

CONTACT INFORMATION	<p>The Robotics Institute Carnegie Mellon University Newell Simon Hall 2104 5000 Forbes Ave, Pittsburgh, PA 15213, USA</p>	<p><i>Mobile:</i> +1 (765) 586-5944 <i>E-mail:</i> <a href="mailto:bmin@cs.cmu.edu">bmin@cs.cmu.edu</a> <i>Web:</i> <a href="http://cs.cmu.edu/~bmin">http://cs.cmu.edu/~bmin</a></p>
RESEARCH INTERESTS	<p>Human-robot interaction in assistive robotics; Control of multi-robot systems; Design and development of robotic sensor networks; Evolutionary algorithms for autonomous system control; Artificial intelligence in multi-agent systems and cyber-physical systems. Applications of my research include field and service robotics, assistive technology, search-and-rescue robots, networked robotics, unmanned aerial vehicles, robot navigation, object tracking, formation control, and embedded systems.</p>	
EDUCATION	<p><b>Carnegie Mellon University</b>, Pittsburgh, PA, USA <b>June 2014 to Present</b> Post Doc, The Robotics Institute – Mentors: Dr. M. Bernardine Dias and Dr. Aaron Steinfeld</p> <p><b>Purdue University</b>, West Lafayette, IN, USA <b>May 2014</b> Ph.D., Computer and Information Technology – Dissertation: <i>Optimizing Self-organizing, Large-scale, Mobile Robotic Broadband Networks</i> – Adviser: Dr. Eric T. Matson</p> <p><b>Kyung Hee University</b>, Yongin, Korea <b>August 2010</b> M.S., Electronics and Radio Engineering – Thesis: <i>Navigation Method for VTOL Type UAV using a Limit-cycle Navigation Method and Fuzzy Logic Control</i> – Adviser: Dr. Donghan Kim</p> <p><b>Kyung Hee University</b>, Yongin, Korea <b>August 2008</b> B.S., Electronics Engineering – Thesis: <i>Humanoid Robot with Web Cam</i></p>	
PROFESSIONAL EXPERIENCE	<p><b>Postdoctoral Researcher</b> <b>June 2014 to Present</b> <b>TechBridgeWorld</b> Research Group, The Robotics Institute, Carnegie Mellon University, Pittsburgh, PA</p> <ul style="list-style-type: none"> <li>– Working on Assistive Robots for Blind Travelers project that addresses the challenge of co-robots being equally capable of interacting with humans with disabilities by exploring meaningful human-robot interaction (HRI) in the context of assistive robots for blind travelers, funded by National Science Foundation (Award #: 1317989).</li> <li>– Development of a smartphone-based navigation aid tool for blind travelers in urban and unfamiliar environments.</li> </ul> <p><b>Graduate Assistant</b> <b>August 2010 to May 2014</b> Department of Computer and Information Technology, Purdue University, West Lafayette, IN</p> <ul style="list-style-type: none"> <li>– Research Assistant in the M2M (Machine-to-Machine) Lab directed by Dr. Eric Matson, conducting research on building large-scale broadband networks using mobile robots for safety, security, and rescue applications.</li> </ul>	

- Teaching Assistant for Design of Sensor and Robotic System (CNIT 499) & Advanced Robotics Development (CNIT 581).

#### **Graduate Assistant**

**September 2008 to August 2010**

Department of Electronics and Radio Engineering, Kyung Hee University, Yongin, Korea

- Research Assistant in Automatic Control Lab directed by Dr. Donghan Kim, developing a humanoid type violin playing robot, and conducting research on autonomous navigation of Vertical Take-off and Landing (VTOL) type UAVs.
- Teaching Assistant for Robotics Engineering & Applied Embedded System & Electronic Circuit Experiments & Basic Circuit Experiments.

#### **Research Intern**

**December 2007 to February 2008**

Robotics and Games Lab, [Griffith University](#), Griffith, Australia

- Supervised by Dr. [Jun Jo](#), developing a prototype of educational battle robots with use of C/C++ and assembly language on microprocessors.

#### **Research Intern**

**March 2005 to May 2005**

Global Associate Partners Team, [Kanbay Software India Pvt. Ltd.](#), Pune, India

- Assisted in Automated Teller Machine (ATM) application development based on J2EE Technology and MS Access 2003.

