

- Objective** A full-time real-time hardware and software research position emphasis on unmanned system implementations and related algorithm development
- Education**
- Ph.D in Mechanical Engineering*, May 2006.
University of California, Berkeley, CA.
Dissertation title: Autonomous helicopter formation: model predictive control approach
Prof. Shankar Sastry, Advisor
- M.S. in Precision Mechanical Engineering*, Aug 1999.
Hanyang University, Seoul, Korea.
Thesis title: ZMP compensation and impedance control for improving walking stability of biped robots
Prof. Jong H. Park, Advisor
- B.S. in Precision Mechanical Engineering*, Feb 1997.
Hanyang University, Seoul, Korea.
- Experience**
- Postdoctoral Researcher** *Robotics and Intelligent Machines Lab,
University of California, Berkeley
June 2006 – present*
Berkeley, CA
Real-time software and hardware development for Unmanned Aerial Vehicles
- Staff Research Associate** *Robotics and Intelligent Machines Lab,
University of California, Berkeley
January 2006 – June 2006*
Berkeley, CA
Real-time software and hardware development for Unmanned Aerial Vehicles
- Graduate Student Researcher** *Robotics and Intelligent Machines Lab,
University of California, Berkeley
Fall 2000 – Winter 2005*
Berkeley, CA
Real-time software and hardware development for Unmanned Aerial Vehicles
- Research Assistant** *Hanyang University, Korea
March 1997 – June 1999*
Seoul, Korea
Development of control algorithms for biped robots, dynamic analysis of continuously variable transmission
- Activities** Participated various UAV projects including:
- Office of Naval Research, Autonomous Intelligent Network System Program
under the grant N00014-99-10756 (Vision-based landing and formation flight)
- Defense Advanced Research Agency, Software Enable Control Program
under the grant F33615-98-C3614 (Vision-based landing and formation flight)
- Defense Advanced Research Agency, Unmanned Combat Armed Rotorcraft
under the grant F33615-98-C-3614 (Urban navigation and obstacle avoidance)
- Army Research Office, Autonomous Formation Flight for Autonomous and Semi-Autonomous
Rotorcraft Using MPC under the grant ARO STIR W911NF-04-1-0448
- Army Research Office, Pilot-Directed Computer Assisted Helicopter Formation Flying
under the grant ARO STTR W911NF-05-C-0088

Academic Publications

Hoam Chung, Elijah Polak, and Shankar Sastry, "An Accelerator for Packages Solving Discrete-Time Optimal Control Problems," IFAC 2008 (to appear)

Hoam Chung, Elijah Polak, and Shankar Sastry, "Enhancements for Contractive Receding Horizon Control," IFAC 2008 (to appear)

Hoam Chung, Elijah Polak and S. Shankar Sastry, "On the Off-Label Use of Outer Approximations: An External Active Set Strategy," EECS Department, University of California, Berkeley, Technical Report No. UCB/EECS-2007-127, October 26, 2007. (also submitted to Computational Optimization and Applications)

Elijah Polak, Hoam Chung and S. Shankar Sastry, "An External Active-Set Strategy for Solving Optimal Control Problems," EECS Department, University of California, Berkeley, Technical Report UCB/EECS-2007-90, July 16, 2007. (also submitted to IEEE Transactions on Automatic Control)

Jessica J. Pannequin, Alexandre M. Bayen, Ian M. Mitchell, Hoam Chung, and Shankar Sastry. Multiple aircraft deconflicted path planning with weather avoidance constraints. In *AIAA Guidance, Navigation, and Control Conference*, 2007. (to appear).

Hoam Chung and S. Sastry, "Autonomous Helicopter Formation using Model Predictive Control", AIAA GN&C Conference, 2006.

D. Shim, Hoam Chung, S. Sastry, "Conflict-Free Navigation in Unknown Urban Environments," IEEE Robotics and Automation Society Magazine, Sept., 2006.

D. Shim, Hoam Chung, H. J. Kim, S. Sastry, "Autonomous Exploration in Unknown Urban Environments for Unmanned Aerial Vehicles," AIAA GN&C Conference, San Francisco, August 2005.

E. Shaw, H. Chung, J.K. Hedrick, and S. Sastry. "Unmanned Helicopter Formation Flight Experiment for the Study of Mesh Stability." In D. Grundel, R. Murphey, P. Pardalos, and O. Prokopyev, editors, *Advances in Cooperative Control and Optimization*. (to appear)

D. H. Shim, H. J. Kim, Hoam Chung, S. Sastry, "Multi-functional Autopilot Design and Experiments for Rotorcraft-based Unmanned Aerial Vehicles", 20th Digital Avionics Systems Conference, Florida, 2001.

Jong H. Park and Hoam Chung, "Hybrid Control of Biped Robots to Increase Stability in Locomotion," *Journal of Robotic Systems*, Vol. 17, No. 4, pp. 187-197, 2000.

Jong H. Park and Hoam Chung, "ZMP Compensation by On-Line Trajectory Generation for Biped Robots," *Proceedings of IEEE Conference on Systems, Man and Cybernetics (SMC'99)*, pp. 960-965 (IV), Tokyo, Japan, October 1999.

Jong H. Park and Hoam Chung, "Hybrid Control for Biped Robots Using Impedance Control and Computed-Torque Control," *Proceedings of IEEE International Conference on Robotics and Automation (ICRA'99)*, pp. 1365-1370, Detroit, USA, May 1999

Awarded Research Proposals:

Army Research Office, SBIR, Autonomous Formation Flight for Autonomous and Semi-Autonomous Rotorcraft, ARO STIR W911NF-04-1-0448, 2005

Army Research Office, STIR, Pilot-Directed Computer Assisted Helicopter Formation Flying, ARO STTR W911NF-05-C-0088, 2005

Army Research Office, "Design of Adaptive Networks of UAVs for Urban Battlespace," Defence University Research Instrumentation (DURIP) 2005

Qualifications

Programming Languages: C, C++, 68k Assembly, TI 64x DSP

Tools: MATLAB/SIMULINK

Operating Systems: QNX RTOS, Linux

Language Skills: Spoken and written English and Korean