

# Jun-young Kwak

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## HOME ADDRESS

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Los Angeles, CA 90020  
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## WORK ADDRESS

PHE 514, Computer Science Department  
University of Southern California  
Los Angeles, CA 90089  
Tel: (213) 740-9560

## EDUCATION

*Aug. 2008 – present*

### University of Southern California (Ph.D.)

Los Angeles, CA, USA

TEAMCORE research group, Computer Science Department, Viterbi School of Engineering

*Advisor:* Milind Tambe

*Research:* Multi-agent coordination and control, Decision-theoretic planning, Teamworks

*Coursework:* Software Multiagent Systems, Advanced Operating Systems, Database Systems

*Aug. 2006 – Aug. 2007*

### Carnegie Mellon University (M.S.)

Pittsburgh, PA, USA

The Robotics Institute, School of Computer Science

*Thesis:* Rough Terrain Navigation for Mars Rovers

*Advisor:* Reid Simmons

*Research:* Path planning and rough terrain navigation

*Coursework:* Planning Execution and Learning, Machine Learning, Computer Vision, Math Fundamentals for Robotics, Kinematics Dynamic Systems and Control, Sensing and Sensors

*Mar. 1999 – Aug. 2006*

### Seoul National University (B.S.)

Seoul, Korea

*(Military Service:*

Computer Science and Engineering

*Aug. 2002 – Aug. 2005)*

*Thesis:* Design and Implementation Issues on AI Editor

## HONORS & SCHOLARSHIPS

**USC Annenberg Graduate Fellowship**, University of Southern California (*Aug. 2008 – present*)

**Research Assistantships (Full Financial Support)**, The Robotics Institute, Carnegie Mellon University (*Jan. 2007 – Aug. 2007*)

**Cum Laude**, Graduation with honor, Seoul National University  
(*August 2006*)

**Tuition Waiver based on academic excellence**, Seoul National University  
(*Spring 1999, Fall 1999, Spring 2000, Fall 2000, Fall 2001, Fall 2002*)

## EXPERIENCE

*Aug. 2008 – present*

**Computer Science Department, University of Southern California** Los Angeles, CA, USA

Graduate Student Researcher

(*SBIR, funded by DARPA*)

*Advisor:* Milind Tambe

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*Research:*            *The Multi-agent Adjustable Autonomy Framework (MAAF) project*  
*Multi-agent coordination and collaboration*  
*Adjustable autonomy for heterogeneous agents*  
*BDI-POMDP hybrid architecture for dealing with uncertainty*

*Sep. 2007 – Jun. 2008*

**Agent Dynamics, Inc. / CMU**

Pittsburgh, PA, USA

*Robotics Programmer / Visiting Scholar*

**(Future Combat System, funded by DoD)**

*Advisor:*            Paul Scerri and Katia Sycara

*Research:*            *The ACCAST system (Advanced Command and Control of Autonomous System Teams) project*  
*Command and Control Tools for Air/Ground Unmanned System Collaboration*  
*Multi-agents coordination and control*  
*Investigate potential solutions to command and control problems and develop a series of metrics for evaluating various C&C techniques*

*July 2007 – Aug. 2007*

**Jet Propulsion Lab, NASA**

Pasadena, CA, USA

*Affiliated Researcher (Summer Internship)*

**(Mars Technology Program, funded by JPL, NASA)**

*Advisor:*            Issa A.D. Nesnas

*Research:*            *Rover Navigation for Very Rough Terrain*  
*Integrating testing, and deploying the integrated software on real and simulated planetary rover*  
*Combining cost functions with the pRRT algorithm*

*Sep. 2006 – Aug. 2007*

**The Robotics Institute, Carnegie Mellon University**

Pittsburgh, PA, USA

*Graduate Student Researcher*

**(Mars Technology Program, funded by JPL, NASA)**

*Advisor:*            Reid Simmons

*Research:*            *Rover Navigation for Very Rough Terrain*  
*Planning algorithms with geometric models, dynamic models of the rover and its interaction with terrain*  
*Finding the optimal vehicle models and reducing the execution errors with Learning*  
*Integrating the simulator with ATRV and a JPL Rover (FIDO)*  
*Making the general simulation environment to support various simulators*

*Oct. 2003 – May 2006*

**Intelligent Robotics Lab., Bonavision Inc.**

Seoul, Korea

# Jun-young Kwak

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*Technical Manager*

*(The International Robotics Development Program, one of the 21<sup>st</sup>-century Frontier R&D Programs funded by the Ministry of Commerce, Industry and Energy of Korea)*

*Advisor:* Richard H. Shinn, *Chief of laboratory*

*Research:* *Organized and managed all research activities*  
*Designed the architecture of intelligent robot software platform*  
*Developed the details of intelligent robot software platform*

*Feb. 2004 – Jan. 2006*

**Intelligent Robotics Lab., Bonavision Inc.**

Seoul, Korea

*Researcher*

*(The Intelligent Robot Research Program, one of Ubiquitous Robotics Companion R&D Programs funded by the Ministry of Information and Communication of Korea)*