#### **Enlisted Soldier**

**July 2001 to September 2003**

[Republic of Korea Army \(ROKA\)](#), Icheon, Korea

- Fulfilled military service as a signal corpsman for a battalion commander.

#### **HONORS AND AWARDS**

- **Best Paper Award** at the 28<sup>th</sup> ICROS (Institute of Control, Robotics and Systems) Annual Conference, for the paper: “A Dust Detection Sensor System for Improvement of a Robot Vacuum Cleaner”, 2013.
- **Research Scholarship** awarded to the student for top research accomplishment by Kyung Hee University, 2009 and 2010.
- **3<sup>rd</sup> Place Award** at the International Robot Contest 2009 (IRC2009), participated in: FIRA Challenge Cup Robot Soccer Competition, 2009.
- **Best Paper Award** at the Proceedings of KIIS (Korean Institute of Intelligent System) Spring Conference 2009, for the paper: “Development of Violin Self-Training using Fuzzy Logic”, 2009
- **4<sup>th</sup> Place Award** at the International Robot Contest 2008 (IRC2008), participated in: “FIRA Challenge Cup Robot Soccer Competition”, 2008.
- **The Gold Lion Prize** awarded for the top volunteer student; 232 total hours of volunteer service during 2006–2008, by Kyung Hee University, 2008.
- **Best Thesis Award** in Graduation Thesis Competition in the Fall of 2007 at Kyung Hee University, for the thesis: “Humanoid Robot with Webcam”, 2008.
- **Useful Idea Award** in the Contest for the 3<sup>rd</sup> Rehabilitation Assistive Devices, by Korean Ministry of Health and Welfare, for the idea: “Design of Electro Oculogram (EOG) Control for a Motorized Wheelchair”, 2007.
- **Academic Scholarship** awarded to the student for outstanding GPA by Kyung Hee University, 2004, 2006, and 2007.

- [1] Byung-Cheol Min, Eric T. Matson, and Jin-Woo Jung, “Finding the Optimal Location and Allocation of Relay Robots for Building a Rapid End-to-end Wireless Communication”, *Ad Hoc Networks*. (Under review)
- [2] Daniel K. Schrader, Byung-Cheol Min, and Eric T. Matson, “Real-time averaging of position data from multiple GPS receivers”, *Measurement*. (Under review)
- [3] Byung-Cheol Min, Eric T. Matson, and Jin-Woo Jung, “Active Antenna Tracking System with Directional Antennas for Enhancing Wireless Communication Capabilities of a Networked Robotic System”, *Journal of Field Robotics*, 2015.
- [4] Byung-Cheol Min, Eric T. Matson, Jinung An, and Donghan Kim, “Improvement of Violinist Robot using a Passive Damper Device”, *Journal of Intelligent and Robotic Systems*, Vol. 72, Issue 3-4, pp. 343-355, Dec. 2013.
- [5] Byung-Cheol Min, John Lewis, Eric T. Matson, and Anthony H. Smith, “Heuristic Optimization Techniques for Self-orientation of Antennas in Long-distance Point-to-point Broadband Networks”, *Ad Hoc Networks*, Vol. 11, Issue 8, pp. 2252-2263, Nov. 2013.
- [6] John Lewis, Eric T. Matson, Sherry Wei, and Byung-Cheol Min, “Implementing HARMS-based Indistinguishability in Ubiquitous Robot Organizations”, *Robotics and Autonomous Systems*, Vol. 61, No. 11, pp. 1186-1192, Nov. 2013.
- [7] Dong-Hoe Kim, Byung-Cheol Min, and Donghan Kim, “A Dust Detection Sensor System for Improvement of a Robot Vacuum Cleaner”, *Journal of Institute of Control, Robotics and Systems*, Oct. 2013.
- [8] Cory Q. Nguyen, Byung-Cheol Min, Eric T. Matson, Anthony H. Smith, J. Eric Dietz, and Donghan Kim, “Using Mobile Robots to Establish Mobile Wireless Mesh Networks and Increase Network Throughput”, *International Journal of Distributed Sensor Networks*, Vol. 2012, Article ID 614532, 2012.
- [9] Byung-Cheol Min, Moon-Su Kim, and Donghan Kim, “Fuzzy Logic Path Planner and Motion Controller by Evolutionary Programming for Mobile Robots”, *International Journal of Fuzzy Systems*, Vol. 11, No. 3, pp. 154-163, Sep. 2009.
- [10] Byung-Cheol Min, Donghan Kim, Yoon Hyuk Kim, Ki Yeoul Kim, and Chongkug Park, “Development of Violin Self-Training Algorithm Using Fuzzy Logic”, *Journal of Korean Institute of Intelligent Systems*, Vol. 19, No. 4, Aug. 2009.

