Schematic Control Architecture for Multi-Functional Service Robots", *International Conference on Control, Automation, and Systems (ICCAS 2003)*, pp. 2045-2050, Gyeongju, Korea, October 22-25, 2003. **Outstanding Paper Award!!**

Gunhee Kim, Doo Yong Lee, and Kyungno Lee, "Formation Approach for Mobile robots with Inaccurate Sensor Information", *International Conference on Control, Automation, and Systems (ICCAS 2001)*, pp.805-808, Jeju, Korea, October 17-21, 2001.

SKILLS

Software

- OS: MS-Windows, DOS, Linux (with Real-Time Kernel).
- Programming: Extensive experience on Matlab, gcc, and MS Visual Studio. Fluency in Java and Python.

Hardware

- Integration and control of several large-scale robot platforms.
- Evolution Robotics ERSP & Scorpion.
- Sensors: Videre design stereo camera, SICK laser range finder LMS200, Hokuyo IR scanner, Tamagawa Optical Fiber Gyro, Ultrasonic sensors.
- Motion controllers: Delta Tau PMAC boards, other specialized controllers.

PROFESSIONAL ACTIVITIES

Conference presentation (selected): WACV 2008, ICAR 2007, IROS 2005, IROS 2004, ICRA 2004, ICRA 2003

Reviewer (selected): IEEE SMC, ICRA 2005, ICAR 2005, IROS 2005

REFERENCES

Dr. Martial Hebert

Professor, Robotics Institute, Carnegie Mellon University
5000 Forbes Avenue, Pittsburgh, PA 15213
412 268 2585 / hebert@ri.cmu.edu

Dr. Christos Faloutsos

Professor, Department of Computer Science, Carnegie Mellon University
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Dr. Daniel Huber

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Dr. Woojin Chung

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Dr. Doo Yong Lee

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