JUNSEOK KANG

B.S. in Mechanical Engineering | Class of 2028 | jk2964@cornell.edu | junseok-kang.linkedin

SKILLS

CAD (Inventor, Fusion 360)
Analytical Mechanics
Machining using a Manual Mill
Solid Propellant Manufacturing
Python
MATLAB

Education

Korean Minjok Leadership Academy *Feb 2021 – Feb 2024*
GPA: 4.95 / 5.0 (unweighted)

Cornell University *Aug 2024 – Current*
Mechanical Engineering | Physics Minor
GPA: 4.07 / 4.3 (unweighted)

TECHNICAL & LEADERSHIP EXPERIENCE

Cornell Racing FSAE

Suspension Part Designer ; Nov 2024 – Current • Collaborated with 60+ student to design, manufacture, and race an electric FSAE car • Design and manufacture the Z-shaped (front) and U-shaped (rear) anti-roll bars for the racecar ARG26 • Designed and Manufactured large-scale Trifilar Pendulum to measure the yaw moment of inertia of the racecar ARG25 • Present the comprehensive design reviews to alumni, leads, and peers, incorporating feedback to optimize the performance and manufacturing of the ARG26 Anti-Roll Bar.

BUZ Aerospace

Founder & Team Lead ; Nov 2021 – Feb 2024 • Established a rocket research team & rocket lab. Developed I-Class Rocket body and 400N solid-propellant engine, completing four hot fires. • Oversaw all research manuals & team management. Grew from 6 students to a group of 18 students with 4 subteams (Structural, Propulsion, Computer, Launch/Recovery Subteam). BUZ Aerospace Video

Project SEM (Satellite Extraction Module)

Chief Executive Officer ; June 2022 – May 2023 • Invented Satellite Extraction Module (SEM), a compact space debris deorbiting system utilizing electromagnetic propulsion. Managed theoretical verification, product design, business model • Led the presentation of SEM & its business model at Johnson NASA center. Expanded the project with Korean Aerospace Research Institute. Project SEM link

Project KMLA Forge

Project Leader ; Feb 2022 – Feb 2024 • Renovated unused golf building into an engineering workshop for young inventors. Designed the facility & appealed to the school for financial support • Opening of the KMLA Forge (2023); developed into official school laboratory for science course with e.g. 3D Printer farm, CNC, Welding Machine, and Laser Cutter.

Haeumnare Physics Club

Captain ; Apr 2021 – Feb 2024 • Compiled latest version of Physics Lab Manual. Coached Junior team for International Young Physicists' Tournament (IYPT) by organizing physics debate sessions and evaluating lab reports. Studied various field of physics: Analytical Mechanics, Fluid Dynamics, and Thermodynamics. Conducted independent research on six IYPT problems (e.g. "Ring on the Rod", "Thermoacoustic Engine", "Oscillating Screw"), dedicating two winter breaks at the school. IYPT Research link

Research "Tesla Turbine Heat Recovery System"

Research Lead ; Sep 2021– May 2023 • Invented Tesla Turbine Heat Recovery System (TTHRS), a novel brake cooling system that recovers thermal energy dissipated from brake disks. Developed a theoretical model that predicts TTHRS's isentropic efficiency by implementing experimental data and thermodynamic numerical simulation results. Research TTHRS link

Independent Research Paper "How Not to Drop your Hula Hoop"

Research Lead ; Mar 2022 – Jul 2022 • Researched the physical mechanism of Hula-Hoop's stability by inventing "Crown Orbit Model" & wrote a research paper. • This project is exhibited in Korea National Science Museum. Research Paper link

HONORS & AWARDS

Conrad Challenge – *Power Pitch Winner & Finalist in Aerospace/Aviation category* (International)
Grade 12 • Innovation competition held at Johnson NASA center. Top 20 teams are qualified as finalists among 950+ teams. Power Pitch Winner is awarded to a top team in each category's finalists who exhibit outstanding engineering design and entrepreneurial skills.

Regeneron International Science & Engineering Fair (ISEF) – *Finalist & National Representative* (International)
Grade 12 • Most prestigious STEM fair. Introduced TTHRS research, competing in "Engineering Technology: Statics & Dynamics" categ.

Korea Science & Engineering Fair (KSEF) – *Gold Award (2023) & Bronze Award (2022) in Engineering category* (National)
Grade 10/11 • First proposal of "Tesla Turbine Heat Recovery System" was submitted in 2022, but with theoretical flaws and lack of data. Continued TTHRS development & upgraded research won the best prize at 2023 KSEF. Invited to Expo-Sciences Europe & ISEF.

Korea Young Physicists' Tournament (KYPT) – *Gold Award (2023) & Silver Award (2022) / Team Captain* (National)
Grade 10/11 • Annually, IYPT org release 17 open-ended physics problems. In the national competition KYPT, each team present & defend their thesis resulted from 6 month of research, judged by professors. • Supervised all 17 problems, leading the team of 5 students.

68th Korea National Science Fair – *Ministerial Award in Physics Category* (National)
Grade 11 • Korea's most authoritative & oldest science fair. In physics categ, Minister's Award is given to top 16 research out of 2607.

Gangwon Science Fair – *1st Award in Physics category* (State) • Grade 11

American Mathematics Competitions (AMC) 12 – *Certificate of Distinction* (International) • Grade 11