- [11] Soo Hyeok Kang, Yong Ho Kim, Byung-Cheol Min, Soon-Geul Lee, Jinung An, Donghan Kim, “Smart Floor with Learning Capability for Mobile Robot System”, *Recent Advances in Robotics and Automation (Series: Studies in Computational Intelligence)*, Vol. 480, pp. 205-215, Springer Berlin Heidelberg, 2013.

- [12] Byung-Cheol Min, Suryansh Saxena, Aaron Steinfeld, and M. Bernardine Dias, “Incorporating Information from Trusted Sources to Enhance Urban Navigation for Blind Travelers”, *IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, Washington, May 26-30, 2015.
- [13] Byung-Cheol Min, Eric T. Matson, Anthony H. Smith, and J. Eric Dietz, “Using Directional Antennas as Sensors to Assist Fire-fighting Robots in Large Scale

Fires”, *2014 IEEE Sensors Applications Symposium (SAS 2014)*, Queenstown, New Zealand, Feb. 18-20, 2014.

- [14] Byung-Cheol Min and Eric T. Matson, “Robotic Follower System using Bearing-only Tracking with Directional Antennas”, in *Proc. International Conference on Robot Intelligence Technology and Applications (RiTA)*, pp. 37-58, 2014.
- [15] Esther Rolf, Matt Whitlock, Byung-Cheol Min, and Eric T. Matson, “Enhancing Wi-Fi Signal Strength of a Dynamic Heterogeneous System Using a Mobile Robot Provider”, in *Proc. International Conference on Robot Intelligence Technology and Applications (RiTA)*, pp. 927-937, 2014.
- [16] Jae-Seok Yoon, Byung-Cheol Min, Seong-Og Shin, and Donghan Kim, “GA-based Optimal Waypoint Design for Improved Path Following of Mobile Robot”, in *Proc. International Conference on Robot Intelligence Technology and Applications (RiTA)*, pp. 127-136, 2014.
- [17] Byung-Cheol Min, Eric T. Matson, and Bakytgul Khaday, “Design of a Networked Robotic System Capable of Enhancing Wireless Communication Capabilities”, *11th IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR 2013)*, Sweden, Oct. 21-26, 2013.
- [18] Sangyup Lee, Byung-Cheol Min, Dong-Hoe Kim, Jae-Seok Yoon, and Donghan Kim, “Passive RFID Positioning System Using RF Power Control”, in *Proc. International Conference on Robot Intelligence Technology and Applications (RiTA)*, Gwangju, Korea, Dec. 2012.
- [19] Ji Hyeon Hong, Byung-Cheol Min, Julia M. Taylor, Victor Raskin, and Eric T. Matson, “NL-Based Communication with Firefighting Robots”, *2012 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, pp. 1461-1466, Seoul, Korea, Oct. 14-17, 2012.
- [20] Soo Hyeok Kang, Byung-Cheol Min, Ji Hyeon Hong, Eric T. Matson, Soon-Geul Lee, and Donghan Kim, “Novel Positioning System for Mobile Robot Using RFID Power Control”, *Joint Proceedings of the 13th Annual TAROS Conference and the 15th Annual FIRA RoboWorld Congress*, Bristol, UK, August 20-23, 2012.
- [21] Daniel K. Schrader, Byung-Cheol Min, Eric T. Matson, and J. Eric Dietz, “Combining Multiple, Inexpensive Receivers to Improve Accuracy and Reliability”, *2012 IEEE Sensors Applications Symposium (SAS 2012)*, University of Brescia, Italy, Feb. 7-9, 2012.
- [22] Byung-Cheol Min, John Lewis, Daniel K. Schrader, Eric T. Matson, and Anthony H. Smith, “Self-orientation of Antennas, Assisted by Mobile Robots, for Receiving the Best Wireless Signal”, *2012 IEEE Sensors Applications Symposium (SAS 2012)*, University of Brescia, Italy, Feb. 7-9, 2012.
- [23] Eric T. Matson, Julia M. Taylor, Victor Raskin, Byung-Cheol Min, and E. Cho Wilson, “A Natural Language Exchange Model for Enabling Human, Agent, Robot and Machine Interaction”, *5th International Conference on Automation, Robotics and Applications (ICARA 2011)*, Wellington, New Zealand, Dec. 6-8, 2011.
- [24] Soo Hyeok Kang, Yong Ho Kim, Eun Jin Lee, Soon-Geul Lee, Byung-Cheol Min, Jinung An, and Donghan Kim, “Implementation of Smart Floor for Multi-Robot System”, *5th International Conference on Automation, Robotics and Applications (ICARA 2011)*, Wellington, New Zealand, Dec. 6-8, 2011.

