

Fall 2025

Undergraduate Research Symposium



A Flagship Academic Event at NYU Shanghai

The NYU Shanghai Undergraduate Research Symposium is a university-wide celebration showcasing the research achievements accomplished by undergraduate students spanning Arts and Sciences, Business, Computer Science, Data Science, and Engineering. The Symposium features a diverse range of projects, including Deans' Undergraduate Research Fund (DURF) projects, capstone projects, Dean's Service Scholars (DSS) projects, research from courses, and any other independent research conducted under the guidance of a faculty mentor from the NYU Global Network.

The audience will vote for the projects that impress them the most to select the winner of the Most Popular Project, and the faculty judges will evaluate and select the winners for the Best Research Project and Best Presentation awards.



Overview

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Map & Schedule

Presentation Rooms

E302

Social Science

E303

Humanities

E304

STEM

Poster Exhibition

Social Science

Humanities

STEM

Magnolia House

Information Desk

4:30 - 5:20 PM

Presentations

- Social Science (E302)
- Humanities (E303)
- STEM (E304)

5:20 - 6:20 PM

Q&A Sessions

6:35 - 7:00 PM

Awards Ceremony

Project Abstracts

- Social Science

Social Science

Other/Interdisciplinary

Framing the Rival: How U.S. Media Shapes Perceptions of China (2000–2025)

Regan Slattery '26, Social Science Mentor: Joanna Waley-Cohen

This project investigates how U.S. print media frames China and the extent to which these portrayals shape American public opinion. Focusing on The New York Times, The New York Post, and the Associated Press, the study applies framing theory to analyze coverage of key moments in U.S.-China relations from 2001 to 2025. By examining themes such as security, economics, politics, and health, and comparing media tone with public opinion surveys, the research finds that media narratives often align with shifts in perception, though recent divergence suggests social media may now be reshaping attitudes independently of traditional outlets.

State-Driven Fertility: Comparative Study of Pronatalist Policies and its Impact across Eastern and Western Nations

Ina Lee '28, Social Science Mentor: Ivan Rasmussen

This study explores the implications of pronatalist logic and policies by comparing approaches in Eastern and Western nations: France, Singapore, Japan, and South Korea. Each of these countries has implemented different strategies to address declining total fertility rates (TFR), with varying results and public reception. The study examines how historical and societal contexts shape the effectiveness of these policies, as well as the precedents they set. Additionally, it investigates the positive and negative externalities, ethical concerns, and impacts on class inequality and individual rights. It argues that, if not addressed properly, these policies could reinforce systemic injustice.

Speaking the Nation: Putonghua, Dialect, and the Making of Identity in China

Zhiteng Yuan '26, Social Science Mentor: Jieun Kim

Drawing on the nationally representative dataset *China Survey 2008*, this study examines how Putonghua ability, as a marker of achieved higher status, and home dialect use, as a marker of inherited regional solidarity, shape the relative strength of national versus local identity and national pride. Results show that home dialect use strongly reinforces regional belonging, consistent with sociolinguistic research, but also diminishes national pride. In contrast, Putonghua ability, traditionally treated as higher social status, enhances national pride. These findings reveal how linguistic boundaries reproduce social hierarchies and subtly shape emotional attachment to the nation.

Class Differences in Well-being among Chinese College Students: a Chain Mediation Analysis of College Process

Xiaohan Cheng '26, Social Science Zhiteng Yuan '26, Social Science Mentor: Xiaogang Wu

While higher education is often viewed as a "great equalizer," inequalities may persist and unfold during the college years. Using the first wave of the Beijing College Students Panel Survey, this study examines how family socioeconomic status (SES) influences students' mental health and the mechanisms behind this relationship. The results show that higher family SES is associated with lower levels of mental distress. This relationship is partly explained by students' academic efficacy, peer interactions, and participation in leadership and club activities. These dimensions reflect human, social, and cultural capital reproduction. The findings challenge the equalizing view of college and highlight processes of social reproduction in contemporary China.

