Ha Yun Anna Yoon
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EDUCATION

Massachusetts Institute of Technology — **June 2019**
Bachelor of Science in Mechanical Engineering *GPA: 4.7/5.0* — **Cambridge, Massachusetts**

Johns Creek High School — **May 2015**
Class Rank: 1/485 — **Johns Creek, Georgia**

WORK EXPERIENCE

Tearney Lab, Wellman Center for Photomedicine- Massachusetts General Hospital — **Aug. 2019-Present**
Research Technician — **Boston, MA**
- Develop portable, inexpensive OCT system under $600
- Design and Align optical system for high resolution OCT with Hamamatsu Broadband laser

Tomocube — **June-Aug. 2019**
Clinical Research Intern — **Daejeon, South Korea**
- Imaged White Blood Cells for AML, APL, Lymphoma using Optical Diffraction Tomography (ODT) technology
- Collaborated with Samsung Medical Center, Seoul National University Hospital, and Chungnam University Hospital for Leukemia Cell Collection from Pathology Labs
- Used AI to deep learn these cell types to allow automatic identification and diagnosis

MIT Office of Admissions — **March-June 2019**
Tour guide — **Cambridge, MA**
- Guide campus tours for visitors and potential students and families
- Recruit students for future classes of MIT

Department of Mechanical Engineering at MIT — **Jan.-May 2019**
Grader and Tutor — **Cambridge, MA**
- Graded problem sets for 2.007 (Design and Manufacturing I)
- Tutor Mechanical Engineering underclassmen for 2.001 (Mechanics and Materials I), 2.005 (Thermal-Fluids Engineering I), 2.007 (Design and Manufacturing I), and 2.008 (Design and Manufacturing II)

ExxonMobil Corporation — **May-Aug. 2018**
Upstream Engineering Intern — **Spring, Texas**
- Led the proposal to monitor Steel Lazy Wave Riser(SLWR) from Liza Phase 1 Project to validate the design fitness in a new theatre of operation
- Evaluated contract bids for Neptun Deep Project
- Performed In-Line Inspection for pipelines in Nigeria
- Created a tool to simulate and compile reservoir souring predictions of Liza Phase 2 Project production wells

Bouma Lab, Wellman Center for Photomedicine- Massachusetts General Hospital — **July 2017- June 2019**
Undergraduate Research Assistant — **Boston, Massachusetts**
- Validated the feasibility of using an optical version of the thermal indicator-dilution technique to measure blood flow (Undergraduate Thesis)
- Measured coronary artery absolute flow rate using Optical Coherence Tomography(OCT) to improve assessment of percutaneous coronary intervention(PCI)
- Analyzed the fluid flow using images from Optical Coherence Tomography and MATLAB

Maseeh Front Desk Staff — **Aug. 2017-May 2018**
- Sorted packages and helped dormitory residents resolve issues in Maseeh — **Cambridge, Massachusetts**

NASA Goddard Space Flight Center Satellite Servicing Project Division — **Jan.-Feb. 2017**
Robotics Engineering Intern — **Greenbelt, Maryland**
- Performed flight simulation with MATLAB of the trajectory of robotic arms to rendezvous, grapple, and berth Landsat 7 for Restore-L Mission
- Analyzed all the maneuvers to and extraction of the tools with the robotic arm on the satellite

Bioelectronics Group in Research Laboratory of Electronics — **Sept. 2015-Mar. 2017**
Undergraduate Research Assistant — **Cambridge, Massachusetts**

- Developed flexible all-polymer multimodal fibers and assembled devices
- Assembled devices with microfluidic channels, optical fibers, and electrodes to be used for optical stimulation and drug delivery
- Hydrogel coated devices to reduce inflammation reaction, which were used to identify specific type of neurons on the behavior model via opsin expressions and optical stimulation

Korea Institute of Science and Technology — **June–Aug. 2016**
Biomedical Research Institute Center for Bionics, Summer Intern — **Seoul, South Korea**

- Quantified lower limb postural and balance control
- Designed parts of lower limb prosthetics using Solidworks and Blender
- Developed VR robot-computer interface for prosthetics using Unity, Processing, and Arduino

Korea Institute of Machinery and Materials — **Jan. 2016**
Environmental and Energy Systems Research Division, Winter Intern — **Daejeon, South Korea**

- Researched and designed in-house Selective Catalytic Reduction (SCR) pumps
- Tested KhanCeara's (M&A with AUSTEM) Three-Way-Catalytic Converter(TWC) to control diesel engine emission

Eaton Peabody Laboratory, Massachusetts Eye and Ear Infirmary — **Sept. 2015-Feb.2016**
Undergraduate Research Assistant — **Boston, Massachusetts**

- 3D CAD human middle ear using ITK-Snap and 3D Slicer to use as prosthesis

LEADERSHIP AND ACTIVITIES

Alpha Chi Omega Sorority (MIT) — **Sept. 2015–May 2019**
VP Panhellenic Delegate, Panhel Judicial Board, Webmaster — **Cambridge, Massachusetts**

- Communicated with MIT offices and other MIT sororities on behalf of MIT AXO

MIT Wind Ensemble — **Sept. 2015-May 2019**
Vice President, Librarian, Flutists/Piccolo — **Cambridge, Massachusetts**

- Planned logistics for the group and concerts and prepared music for each concert cycle

Associate Advisor — **Aug. 2016-May 2019**

- Advised freshmen in academic fields and help them get accustomed to MIT — **Cambridge, Massachusetts**

MechE Student Advisory Committee — **Sept. 2017-May 2019**

- Served as Mechanical Engineering Student Government — **Cambridge, Massachusetts**

MGH Music Ensemble — **Aug. 2019-Present**

- Played flute for patients and families at various Partners site — **Boston, Massachusetts**

SERVICE

Global Teaching Lab: Girls' Town Boys' Town (Orphanage in Busan, South Korea) — **Nov. 2018- Jan. 2019**

- Led communication between the team and Korean organizations
- Coordinated with NCSOFT to plan STEM camp for 2 weeks
- Taught 20 girls (12-14 yr olds) various science and Engineering concepts including Rube Goldberg Machines and Optics, etc.