- [25] Byung-Cheol Min, Ji Hyeon Hong, and Eric T. Matson, “Adaptive Robust Control (ARC) for an Altitude Control of a Quadrotor Type UAV Carrying an Unknown Payloads”, *2011 11th International Conference on Control, Automation and Systems (ICCAS 2011)*, KINTEX, Gyeonggi-do, Korea, Oct. 26-29, 2011.
- [26] Eric T. Matson and Byung-Cheol Min, “M2M infrastructure to integrate humans, agents and robots into collectives”, *Instrumentation and Measurement Technology Conference (I2MTC)*, 2011 IEEE, Hangzhou, China, May 10-12, 2011.
- [27] Byung-Cheol Min, Hina Chaudhry, Eric T. Matson, Anthony H. Smith, and J. Eric Dietz, “Rural Energy Security using Autonomous Micro-turbine Smart Grids”, *2011 IEEE Rural Power Conference (IEEE REPC)*, Chattanooga, Tennessee, USA, April 10-13, 2011.
- [28] Jeong Wan Kim, Yong Ho Kim, Byung-Cheol Min, and Donghan Kim, “Tacit Navigation Method for Multi-Agent System”, in *Proc. FIRA Robot World Congress*, Bangalore, India, Sep. 15-17, 2010.
- [29] Byung-Cheol Min, Hee Yeul Kwon, and Donghan Kim, “Path Planning Algorithm for VTOL Type UAVs Based on the Methods of Ray Tracing and Limit Cycle”, *IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA 2009)*, Dajeon, Korea, Dec. 2009.
- [30] Byung-Cheol Min, Chan Ho Cho, Kyung Min Choi, and Donghan Kim, “Development of a Micro Quad-Rotor UAV for Monitoring an Indoor Environment”, in *Proc. FIRA Robot World Congress*, Incheon, Korea, Aug. 16-20, 2009.
- [31] Chan Ho Cho, Byung-Cheol Min, and Donghan Kim, “A Gait Generation for an Unlocked Joint Failure of the Quadruped Robot with Balance Weight”, in *Proc. FIRA Robot World Congress*, Incheon, Korea, Aug. 16-20, 2009.
- [32] Byung-Cheol Min, Eun Jin Lee, Soo Hyeok Kang, and Donghan Kim, “Limit-cycle Navigation Method for a Quad-rotor Type UAV”, *Industrial Electronics, 2009. ISIE 2009, IEEE International Symposium on*, pp. 1352-1357, Seoul, Korea, July 2009.

REPORTS,  
EXTENDED  
ABSTRACTS

- [33] Byung-Cheol Min, Aaron Steinfeld, and M. Bernardine Dias, “Towards Effective Human-Robot Interaction for Visually Impaired Adults”, *ICRA 2015*, Late-Breaking Reports, Seattle, May 26-30, 2015.
- [34] Byung-Cheol Min, Aaron Steinfeld, and M. Bernardine Dias, “How Would You Describe Assistive Robots to People Who are Blind or Low Vision?”, *ACM/IEEE HRI 2015*, Late-Breaking Reports, Portland, Mar. 2-5, 2015.
- [35] Alekhya Jonnalagedda, Lucy Pei, Suryansh Saxena, Ming Wu, Byung-Cheol Min, Ermine A. Teves, Aaron Steinfeld, and M. Bernardine Dias, “Enhancing the Safety of Visually Impaired Travelers in and around Transit Stations”, tech. report CMU-RI-TR-14-28, Robotics Institute, Carnegie Mellon University, December, 2014.