*Advisor:* Richard H. Shinn, *Chief of laboratory*

*Research:* *Designed the architecture of Case-Based Reasoning Engine with intelligent planner*  
*Developed the details of Case-Based Reasoning Engine with intelligent planner*

*Aug. 2002 – Sep. 2003*

**Intelligent Solution Team, Bonavision Inc.**

Seoul, Korea

*Project Manager*

*Work:* *Organized and managed all project activities*  
*Designed and developed Email Response Managing System (ERMS)*  
*Developed e-Contract Manager and e-Bill Manager*  
*Developed BONADEV (Bonavision Framework for Web Application)*

## **PUBLICATIONS**

### **FULL CONFERENCE**

Pradeep Varakantham, **Jun-young Kwak**, Matthew E. Taylor, Janusz Marecki, Paul Scerri and Milind Tambe, “**Exploiting Coordination Locales in Distributed POMDPs via Social Model Shaping**”, in *Proceedings of the 19th International Conference on Automated Planning and Scheduling (ICAPS 2009)*, 2009

**Jun-young Kwak** and Paul Scerri, “**Path Planning for Autonomous Information Collecting Vehicles**”, in *Proceedings of the 11th International Conference on Information Fusion (FUSION 2008)*, 2008

**Jun-young Kwak**, Mihail Pivtoraiko and Reid Simmons, “**Combining Cost and Reliability for Rough Terrain Navigation**”, in *Proceedings of the 9th International Symposium on Artificial Intelligence, Robotics and Automation for Space (i-SAIRAS 2008)*, 2008

Nik A. Melchior, **Jun-young Kwak** and Reid Simmons, “**Particle RRT for Path Planning in Very Rough Terrain**”, *NASA Science Technology Conference 2007 (NSTC 2007)*, 2007

**Jun-young Kwak**, Ji Young Yoon and Richard H. Shinn, “**An Intelligent Robot Architecture based on Robot Mark-up Language**”, *2006 IEEE International Conference on Engineering of Intelligent*

# Jun-young Kwak

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*Systems (ICEIS 2006)*, 2006

## WORKSHOP AND SYMPOSIUM

Jason Tsai, Zhengyu Yin, **Jun-young Kwak**, David Kempe, Christopher Kiekintveld and Milind Tambe, "**Strategic Security Placement in Network Domains with Applications to Transit Security**," in *IJCAI Workshop on Quantitative Risk Analysis for Security Applications (QRASA 2009)*, July, 2009

**Jun-young Kwak**, Pradeep Varakantham, Matthew Taylor, Janusz Marecki, Paul Scerri and Milind Tambe, "**Exploiting Coordination Locales in Distributed POMDPs via Social Model Shaping**," in *AAMAS Workshop on Multi-agent Sequential Decision-Making in Uncertain Domains (MSDM 2009)*, May, 2009

\*Superseded by the ICAPS-09 conference paper "Exploiting Coordination Locales in Distributed POMDPs via Social Model Shaping."

## SHORT CONFERENCE

### PAPERS AND POSTERS

**Jun-young Kwak**, Ji Young Yoon and Richard H. Shinn, "**Some Design Issues on intelligent Robot Software Platform**", *2<sup>nd</sup> IEEE International Conference on Ubiquitous Robots and Ambient Intelligence (ICURAI 2005)*, 2005

**Jun-young Kwak**, Ji Young Yoon and Richard H. Shinn, "**A Software Platform Architecture for Developing an Intelligent Robot System**", *6<sup>th</sup> International Symposium on Advanced Intelligent Systems (ISIS 2005)*, 2005

Ji Young Yoon, **Jun-young Kwak** and Richard H. Shinn, "**Case-Based Reasoning Engine for Intelligent Robot Platform**", *2<sup>nd</sup> IEEE International Conference on Ubiquitous Robots and Ambient Intelligence (ICURAI 2005)*, 2005

Ji Young Yoon and **Jun-young Kwak**, "**Case-Based Reasoning Engine for Intelligent Guiding Robot System**", *1<sup>st</sup> International Conference on Ubiquitous Robots and Ambient Intelligence (ICURAI 2004)*, 2004

## THESES

**Jun-young Kwak**, "**Rough Terrain Navigation for Mars Rovers**", Master's Thesis, The Robotics Institute, Carnegie Mellon University, August, 2007

**Jun-young Kwak**, "**Design and Implementation Issues on AI Editor**", Bachelor's Thesis, Seoul National University, 2006

## CERTIFICATES

**Engineer Information Processing**, *Human Resources Development Service of Korea*, 2002

**The Academic Culture and Communication (ACC) Program**, *Intercultural Communication Center, Carnegie Mellon University*, Aug. 2006

## PROFESSIONAL

### SKILLS

**Programming Languages**

Expert in C/C++, Java, MATLAB, SQL, HTML, XML

Familiar with Visual C++, C#, UML

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## **Operating Systems**

Familiar with Windows, Linux, VxWorks

## **Middleware**

Familiar with CORBA (TAO, JacORB), Web Services

## **Database**

Expert in MySQL

Familiar with ORACLE, MS-SQL