Special Olympics Massachusetts- Sailing — **May 2017-June 2019**

- Helped out with the athletes on the sailing team as unified partner

Boston Children's Hospital- Cardiology In-Patient Unit — **June 2017-Oct. 2018**

- Volunteered with In-patient unit in the Cardiology department

HONORS, AWARDS, AND SCHOLARSHIPS

- **MIT Martin Prince Innovation Award** — **May 2019**
- **National Elks Association Most Valuable Student** — **Sept. 2015-June 2019**
- **Nordstrom Scholarship Winner** — **Sept. 2015- June 2019**
- **Coca Cola Scholars Regional Finalist** — **March 2015**
- **National Merit Scholar** — **March 2015**

PUBLICATIONS AND PRESENTATIONS

Publications

- Yoon, Ha Yun Anna. "Measuring Coronary Artery Flow Rates using Intravascular Optical Coherence Tomography to Improve the Assessment of Percutaneous Coronary Intervention." *Measuring Coronary Artery Flow Rates using Intravascular Optical Coherence Tomography to Improve the Assessment of Percutaneous Coronary Intervention,* Massachusetts Institute of Technology, 7 June 2019.
- C. S. Yoon, H. A. Yoon, J. S. Yoon, *Renewable Energy*, 3rd ed., Infinity Books, 2019.

Abstracts

- S. Park, Y. Guo, X. Jia, H. Choe, B. Grena, J. Kang, H. Yoon, G. B. Choi, Y. Fink, P. Anikeeva, "Flexible all-polymer multimodal fiber for integrated optogenetics", Society for Neuroscience (SfN), 2016.
- N. Uribe-Patarroyo, H. A. Yoon, B. E. Bouma, "Quantifying blood flow using backscattering indicator-dilution in intravascular optical coherence tomography: in vitro validation", Optics in Cardiology, 2018.

Presentations

- S. Park, Y. Guo, X. Jia, H. Choe, B. Grena, J. Kang, H. Yoon, G. B. Choi, Y. Fink, P. Anikeeva, "Flexible all-polymer multimodal fiber for integrated optogenetics", Society for Neuroscience (SfN), 2016.
- N. Uribe-Patarroyo, H. A. Yoon, B. E. Bouma, "Quantifying blood flow using backscattering indicator-dilution in intravascular optical coherence tomography: in vitro validation", Optics in Cardiology, 2018.
- H. A. Yoon, "Traffic light human reaction time", MIT Measurement and Instrumentation Showcase, 2018.
- "Talon: Retractable Capacitive Sensing Utility Knife" at 2.009 MIT Product Engineering Process Final Presentation (2018)

OTHER PROJECTS

2.009: Talon- Retractable Capacitive Sensing Utility Knife — **Sept. 2018-Present, Cambridge, Massachusetts**

- Chosen as Q&A speaker for presentation (front of 300 investors & 1300 audience, and viewed live-stream > 47,000 people globally)
- Filed Provisional Patent with USPTO
- Won MIT Martin Prince Innovation Award from the Department of Mechanical Engineering
- Safety Officer for team of 23 students, looking over entire manufacturing and testing phases
- Led the Patent Taskforce and User Interview Task Force
- Ideate and create a product to alpha prototype with budget of $7000 in 3 months
- Talon: safe utility blade that provides construction workers with utility knives that prevent injury by retracting the blade via capacitive sensing when the blade comes in contact with the human skin
- http://designed.mit.edu/new/view.html?year=2018&team=blue

Website: "Formation of Kpop Idols- Online Voting Effect on Formation of Kpop Idols" — **May 2018, Cambridge, Massachusetts**

- Researched mass media consumption effects of the millennials
- Created a website that discusses the emerging mass media consumption trend of online voting on televised program and its effect on formation of Korean-pop(Kpop) idol groups
- https://idolcompetition.weebly.com

Motorized Retractable Joystick Module for Power Wheelchair — **Sept. 2017-May 2018, Cambridge, Massachusetts**

- Designed and fabricated retractable joystick module used by power wheelchair users in The Boston Home for residents with Multiple Sclerosis
- Featured on the Instructables Technology Page
- Produced, Filmed, and Edited the Video for Assistive Technology Project
- https://www.instructables.com/id/Developing-a-Motorized-Retractable-Joystick/
- https://www.youtube.com/watch?v=Ut_dXh0NC9Y

LANGUAGES & SKILLS

Languages: English(Fluent), Korean(Fluent), Spanish(Conversational), Mandarin(Elementary).
Skills: Java, C, R, SQL, MATLAB, Excel, Solidworks, Arduino, 3D Slicer, ITK-Snap, Blender, Mill, Lathe