

Chloe Kim

Resume – Academic Emphasis

📍 Cranbrook Kingswood Upper School, 39221 Woodward Ave. Bloomfield Hills, MI

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Academic Interests & Selected Outputs

Focus: AI × Human Decision-making under Uncertainty & Fairness

- Cognition & intelligence — perception, reasoning, risk
- Applied domains: social applications of AI, AI insurance, legal networks, healthcare triage

Keywords: Computational cognitive science; reinforcement learning & Bayesian inference; NLP; causal inference

Selected Outputs

- *Professional Academic Presentations:* EURO 2025; Helmholtz AI 2025 (*Spotlight*)
— Human *vs.* model-based reasoning; recognition & uncertainty, fairness; AI applications
- *Patents:* AI insurance framework linking reliability risks to actuarial metrics (Sole Inventor)
- *Software Reg. (4 works):* Network dynamics, power-law & inequality study (Sole Developer)

Education

Cranbrook Kingswood Upper School *High school student* Aug 2022–Jun 2026 (expected)
Bloomfield Hills, MI

Harvard University *Undergraduate-level studies* July 2024–Aug 2024
Cambridge, MA

Molecular Biology (BIOS-S1a) (A-) and Historical Linguistics (LING-120) (A)
Studies at Harvard Summer School (for credit)

南京时代双语学校 (Nanjing Times College) *Middle school student* Apr 2020–Jun 2022
南京(Nanjing), China

Kyunghee School *Elementary school student* Mar 2014–Feb 2020
Seoul, Republic of Korea

Selected Research & Intellectual Property

Patents *Sole Inventor*

“System and method for evaluating AI output consistency and providing dynamic insurance”
#10-2025-0104581, patent pending (Korea)

- Quantifies AI risks (factuality, logical/semantic consistency, bias) into actuarial metrics.
- Designs dynamic premium pricing & claim validation linked to AI performance.
- *AI Insurance* – recompensation for AI hallucinations

“Systems and Methods for Temporal Influence Scoring of Judicial Decisions”

#10-2025-0166979, patent pending (Korea)

- Builds a dated, directed legal-citation index; computes influence measures (adoption/impact).
- Improves retrieval via structure-weighted rankings and rolling-window alerts that surface pivotal precedents and enable monitoring.

Software Registrations *Sole Developer*

“Interpreting Social Intent and Behavior: Temporal Dynamics of Network Heatmaps” (#035490)

- Analyzes temporal networks, creating centrality- & time-based maps of social relations.

“Analysis of Social Intentionality: Visualization of Case-law Networks” (#035307)

- Processes legal datasets, computing centrality & visualizing case-law structures.

“Simulation of Behavioral Relationships in Power-law Dynamics using AI” (#035489)

- Models behavior relations under power-law dynamics with AI sampling & visualization.

“Inequalities in Human Behavior: A Graph-based and AI Interpretation” (#034662)

- Analyzes behavioral inequality using AI/graphs, quantifying disparities via references.

Research Presented & Papers *First author & Presenter*

“Dynamic Network Analysis of Legal Citation Networks (especially medical)”

34th European Conference on Operational Research (EURO 2025), Leeds, UK

- Analyzed 86,000+ Supreme Court cases using network and power-law analysis, showing concentrated reliance on landmark precedents.
- Illustrates how structural citation patterns shape legal & medical decision-making.

“Emergent Architecture of Law: Dynamic Network and AI Analysis of Comprehensive and Medical Legal Precedents in South Korea (1951–2023)”

Submitted to PLOS One (w/ S. Kim), Oct 2025

“An Experimental Analysis of Intuition and Semantic Reasoning in Linguistic Visualizations by Humans and AI”

Helmholtz AI Conference 2025, Karlsruhe, Germany

- Compared 40+ multilingual participants with GPT-4 on sound-to-shape tasks, revealing humans’ intuitive mappings *vs.* AI’s semantic reasoning.
- Findings support dual-mode cognition, highlighting differences in human and machine decision-making.

“Multimodal Deep Learnings and Interpretability for Automated Mallampati Scoring and Endoscopy Prediction” (*Spotlight*)

Helmholtz AI Conference 2025, Karlsruhe, Germany

- Trained on 500+ patient cases with fused imaging (Vision Transformer) and clinical features (XGBoost), achieving 92.7% accuracy and AUROC 0.90.
- Results demonstrate scalable, interpretable AI for airway management, highlighting contrasts between human judgment and standardized decision-making.

