

# Hyunwook Kim

## Curriculum Vitae

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### Education

2026 **B.S. in Civil & Environmental Engineering (Double Major in Computer Science),**  
(Expected) **GPA: 4.0/4.3, Yonsei University, Korea**

Aug 2023 – **Exchange Student, Civil & Environmental Engineering, University of Illinois Urbana–**  
May 2024 **Champaign (UIUC), USA**

### Research Interests

Computational Mechanics, Cementitious Materials, Microstructure Modeling

AI-based Generative Models (GANs, Diffusion Models) for Material Science

Object Detection and Segmentation for Microstructural Analysis (YOLO)

### Research Experience

Mar 2025 – **Undergraduate Research Intern, Structural Analysis Lab, Yonsei University, Korea**

- Present
- Developed AI-based methods for cementitious microstructure reconstruction using GANs and Diffusion Models
  - Generated virtual microstructure specimens reflecting real CT imaging data to overcome data limitations
  - Trained YOLO object detection models on cement aggregate CT images, building an annotated dataset and evaluating detection accuracy for automated segmentation

Spring 2025 **Research Project: Optimization of Electric Vehicle Charging Station Locations, Yonsei University, Korea**

- Built optimization models to determine cost-effective EV charging station placements in Jeju
- Conducted economic analysis using Net Present Value (NPV) and Annualized Value (AV) methods
- Evaluated user benefits through reduced waiting times at charging stations

Fall 2024 **Bridge Design with BIM (Building Information Modeling), Yonsei University, Korea**

- Designed a parametric truss bridge using Revit for structural and material quantity analysis
- Applied BIM workflows to visualize internal components and evaluate construction feasibility
- Collaborated in a multidisciplinary team, strengthening project management and leadership skills

Jan 2024 – **Research Intern, Regional Risk and Analysis Lab, University of Illinois Urbana–**  
May 2024 **Champaign (UIUC), USA**

- Conducted research on regional risk modeling and infrastructure resilience
- Applied data-driven approaches to evaluate environmental and civil risk factors
- Assisted in quantitative risk analysis for infrastructure systems

## Professional Experience

- Oct 2022 – **College Prep Consultant**, *Opensky Edu*, Korea
- Jul 2023
- Conducted one-on-one counseling sessions to identify students' academic goals
  - Designed personalized college admission strategies aligned with each student's aspirations
- May 2022 – **Quarantine Service Interpreter**, *Republic of Korea Army Headquarters, Incheon International Airport*, Korea
- Jul 2022
- Provided English interpretation for official quarantine guidelines
  - Assisted with translation and documentation support for international travelers

## Honors & Awards

- Feb 2021, **High Honor Award & Scholarship (Top 3%)**, Yonsei University — Merit-based
- Aug 2023, scholarship for outstanding academic achievement across three semesters
- Feb 2025

## Certifications

- 2025 **Professional Engineer in Civil Engineering (Korean National License)**

## Leadership & Activities

- 2025 – **President, Youth Group**, *Deungchon Church*, Seoul, Korea
- Present
- Lead a community of young adults, organizing weekly gatherings and volunteer activities
  - Strengthened community engagement through event planning and mentoring
- 2024 **Participant, Next-Generation Construction Leaders Academy**, *Hanmi Global*, Korea
- Selected for competitive national program nurturing future leaders in the construction industry
  - Completed intensive training in project management (40-course curriculum), site visits, and special lectures
  - Engaged in team project and patent-related activities on innovative construction technologies
- 2023 **President, JOY Christian Fellowship**, *Yonsei University*, Korea
- Oversaw student fellowship activities and leadership training programs
  - Managed event planning and mentoring of undergraduate members

## Technical Skills

Programming & Data Science: Python (NumPy, Pandas, Scikit-learn), PyTorch, MATLAB

Engineering & Modeling Tools: Revit (BIM), MATLAB (structural analysis & optimization)

## Languages

- English TOEIC 980; OPIc AL (Advanced Low)
- Spanish DELE B1 (Intermediate)
- Korean Native