

## Changil Jeffrey Moon

wonchangil005@gmail.com | (+82)10-2512-5397 | (+1)413-206-5832 | [Linkedin](#) | [www.changiljeffreymoon.com](http://www.changiljeffreymoon.com)

### EDUCATION

**Eaglebrook School**, United States of America Sep 2018 - July 2022

**Choate Rosemary Hall**, United States of America Sep 2022 - Jun 2025

- GPA: 4.02/4.00 (unweighted) | 4.40 (weighted)

**University of Pennsylvania**, United States of America Sep 2025 - Jun 2029

**Boston University Summer Term - Introduction to Management** Jun 2023 - Aug 2023

- GPA: 3.70 / 4.00 (4 credits)

**Harvard University Summer Term - Introduction to Historical Linguistics** Jun 2024 - Aug 2024

- GPA: 3.70 / 4.00 (4 credits)

**SAT:** 1550 - Evidence-Based Reading and Writing 750 | Math 800

**AP:** AP Calculus BC - 5, AP Computer Science A - 5, AP English Language and Composition - 4, AP Physics C: Mechanics - 5, AP World History: Modern - 5, AP Statistics - 5, AP English Literature & Composition - 4, AP Chemistry - 5, AP Physics C: Electricity and Magnetism - 4

### TECHNICAL SKILLS & COURSEWORK

**Language:** Korean(Native Proficiency), English(Native Proficiency), Chinese(Limited Working Proficiency)

**Skills:** Java(Intermediate), Python(Advanced), C/C++(Advanced), Machine Learning(Intermediate), CAD: Fusion360(Intermediate), Circuit Design: KiCad(Intermediate), HTML/CSS(Intermediate), JavaScript(Intermediate), Git(Intermediate), Adobe Photoshop(Beginner), Adobe Premiere Pro(Beginner), SQL(Beginner), PHP(Beginner), AWS(Beginner)

**Courses:** Calculus BC, Linear Algebra, Multivariable Calculus, Statistics and Probability, Discrete Math, Advanced Honors Chemistry, Advanced Honors Physics, Science Research Program, Modern Mathematics, Applied Differential Equations

### WORK EXPERIENCE

**Yale Vision Lab** Jun 2024 - present

*Research Intern | Co-Author*

- Developed a model that performs monocular depth estimation and extracts the scale information from the radar point cloud to create a metric-scaled depth map, outperforming previous baselines in both accuracy and complexity.
- Supervised by Prof Alex Wong

**TruDiary Inc.** Jul 2023 - Aug 2023

*Software Developer Intern*

- Created a web application prototype as a team for TruDiary, a digital health company aiming to help BIPOC women in all stages of pregnancy, that allows BIPOC women to locate other BIPOC women within a 10-mile radius and communicate with them online or in-person
- Participated in the development process of both the frontend and the backend, using React, Node.js, HTTPS, and MongoDB for the development while utilizing Git to work together

### RESEARCH & PROJECTS

**Optimized Translator Model for Jeju Dialect Using Language-specific Characteristics** Jul 2022 - present

*Primary Investigator | First Author*

- Researched an optimized embedding method for the Korean language using its *jamos*, which are smaller units than characters

- Researched an optimized translation method of a combination of word identification of a dialect and a one-to-one mapping, utilizing the characteristic of the Jeju dialect's structure being composed of few dialect words replacing the standard Korean language without grammatical structure change

#### **Construction of a Low-cost, Accurate Liquid Handling Device with 3D Printing for PCR** Jun 2022 - present

*Primary Investigator | Co-Author*

- The building of a low-cost alternative for commercial Liquid Handling devices with a total budget of approximately \$200 and a pipetting percent error of 4.8%
- Paper submitted to Columbia Junior Science Journal, International Journal of High School Research, and the Connecticut Science Fair

#### **VisioMed: Smart Voice-Guided Medicine Management System for the Visually Impaired and Elderly**

*Primary Investigator*

- Built a smart medication storage system designed to assist visually impaired and elderly individuals in managing their medication intake independently.
- Created a web application and an Android application to register and manage medication information using Java, Apache Tomcat for the WebSphere Application Server, and Oracle for the database.

#### **Modular Mobile Robot with Computer Vision and Advanced Navigation Capabilities** Mar 2024 - present

*Primary Investigator*

- Constructed a mobile robot that navigates a line on the ground using a single camera combined with computer vision. The robot consists of 9V 4A battery, Jetson Nano, aluminum profiles, two motors, and a camera.

#### **Computational Statistical Analysis of Classification Models Regarding Financial Comments** Dec 2022

*Team Leader*

- Led a team project that built and compared a Logistic Regression, LSTM, and a BERT model that classifies comments about certain stocks as "positive", "neutral", or "negative" predictions

#### **Building a Solar-Powered Car Capable of Self-Driving Using Infrared Sensors** Jun 2022 - Jul 2022

*Primary Investigator*

- Created a solar-powered car that uses infrared sensors to follow a pathway and starts moving after the capacitors are full from the solar panel

#### **Examining Stock Trends Before and After the Covid-19 Pandemic Utilizing AI** Dec 2021 - May 2022

*Primary Investigator*

- Investigated the trends of major stocks before and after the covid-19 pandemic utilizing AI to create a prediction of the stocks when another pandemic like covid begins

#### **BoarBot Project: Creating an Efficient FRC Robot for Inexperienced Teams** Sep 2022 - Apr 2023

*Team Co-leader*

- Led the designing and building process in a school-supported project that designs and creates an intermediate FRC robot made from the rookie kit that will be provided to underprivileged rookie teams

