Curriculum Vitae
(Last updated: September 1, 2016)

# Han-Eol Kim

Research Engineer, Samsung Medison
1003, Daechi-dong, Gangnam-gu, Seoul, Korea
Office: +82-02-2194-7025 / Cell: +82-10-4352-6317
E-mail: loenahmik@gmail.com

Born in Seoul, Korea, 6, November, 1986

## Skills Overview

Excellence in problem solving
Proficient in software implementation
Experiences in ultrasound medical imaging

## Education

**Gwangju Institute of Science and Technology (GIST)** — Gwangju, Korea
Master of Science — Mar/2009 – Feb/2011
- Department of Mechatronics
- Distributed Control and Autonomous Systems Laboratory (DCASL)
- Thesis title : Multiagent Cooperative Reinforcement Learning: Convergence Proofs and Applications
- Advisor : Professor Hyo-Sung Ahn
- http://dcas.gist.ac.kr

**University of Seoul (UOS)** — Seoul, Korea
Bachelor of Engineering
- Department of Electrical and Computer Engineering — Mar/2007 - Feb/2009
- Department of Physics — Mar/2005 - Feb/2007

## Work Experience

**Samsung Medison** — Seoul, Korea
Research Engineer (R&D) — Jan/2013 – present
http://www.samsungmedison.com

**Seoul National University** — Seoul, Korea
Researcher (ERC-ACI) — Jan/2011 - Dec/2012
http://asri.snu.ac.kr

**Korea Institute of Science and Technology (KIST)** — Seoul, Korea
Intern Student — Jul/2005 - Feb/2006
http://www.kist.re.kr

# Research Experience

**Samsung Medison** Jan/2013 – present

Main software development of ultrasound diagnosis equipment

- 2D/3D image module, user interface, engine development, and debugging
- 2D/3D memory management, image optimization

Ultrasound image processing and its application

- 3D volume rendering application (OB/GYN, Radiology)
  - 3D viewer simulator (3D rendering, DICOM)
  - 3D elastography rendering, specular reflection rendering, endoscopic rendering, stereoscopic rendering, 3D panoramic rendering
  - Polyp segmentation and its visualization
  - Voxel to mesh 3D data converter, volume converter for 3D printer
  - Mimicking human body phantoms (vessel, gallbladder, polyp)
  - Tool: C++, C#, Delphi (Pascal), DirectX (HLSL), IPP, OpenCV, itk, vtk, ImageJ, dcmtk
- Web UI
  - HTML5 based user interface and image streaming
  - Tool: C#, HTML5, Java Script, CSS, PHP, MySQL, Apache
- Sensors and embedded systems
  - Probe recognition system (EMI sensing, metal detection, FFT)
  - 3D freehand panoramic system (acoustic sensor, IMU)
  - Tool: ARM Cortex M3 (TI CC2650), CCS, IAR
- Deep Learning application
  - Ultrasound image organ classifier
  - Tool: C++, C#, caffe, OpenCV
- Clinical research with domestic and international hospitals

**Seoul National University** Jan/2011 - Dec/2012

Model-based simulation software development

- Control system modeling software development
  - CEMTool: Script based control system simulation software
  - CEMStudio: GUI based control system simulation software
  - Tool: C++, MFC, C#, OpenCV

Applications

- Control engineering toolbox
- Quad rotor simulator using drones
- Cloud-based simulation software (government project)
- Seawater desalination simulation software (government project)
  - Tool: C++, MFC, C#, HTML5, Java Script, CSS, APM, OpenCV

**Gwangju Institute of Science and Technology (GIST)** Jan/2009 - Dec/2010

Bio-insect interaction experiment (government project)

- Control insects using reinforcement learning algorithm

**Korea Institute of Science and Technology (KIST)** Jul/2005 - Feb/2006

Phosphorescence measurement sensor and controller

**Private Business**

pcFrame.net: Computer information website for computer assembly (non-profit) 2002 - 2012
LuminoWorld.co.kr: Online store for phosphorescence products 2003 - 2014
Ssamzinonsul.co.kr: Essay correction service for high school students 2006 - 2008

## Teaching Experience

**Gwangju Institute of Science and Technology (GIST)** Gwangju, Korea
Instructor of GIST Science Camp July/2010

- Manage robot session for high school students
  - Obstacle avoidance robot using MCU and sensors

