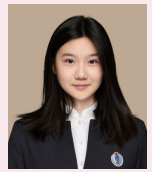


ZIYI (ALICIA) CHAI

ARCHITECTURE | URBANHISTORY | CULTURALHERITAGE | SPATIAL DESIGN

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EDUCATION

Keystone Academy

Sep 2021 - May 2027

Beijing, China

- TOEFL Total 119 (R29, L30, S30, W30) | SAT 1520: R740, M780
- IB Higher Level: Mathematics Analysis and Approaches, History, Design Technology
- IB Standard Level: English A Language and Literature, Music, Chinese A Literature

ARCHITECTURE AND SPATIAL DESIGN

Beijing Embassy District Illustrated History

Grades 9-10

Urban History Researcher & Public Realm Designer | 4 hrs/week, 30 weeks/year

- Mapped 160 years through archives and maps, examining architecture, art, diplomacy, and public space; authored and illustrated a 23+ page book donated to the Keystone Library and read by 1,600+.

UN SDG 11 Beijing Embassy District Public Realm Redesign

Grade 10

Commons Space Designer & Sustainability Researcher | 5 hrs/week, 5 weeks

- Identified three public-space gaps through fieldwork and surveys; designed a two-tier, five-zone system using local materials, solar energy, and reuse strategies; proposed adaptation across six cities.

China Academy of Urban Planning & Design (CAUPD)

Grade 11

Architectural Designer, Cultural Hybridity | 25 hrs/week, 2 weeks

- Compared 5+ embassy buildings in Beijing's historic Legation Quarter and Embassy Area; studied enclosure, hierarchy, movement, facades, roofs, and windows.
- Abstracted and recombined cross-cultural motifs into layered compositions; modeled spatial proposals in Rhino and presented them to CAUPD planners.

Georgia Tech Architecture Camp

Selected 1 out of 60

Architecture Program Participant

- Designed a pavilion for Tech Green by hand; produced 40+ studies, two models, three plans, two renderings, and a nine-page portfolio.

Music-to-Space Translation: J.S. Bach BWV 880 Fugue

Grade 11

3D Architectural Designer | 3 hrs/week, 5 weeks

- Analyzed Baroque counterpoint, polyphony, rhythm, and layered themes; devised a visual logic, generated a 2D pattern, and modeled a 3D mass in Rhino.

Beijing City Walls & Urban Memory

Grade 11

Interactive Designer | 20 hrs/week, 2 weeks

- Traced shifts in maps, borders, materials, preservation, demolition, and urban narratives; layered maps over time and built interactive visuals showing walls as structures and symbols.

Chinese Paper-Cutting Motifs & Spatial Design

Grade 11

3D Paper-Cutting Artist | 20 hrs/week, 2 weeks

- Extracted and recombined decorative motifs into visual rules; folded planar patterns into layered 3D forms exploring heritage, surface, light, and space.

The Architectural Imagination, HarvardX

Certificate

Architecture Coursework

- Analyzed Villa Savoye and Crystal Palace as records of culture and technology; studied form, proportion, and function, and practiced perspective, axonometric drawing, and model-making.

ARCHITECTURE URBAN RESEARCH AND PUBLICATIONS

Ancient Pagoda Adaptive Reuse and Contemporary Civic Architecture

Published 2025

Author | International Conference on Architecture, Civil and Geotechnical Engineering | CPCI

- In a 12-page paper, analyzed Yingxian Pagoda's geometry, octagonal plan, vertical organization, and symbolism; translated its formal logic into public spaces balancing heritage, access, and urban use.

Beijing Embassy District: 160-Year Illustrated History
Author&Illustrator | Donated to Keystone Library

Published project

- Produced a 23+ page architectural and urban history publication connecting diplomatic change, public space, art, and the built environment; reached 1,600+ readers.

Follow the Sun and Catch the Wind
Co-Author | Spatio-Temporal GNN-DRL Routing for Carbon-Neutral Geo-Distributed Data Centers

PSESG 2026

- Modeled eight data centers and reduced modeled carbon emissions 41.4% while balancing system speed and reliability; published at the 3rd International Conference on Power System Engineering and Smart Grid.