## **LEADERSHIP AND EXTRACURRICULARS**

#### **FIRST Tech Robotics Club/Choate Robotics Team** Aug 2019 - present

*Leader(G8)(G9) | Member(G10) | Leader(G11)*

- Led the designing, programming, and engineering process of the school FTC/VEX competition team
- Taught inexperienced students how to CAD, program, and plan strategies

#### **Choate Makers Club** Sep 2022 - present

*Member(G10) | Member(G11) | Member(G12)*

- Led the club aiming to teach students on how to create individual projects or objects they are interested in

#### **Choate Programming Union (CPU)** Sep 2022 - present

*Member(G10) | Member(G11) | Vice President(G12)*

- Took part in a student-led organization aiming to improve access to Computer Science education and raise the general interest in the subject on Choate's campus

#### **Math Team** Sep 2022 - present

*President(G9) | Member(G10) | Member(G11)*

- Took part in a school-led organization that organizes in-school math events and participated in local and national math competitions
- Choate Physics Club** Sep 2022 - present  
*Member(G10) | Member(G11) | Secretary(G12)*
- Helped younger students prepare for the Physics Olympiad and hosted school events like the paper airplane contest and cardboard boat race
- AwesomeMath Summer Program Counting Strategies** Jul 2021
- Learned about Combinatorics through an online study environment
  - Discussed counting strategies such as properties of the binomial coefficients, bijections, recursions, and the inclusion-exclusion principle
- Inspirit AI Scholars Advanced** Dec 2022
- Participated in a winter online program that explored the topics of application of AI through Google Collab, ethics of AI usage, and a student-led project
- LaunchX Innovation Program** Jun 2023 - Aug 2023
- Participated in a program that teaches students knowledge about management and helps groups counsel actual companies in the United States
- Eaglebrook/Choate Varsity Football Team** Sep 2020 - Nov 2022  
*Captain(G9) | Member(G10)*
- Played linebacker and left guard for the team and led the team as one of the captains voted by the Eaglebrook team
  - Played nose tackle and left guard for the team through a successful season (2022 Founder's League Champion)
- Music Ensembles: Jazz, Concert, and Symphony** Sep 2018 - present  
*Trumpet*
- Performed advanced jazz pieces, classical symphonies, and ensemble music in Jazz Band, Concert Band/Wind Ensemble, and Choate Symphony Orchestra
  - Held First Chair position (G9–G12) and led the trumpet section, teaching sightreading and fundamental techniques to less experienced students
- Harvard Science Research Conference (HSRC)** Oct 2023
- Participated in a conference for exceptional high school students that entailed a series of speakers, workshops, and mentoring sessions
- Science Research Program (SRP)** Sep 2023 - present
- Took part in a school signature program that selects 8 independent science students to join a university laboratory for a research, write manuscript meeting the standards of professional publication, and provide a 15-minute seminar talk to the Choate community

## HONORS & ACHIEVEMENTS

### Math

- Deerfield Math Competition Team Sweepstakes - 2<sup>nd</sup> place May 2022
- Deerfield Math Competition Individual - 1<sup>st</sup> place May 2022
- Deerfield Math Competition Team Sweepstakes - 1<sup>st</sup> place Apr 2018
- Deerfield Math Competition Individual - 2<sup>nd</sup> place Apr 2018
- AMC 10 AIME Qualifier Nov 2022
- AMC 12 AIME Qualifier Nov 2023
- AMC 12 AIME Qualifier Nov 2024
- HMMT Team Round - 5<sup>th</sup> place Nov 2023

### Engineering & Computer Science

- IROC National AI Soccer Competition - Silver/2<sup>nd</sup> place Dec 2021
- IROC Korea Team AI Soccer Competition - Gold/1<sup>st</sup> place Aug 2022
- IROC Korea Team Creative Problem Solving- Gold/1<sup>st</sup> place Aug 2022
- IROC Korea Energy Saving - Bronze/4<sup>th</sup> place Aug 2022
- IROC Korea Team Creative Problem Solving - Gold/1<sup>st</sup> place Aug 2023

- IROC Korea Individual AI Soccer Competition - Gold/1<sup>st</sup> place Aug 2023
- Certification from MIT BWSI - Microelectronics and Hardware Development Mar 2023
- USACO Gold Division Dec 2024

#### **Academics**

- Academic Excellence Award May 2019 - May 2022
- Deans' List for Students Who Excel in All Subjects Sep 2022 - present
- AP Scholar with Distinction Award Jul 2023

### **VOLUNTEER WORK AND VOLUNTEER EXPERIENCE**

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**Tutoring for North Korean Defectors - English** July 2021

*Student Tutor*

- Taught basic English vocabulary and grammar skills to young students whose parents escaped from North Korea
- Led classes into different entertaining activities involving the usage of English

**Teach Music** Dec 2022 - present

*Student Tutor*

- Tutored for trumpet students of the Spanish Community of Wallingford (SCOW)
- Taught the fundamentals of the trumpet and how to take care of the instrument

**International Student Mentor** Sep 2023 - present

*Mentor*

- Mentored new international students to help them adjust to the school with ease, providing advice and answering questions

**Math Peer Tutoring** Sep 2021 - present

*Student Tutor*

- Tutored peers to help peers understand mathematical concepts and methods to apply the mathematical concepts to problems