SUYEON CHOI

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RESEARCH INTERESTS

3D Displays, Light Fields, Computational Imaging, Nanophotonics, and Optimization

EDUCATION

Stanford University *Sep 2019 –*
Master of Science in Electrical Engineering

Seoul National University *Mar 2013 – Feb 2019*
Bachelor of Science in Electrical and Computer Engineering, *summa cum laude*
2-year absence to fulfill military duty (*Aug 2015 – May 2017*)

Seoul Science High School *Mar 2010 – Feb 2012*
The school for gifted students

PUBLICATIONS

D. Yoo, S. Lee, Y. Jo, J. Cho, **S. Choi**, and B. Lee "Volumetric Head-Mounted Display with Locally Adaptive Focal Blocks", IEEE Transactions on Visualization and Computer Graphics; *under review*;

S. Choi, S. Lee, Y. Jo, D. Yoo, D. Kim and B. Lee, "Optimal binary representation via non-convex optimization on tomographic displays," Opt. Express **27**(17), 24362-24381 (2019);

Y. Jo, S. Lee, D. Yoo, **S. Choi**, D. Kim, and B. Lee, "Tomographic Projector: Large Scale Volumetric Display with Uniform Viewing Experiences,", ACM Trans. Graph. **36**(8), 215, SIGGRAPH Asia 2019);

D. Yoo, S. Lee, Y. Jo, J. Cho, **S. Choi**, and B. Lee, "15 focal planes head-mounted display using LED array backlight," Proc. SPIE 11040, Optical Design Challenge 2019, SPIE Photonics West 2019;

RESEARCH EXPERIENCE

Computational Imaging Lab, Stanford University
Graduate Research Assistant (Advisor : Professor Gordon Wetzstein) *Sep 2019 –*

⋆ Working on a computational display project

Optical Engineering and Quantum Electronics Laboratory, Seoul National University
Research Assistant Intern (Advisor : Professor Byoungho Lee) *2017, Jun 2018 – Jul 2019*

⋆ Volumetric displays on theater setting:
  – Built a projection system for use in multi-user 3D displays

⋆ Non-convex optimization for 3D displays:
  – Devised a novel optimization scheme for designs combining backlight and display panel
  – Applied DART and PALM algorithm to binary backlight optimization

⋆ Near-eye displays with many focal planes:
  – Developed a prototype that supports 15 layers within the wide depth of field
  – Synchronized backlight and focus-tunable optics by using Arduino and LabVIEW
  – Demonstrated the prototype at IMID 2018 SF-Zone
  – Won 2nd prize in Optical Design Challenge at SPIE Photonics West 2019

⋆ *pyPupil*: an eye-tracker helper module for Pupil Labs products in Python (*PyPI*)
  – Implemented a calibration method without the world camera

⋆ Next-Generation Holographic Optical Metasurfaces:
- Studied the latest research trends of metasurfaces and simulated several structures with COMSOL

Virtual Machine & Optimization Lab, Seoul National University
Undergraduate Research Project (Advisor : Professor Soo-Mook Moon) *Jan 2018 – Jun 2018*

⋆ Gitchain: a decentralized version control system using blockchain network
- Devised a novel protocol with optimization and implemented a prototype

WORK EXPERIENCE

Cyber Bureau, Korean National Police Agency *Mar 2016 – May 2017*
Cybercrime Investigation Planning Team
- Selected as the only one agent from the whole auxiliary police officers
- Worked as a full-stack software engineer for the national performance management system

Sway Mobile, Inc *Jan 2015 – Feb 2015*
Software Internship
- Implemented the In-App Purchase module for Android in Unity platform

Samsung SDS *Aug 2013 – Aug 2015*
Samsung SDS sGen Club, Software Internship Program
- Participated in three projects of service development for two years.

⋆ White Cane : a walking aids iOS application using GPS for visually impaired people
- Implemented turn-by-turn navigation logic with Naver Maps API and UI
- Won bronze and popularity awards at the year-end project awards of all sGen Club teams

AWARDS AND SCHOLARSHIPS

Grand Prize in Blockchain technology contest, *LINE X Korean Institute of Information Sci. and Eng.* *2018*
$3,000 as awards, participated with *Gitchain* project.

Bronze Medal in the University Students Mathematics Contest, *the Korean Mathematical Society* *2016*

Silver Medal in the **International Physics Olympiad (IPhO)** *2012*

Gold Medal in both the Korean Mathematical/Physics Olympiad *2009/2008 respectively*

Kwanjeong Scholarship, *Kwanjeong Foundation* 2019 – 2021
Scholarship for students in Korea to study abroad at graduate school (*$30,000 / year*).

Government Scholarship for Overseas Study, *Korea government* 2019 – 2021
Scholarship for students in Korea to study abroad at graduate school (*additional $10,000 / year*).

Presidential Science Scholarship, *Korea Student Aid Foundation* *2013 – 2018*
Full tuition and additional stipends *($5,000 / year)* for academic excellence.

Youth Scholarship, *Woongjin Foundation* *2012*

Yongwoon Ph.D. Scholarship, *Yongwoon Foundation* *2019*
Declined due to the period overlap with Kwanjeong and NIIDE Scholarships

TEACHING

Undergraduate Teaching Assistant
Digital Systems Design and Experiments, *College of Engineering, Seoul National University* *Autumn 2018*
Introduction to Electromagnetism, *College of Engineering, Seoul National University* *Autumn 2017*
Introduction to Circuit Theory and Laboratory, *College of Engineering, Seoul National University* *Spring 2015*
Digital Logic Design and Lab, *College of Engineering, Seoul National University* *Autumn 2014*

Tutor
Basic Physics, *Dept. of Physics, Seoul National University* *Autumn 2014, Spring 2015, 2018*

EXTRA CURRICULAR ACTIVITIES

Qualcomm IT Tour, *Qualcomm, San Diego* *Aug 2017*

Crime Prevention Police Company, *Seoul Eunpyeong Police Station* *Sep 2015 – Mar 2016*
– Served as an auxiliary policeman for military service

Seoul National University Children's Hospital, *SNUH* *Jul 2013 – Jul 2015*
– Taught math to patients of childhood cancer

Freshman Mentor, *Dept. of ECE, SNU* *2014*
– Helped 10 freshmen adjust to university life

TECHNICAL STRENGTHS

Programming Languages	Proficient : MATLAB, Python, Javascript Intermediate : C++, Java, Verilog, PHP, MySQL
Tools	Proficient : LaTeX, git, LabVIEW Intermediate : Xilinx Vivado, COMSOL(EM wave analysis), Arduino
Deep Learning Frameworks	PyTorch, TensorFlow, Keras