## Technical Skills

Windows Programming (C/C++/C#/MFC/Delphi)
Volume Rendering (DirectX, HLSL)
Firmware Programming (ARM, AVR, PIC, CCS)
Web Programming (HTML5, JAVASCRIPT, PHP, ASP, ISP, APM)
Medical Image Processing (OpenCV, VTK, ITK, dcmtk. ImageJ, DICOM)
Simulation Tool (MATLAB, Simulink, LabVIEW)

## Honors and Awards

| | |
|---|---|
| 2016 | Great employee awards, Samsung Electronics |
| 2016 | Best Idea Awards, Samsung 7th Bluehack Hackathon (VOMI: VR software for visual impairment) |
| 2015 | Creative idea contest (Silver Medal), Samsung Medison |
| 2014 | Greatest employee evaluation, Samsung Medison |
| 2011 | Best Award Paper (Oral session), Korea Multi-Media Society |
| 2010 | Science Camp Awards (Bronze Medal), GIST |
| 2009 – 2011 | Government Full Scholarship, GIST |
| 2005 – 2008 | Seoul Citizen Scholarship/Academic Scholarship, University of Seoul |

## Publications

10. Doory Kim, **Han-Eol Kim**, Chang-Hong Kim, "Development of a Blue Emitting Calcium-Aluminate Phosphor", PLoS ONE, 2016
9. Doory Kim, **Han-Eol Kim**, Chang-Hong Kim, "Effect of Composition and Impurities on the Phosphorescence of Green-emitting Alkaline Earth Aluminate Phosphor", PLoS ONE, 2016
8. **Han-Eol Kim**, Bong-hee Seo, Kwang-jin Kim, “CEMStudio: model-based simulation software for general-purpose signal processing”, KMMS 2012, Seoul, Korea *(*Best Award Paper)*
7. **Han-Eol Kim**, Huy Bien, Kwang-Jin Kim, Jun-Ha Kim, “seaHERO: Modeling and Simulation Software for Seawater Desalination Plant”, 4th International Desalination Workshop 2011, Jeju, Korea
6. Young Wook Kwon, **Han-Eol Kim**, Wook-hyun Kwon, Soohee Han, "Golf swing simulation using a double inverted pendulum", IEIE 2011, Jeju, Korea
5. **Han-Eol Kim**, M.S. Thesis, "Multiagent Cooperative Reinforcement Learning: Convergence Proofs and Applications", School of Information and Mechatronics, Gwangju Institute of Science and Technology, 2011.
4. **Han-Eol Kim**, Hyo-sung Ahn, “Convergence of Multiagent Q-Learning: Multi Action Replay Process Approach”, IEEE ISIC 2010, Yokohama, Japan
3. **Han-Eol Kim**, Hyo-sung Ahn, “Multi-agent cooperative reinforcement learning for heterogeneous mobile

robots", ICMIT 2009, Gwangju, Korea
2. **Han-Eol Kim**, Hyo-sung Ahn, "A review on Q-Learning convergence theorem", KACC 2009, Busan, Korea
1. **Han-Eol Kim**, Doory Kim, Chang-Hong Kim, "Energy Transfer between Two Phosphorescent Phosphors", Korean Chemical Society 2007, Daegu, Korea

## Patents

5. Dong-yoon Park, **Han Eol Kim**, Dong Hoon Oh, Dong Gyu Hyun, "Input apparatus and medical image apparatus comprising the same", US Patent 20160162163A1
4. **Han-Eol Kim**, Dong-hoon Oh, "ULTRASOUND DIAGNOSIS APPARATUS AND METHOD", US Patent 20160128672A1
3. **Han-Eol Kim**, "Ultrasound diagnosis apparatus and method of displaying ultrasound image", US Patent 20150257738A1, Europe Patent 2918233A1, China Patent 104905814A
2. **Han-Eol Kim**, Chang-hong Kim, Doory Kim, "Enhancement of long persistent phosphorescence by chemical mixing of two or more phosphorescent phosphors with spectral overlap", KR Patent pending (2020090009795)
1. Doory Kim, Chang-hong Kim, **Han-Eol Kim**, "Fluorescent lamp with phosphorescent mold cover", KR Patent pending (10-2006-0071858)