curriculum vitae **Pyokyeong Son**

Room 1207, 13-7 Nakamaruko,
Nakahara-Ku, Kawasaki, Kanagawa, Japan
+81 90 1539 6036
pyoky3289@gmail.com
@pyokyeong
pyoky.me

Educational Background

Secondary

O-SUNG MIDDLE SCHOOL
7th – 9th grade; Daegu, Korea;
Public Middle School Education

SAINT MAUR INTERNATIONAL SCHOOL
1st – 4th, 10th – 12th grade; Yokohama, Japan;
IGCSE; IB Diploma Programme

Extracurricular Activities

School-based

HIGH SCHOOL STUDENT COUNCIL, PRESIDENT (01/2018~01/2019)
Elected High School Student Council President in Junior Year. Proposed and led participation in various activities including Shine On Kids, Monetary donations for books, International Anti-bulling Day (Pink Shirt Day), etc. Organized school events including Socials and assemblies.

HIGH SCHOOL ROBOTICS CLUB, PRESIDENT (07/2016~06/2019)
Participated in robotics club since second grade. In MS, used Arduino kits in making a concept "smart home," awarded first place in the National Youth Science Club fair, and a special award in ISEF-Korea. In HS, led the VEX robotics team, competing at the Finals (at the int'l ASIJ competition), and awarded a judge's award in 2016.

JV BASKETBALL, TEAM CAPTAIN (09/2017~01/2018)
Participated in the KPASS basketball tournament in 2016 and 2017. Appointed team captain in Junior Year by teammates, awarded Most Improved Player both years.

JAPANESE ANIMATION STUDIES CLUB (09/2016~)
Participated in Japanese discussions and produced written analysis of contemporary Japanese anime series.

Extracurricular Activities

Extra-scholastic

WOLFRAM SUMMER CAMP (07/2018)
Participated in a two-week computer science program at Wolfram Research. Completed a project using Mathematica to investigate the derivation of theorems using axioms, and formulating alternative axiom systems. The project was labeled a Staff Pick and gathered significant attention from the Wolfram Community. (Computational Essay)

SCIENCE IMMERSION PROGRAM (07/2017)
Participated in a 3-day science immersion camp in collaboration with the Yokohama Science Frontier High School, with an investigative research project in collaboration with Japanese students. (reflection)

Volunteer Experiences

Extra-scholastic

TOKYO NATIONAL MUSEUM OF SCIENCE & INNOVATION (01/2016~)

Participated monthly, aiding communication with visitors, translation, and event preparation. Occasionally supported presentation of research by university laboratories.

HABITAT FOR HUMANITY, STUDENT VOLUNTEER (07/2017~07/2018)

Participation in Habitat for Humanity fundraising events and awareness campaigns. Traveled to Siem Reap with support from Habitat for Humanity Cambodia, as volunteer worker.

Awards & Distinctions

** KPASS: Kanto Plain Association of Secondary Schools (Wikipedia)*

YOUTH SCIENCE CLUB (YSC)

2015 *Grand Prize, by Ministry of Science, ICT, and Future Planning*

ISEF-KOREA

2015 *Special Award from Korean Aerospace Research Institute*

(PARTICIPATION)

2015 *Daegu Educational Institute for the Gifted in Science*

KPASS HISTORY BOWL

2017 *First Place (Team)*

KPASS BRAIN BOWL

2017 *First Place (Team), All Stars Award (Individual)*
2018 *Third Place (Team), All Stars Award (Individual)*

VEX ROBOTICS COMPETITION

2016 *Judge's Award (Finals)*
2017 *Quarter-Finalist*

KPASS SPEECH CONTEST

2016 *Extemporaneous - Silver Award*
2017 *Extemporaneous - Bronze Award*
2018 *Extemporaneous - Gold Award*

KPASS MATH FIELD DAY

2016 *Senior Tech Challenge, Winner*
2017 *Math Skills Test, Junior, First Place*

Miscellaneous

JOURNALISM

Developing and maintaining a personal website and a blog.

SKILLS

Linux System Administration; C; Python (Numpy, Flask); PHP; Java (Swing); iOS (Swift); HTML & CSS; Mathematica (Wolfram Language)

CERTIFICATIONS

iBT TOEFL *:119,* ***IELTS****: 8.5,* ***JLPT N-1****: Pass (175/180),* ***SAT****: 1570*
SAT Subjects*: 800 in Mathematics Level 2, Physics, and Japanese*
AP*:* ***5*** *in Comp. Sci., Microecon., English Lang., and Calculus AB*

Personal Projects & Inspirations

Physics

8TH GRADE Accepted to the ***Daegu Educational Institute for the Gifted in Science***

9TH GRADE Completed Korean high school mathematics and physics

11TH GRADE Referencing transcribed Feynman lectures on topics of interest, consuming online lectures on related topics

REPORT: ***"Investigation of a Lagrangian Description of a Modified Demonstration of Atwood's Machine,"*** in which I used computational methods to solve Lagrangians describing a modified Atwood's machine, predicting its behavior and comparing it to experimental data.

Foundational Mathematics

10TH GRADE Inspired by: Stephen Wolfram, ***"What is Ultimately Possible in Physics?"***

11TH GRADE Inspired by: ***"Gödel, Escher, Bach," "A New Kind of Science"***

11TH GRADE Accepted and participated in the ***Wolfram Summer Camp***

RESEARCH ***"Exploration of Fundamental Mathematics via Implementation of Common Axiom Systems and Proof Generation"*** (link) Using coded axioms used in mathematics to algorithmically prove general theorems, as well as investigating alternate axiom systems and their implications. Learned to use Wolfram Mathematica, useful in math or physics class in solving high-order differential equations.

Cryptography

PROJECT ***Security using OTP implementation and iOS client***

PROJECT ***"Mathematics of the Deciphering of the Enigma machine"*** (link)

Machine Learning

11TH GRADE Inspired by: 3blue1brown, ***"But What *is* a Neural Network?"***

11TH GRADE Studied: Michael Nielsen, ***"Neural Networks and Deep Learning"***

11TH GRADE Studied: Stanford CS231n, ***"Convolutional Neural Networks for Visual Recognition"***

11TH GRADE Experimented with Recurrent, Convolutional neural networks in ***Tensorflow, Numpy***

RESEARCH ***"Evaluation of Optimization Algorithms for Machine Learning Applications"*** (link) Analyzed various gradient descent algorithms in terms of their efficiency in optimization in generalizable test-functions and a vanilla neural network. Learned to use scientific computing as well as ML libraries in python ***(scipy, numpy, tensorflow)*** and learned to use a ***jupyter notebook.***