Data-Driven Mega-Event Scheduling
Co-Author | Smart City and Sustainable Development | ACM proceedings

SCSD 2026

- Modeled fan travel and match timing; built a MINLP/TA-ALNS system reducing emissions 38%, increasing transit use 24%, and easing peak-hour congestion.

SELECTED HONORS

- Keystone Scholar **Finalist - Top 2%** schoolwide for academics, activities, leadership, and character.
- AIME score 9; AMC 10B score 111; **Greater China IMMC First Prize**, International Mathematical Modeling Challenge (Top 10%).
- Advanced LCM Dip LCM and ALCM Piano Diplomas; six international piano awards: **1 Gold, 4 Silver, 1 Bronze**.

LEADERSHIP AND COMMUNITY

Keystone Dorm Council
One of 7 Executive Presidents & Proctor | 5 hrs/week, 40 weeks/year

Grades 10-12

- Led 15 executives and 55+ proctors serving 500+ boarders; chaired weekly meetings, staffed Dorm Olympics, Jazz Night, and Watch Your Back, and redesigned Grade 9 orientation.

Keystone Heritage Learning & Design Club
Co-Founder | 3 hrs/week, 35 weeks

Grade 10

- Proposed the club and recruited 10 peers; led workshops, trips, and talks on porcelain, mining, opera, and architecture; converted a 60-page lecture into a visual 30-page deck.

Keystone Math Modeling Team
Captain & Lead Programmer/Developer | 3-person team

Grade 10

- Led two projects on green data centers and sustainable scheduling using GNN-DRL, nonlinear programming, and genetic algorithms; both became peer-reviewed conference papers.

MUSIC PERFORMANCE AND COMPOSITION

Keystone Dreamland Musical Pit Orchestra
Keyboard I | 10 hrs/week, 13 weeks

Grade 10

- Carried lead melodies across 24 numbers in a two-hour show; accompanied soloists and ensembles, scored prop changes and dialogue cues, and performed four shows for 1,000+.

Key Melody at Keystone Academy
Music Access Organizer | 3 hrs/week, 25 weeks/year

Grades 9-12

- Organized four Beethoven and jazz storytelling events for 60+; wrote scripts and curated live pieces and media; donated 20+ instruments, expanding access for 100+ students.

Original Composition
Composer

Selected works

- Composed a one-minute fight song using marching-band timbres and rhythmic drive, and a three-minute song shaping harmony, phrasing, and dynamics around identity.

LITERATURE MEDIA AND CULTURAL PRACTICE

House of Woolf, Keystone Literature Playhouse
Captain | 3 hrs/week, 30 weeks/year

Grades 8-10

- Organized two Borges salons, analyzed 10+ works, and led study groups across three countries; co-wrote half of Everlasting Regret, starred in it, and performed for 300+.

Keystone Poetry Club
Anthology Editor & Leader | 3 hrs/week, 35 weeks/year

Grades 7-10

- Led weekly talks and workshops; edited a 200+ page anthology, sold 400 copies, and raised RMB 5,000+ annually; hosted three yearly salons with 30 performers and 50+ attendees each.

The Voice, Keystone Student Media Platform
Editor & Content Lead

Grades 9-12

- Launched a teacher interview series; edited 15+ musical reviews, sports promotions, Q&As, and campus features; reached 100,000+ reads and 500+ followers.

Music as Historical Force in Modern America

Grade 9

Independent Researcher | 4 hrs/week, 10 weeks

- Applied Adorno and Hall to music hierarchies; analyzed Billie Holiday and Charles Mingus to show how jazz exposed racism, fueled protest, and shaped civil-rights awareness.

DESIGN AND RESEARCH TOOLS

Spatial and visual: Rhino, architectural drawing, perspective, axonometric drawing, physical modeling, mapping, archival research, interactive visualization

AI Tools Skills: ChatGPT, Claude