Work Experience

Lawfirm Hoam *Research Assistant*

*Summer 2024–
Seoul, Rep. of Korea & Remote*

- Conduct data (legal) analytics and case research using AI and quant. network analysis.
- Presented results at an academic conference.

Quilt.ai Research Intern

Jul 2024–Dec 2024
Boston, MA & Remote

- Evaluated and researched AI narrative generation for fashion ads that support human perception and cognition.
- Ran market surveys; produced insight memos used by the design/product teams.

Media art Yeseung Lee's team Assistant Editor/Supporter

Dec 2024–
Seoul, Rep. of Korea & Remote

- Supported a project on art and human cognition.
- Edited artist statements and exhibition texts (Singapore, Seoul Dongdaemun Design Plaza (DDP), National Museum of Modern Art (MMCA) exhibitions).

Elroi AI Research Intern

May 2025–
Troy, MI & Remote

- Prototyped and studied modules for generation and HAI workflows; conducted user tests.
- Delivered a technical brief.

SAT Mathematics Tutoring Tutor

June 2025–September 2025
NYC, NY & Remote

- Tutored high school students in SAT Math preparation and strategies.

Computer Science Projects Independent researcher

Jun 2022–
Bloomfield Hills, MI & remote

- Built coding projects including BMI Calculator, Quiz Game, Server–Client Trading Apps, and AI&ML-based game simulations.
- 9th – 12th grade

Leadership & Service

Varsity Rowing Team Coxswain

- Coach/manage boats (steering/making calls & corrections), mentor novice rowers, delegate roles, manage race day logistics & encourage team support

Linguistics Club Founder, Co-President

- Founded Linguistics Club to promote different branches of linguistics; raise awareness of diverse languages; NACLO prep; AI+ Linguistics research

Ethics Bowl Club President/Founder

- Founded club; recruited, hosted state-wide practice events, organized spaces for ethical thinking & dialogue in & out of school & community

Crane Clarion (School newspaper) Assoc. Arts Editor, Graphic Designer, Staff Writer

- Led artists & writers; mentored junior writers; established journalistic protocols; publicized arts & school spirit; wrote cultural sens. guidelines

LITE (Leaders in the Environment) Food Board Captain

- Liaison to school meal providers; promoted inclusive meals; systemized negotiation process btw. student body, faculty, and providers; org 10+ events

Cranbrook Kingswood Chamber Orchestra, Thornlea Quartet *Violinist; Organizer*

- Violinist in school orchestra; performed at school/community; organized fundraising concerts for Brilliant Detroit; mentored peers

Tutoring *Comm. Service – Volunteer tutor*

- Independent & Volunteer – Local & Overseas; hybrid—in-person/online via Zoom/Teams)
- Tutored 5-7 under-resourced students: English (Chinese & Korean) + SAT Math (US); ran Zoom lessons; built practice sets; measurable score gains

Gold Key *Sophomore Lead***“Ergasterion” – Theater & Drama club** *Stage Crew & Member***Student Council** *Member***Awards and Honors**

National Latin Exam Cum Laude and 2x Magna Cum Laude – *G9, 10, 11; National***Ethics Bowl Central Division 4th place** – *G10, 11; State***3rd in State for National Economics Challenge** – *G10; State***District MSBOA 1st Division (solo) & 1st/2nd Division (quartet)** – *G9, 10, 11; State***NEC – National Economics Challenge; 3rd (D. Ricardo)** – *G10; State***Strickland Writing Award** – *G9; School***Dean’s List & Honors** – *G9, 10, 11; School***AP Scholar with Distinction Award** – *G11; School***Skills**

AI and Data Analytics

- Statistics and Data Analytics
- Network and Complex System Analysis

Technical Computer Science: *Java, Python, Julia*

- Applications to Semantics and Philosophy

Additional

LanguagesEnglish (*native*); Korean (*native/bilingual*); Chinese (Mandarin, *native*); French (*intermediate*); Japanese (*intermediate*); Latin (*NLE Latin III*)**Training** (selected external coursework)MIT OCW (Python/Julia, abstraction, object-oriented programming, recursion); FastCampus ML (TensorFlow, Docker, LLM agents); Human Asia (“*Human Rights*” for North Korea)**Citizenship:** United States