PATENTS

- [1] Byung-Cheol Min et al., “Method for providing guidance information based on user information”, Patent No. 1011983850000, October 2012. (Korean Patent)
- [2] Byung-Cheol Min et al., “Apparatus for Cleaning Exterior Wall of Building”, Patent No. 1011815400000, September 2012. (Korean Patent)

- [3] Byung-Cheol Min et al., “Walking guide Robot for blind person”, Patent No. 101146-8550000, May 2012. (Korean Patent)
- [4] Byung-Cheol Min et al., “LED Lighting Apparatus with Air Levitation System”, Patent No. 1010905640000, November 2011. (Korean Patent)
- [5] Byung-Cheol Min et al., “Embedding Device for RFID Tag”, Patent No. 1010568640000, August 2011. (Korean Patent)

PROFESSIONAL  
ACTIVITIES

**Journal Editor**

- Guest Editor of Sensors Special Issue on “Integration of Sensors in Complex, Intelligent Systems”
- Guest Editor of Machines Special Issue on ‘Sensors and Machines for Human Well-Being’

**Conference Program Committee**

- Co-organizer, 2015 International Workshop on Communication for Humans, Agents, Robots, Machines and Sensors (CHARMS 2015), Belfort, France, August 17–20, 2015.
- Technical Program Committee, 2015 IEEE Sensors Applications Symposium (SAS 2015), Zadar, Croatia, April 13–15, 2015.
- Associate Technical Program Chair, the 6th International Conference on Automation, Robotics, and Applications (ICARA 2015), Queenstown, New Zealand, February 17–19, 2015.
- Technical Program Committee, International Workshop on Security and Privacy in Machine-to-Machine Communications (M2MSec’14), San Francisco, CA, USA, October 29, 2014.
- Technical Program Committee, 2014 IEEE Sensors Applications Symposium (SAS 2014), Queenstown, New Zealand, February 18–20, 2014.
- Program Committee, the 4th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN 2013), Niagara Falls, Ontario, Canada, October 21–24, 2013.

**Journal Reviewer**

- Journal of Field Robotics
- Journal of Intelligent and Robotic Systems
- International Journal of Advanced Robotic Systems
- Journal of Institute of Control, Robotics and Systems
- IEEE Transactions on Mechatronics
- IEEE Transactions on Systems, Man, and Cybernetics, Part C: Applications and Reviews
- IEEE Journal on Selected Areas in Communications
- Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science
- Soft Computing
- Journal of Electromagnetic Waves and Applications
- Multimedia Tools and Applications
- The Journal of Korea Information and Communications Society (J-KICS)

**Conference Reviewer**

- IEEE International Conference on Robotics and Automation (ICRA) (2015)
- AAAI Conference on Artificial Intelligence (AAAI) (2015)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (2014)
- IEEE Sensors Applications Symposium (SAS) (2012, 2013, 2014, 2015)
- International Conference on Robot Intelligence Technology and Applications (RiTA) (2012, 2013)

- International Conference on Control, Automation and Systems (ICCAS) (2010)
- Chinese Control Conference (CCC) (2009)

#### **Invited Talks**

- Gacheon University, Seongnam, Korea, April (2015)
- Dongguk University, Seoul, Korea, April (2015)
- Korea Institute of Science and Technology (KIST), Seoul, Korea, April (2015)
- Purdue University, West Lafayette, IN, February (2015)
- Transportation Research Board 94th Annual Meeting, Washington D.C., January (2015)
- École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, March (2014)

PROFESSIONAL MEMBERSHIPS    **Institute for Electrical and Electronics Engineers (IEEE)**, Student Member (2008–2014), Member (2014–present)

MORE INFORMATION    More information and auxiliary documents can be found at <http://www.cs.cmu.edu/~bmin>.