Money Is Not a Number: How peidu Mothers in China Make Meaning of Their Husbands' Remittances

Xiaohan Cheng '26, Social Science Mentor: Yilin Chiang

This study examines how Chinese peidu mothers—women who return to the hukou city to support children's schooling while husbands work in big cities—interpret their husbands' remittances within emotionally distant marriages. Through 18 qualitative interviews, I find that money is not only an economic transfer but carries affective meanings. Regular remittances are read as the husband's fulfillment of paternal and marital duty, allowing wives to sustain trust despite minimal communication. Conversely, disrupted transfers expose fragile emotional foundations and heighten suspicions of infidelity. This paper advances an understanding of how economic practices uphold symbolic kinship in translocal Chinese families.

EU-China Relations: A Historical Perspective

Yiheng Guo '26, Social Science Mentor: Ivan Rasmussen

While most research on EU-China relations focus on China's relations with a single EU member state or EU foreign policy towards China, my research offers a comparative analysis of six EU member states' relations with China using Rudy Weissenbacher's "EU core-periphery divide theory" as a framework to study why EU member states developed different types of relations with China. Using case studies of six EU member states' relations with China, this research suggests that an EU member state's core-periphery status within the EU influences their economic relations with China and attitudes towards their bilateral relations with China.

Altars, Genealogies, and Temples —The Social Functions of Local Folk Practices in Guangdong

Jun Yoshizaki '28, Social Science Mentor: Shuang Wen

This project examines clan religion and folk practices in South China as social infrastructure rather than theology. Drawing on fieldwork in Qixi Village (Guangdong), it analyzes four levels—household altars, ancestral hall and genealogy, the Qishan village temple, and the inter-village Guanyin shrine—to show how practices assemble people, redistribute resources, and sustain resilience. Integrating classic scholarship with new ethnographic evidence, the study argues that doctrine is eclectic and shifting, while function—cohesion, resource pooling, risk management—remains constant, illuminating how rural communities endure uncertainty through layered religious institutions.

Constructing the Outsider: Anti-Immigrant and Separatist Discourses on X (Twitter) In the U.S. and U.K.

Kayla Brackett '26, Social Science Mentor: Zixi Chen

Populist movements in the United States and the United Kingdom increasingly frame immigration as a threat to national identity and social cohesion. Drawing on the work of Franz Fanon, this project applies Epistemic Network Analysis (ENA) to examine how anti-immigrant and separatist narratives circulated on X (formerly Twitter) between 2017 and 2025. A pilot dataset of 100 tweets from verified political and government accounts was manually coded to identify rhetorical frames, including Security Threat, Cultural Incompatibility, and Dehumanizing Language. The analysis reveals that platform dynamics amplify exclusionary rhetoric, showing how elite-driven discourse reproduces colonial hierarchies of belonging in digital spaces.

Designing for Health: The Role of Campus Infrastructure in Shaping Physical Activity Among College Students in Shanghai

Nadine (Ziyan) Chen '26, Social Science Leon (Guanlin) Liu '26, Mathematics; Data Science Mentor: ChengHe Guan

Urban health is a growing concern in China, particularly among college students. This study surveyed 602 students in Shanghai's Songjiang and Wujiaochang University Areas to examine the relationship between exercise frequency and self-rated physical health. Results showed a positive correlation: students who exercised more frequently reported better physical health. Contributing factors included facility access, environmental support, and personal interest. However, benefits were diminished among smokers and those with prior athletic experience. The findings highlight the importance of creating accessible, engaging exercise environments to promote healthier lifestyles and suggest targeted health interventions for student populations at risk.

Mapping Urban Ventilation Potential and Aged Population Distribution: Implications for Heat Risk Mitigation in Shanghai

Bingxin Xi '28, Data Science Mentor: Jiayong Liang

This study evaluated the spatial intersection between urban ventilation potential and elderly population distribution in Shanghai to identify heatthereby providing vulnerable areas, targeted urban recommendations within the existing urban morphology. Using a GIS workflow, the Frontal Area Index (FAI) aligned with the prevailing summer winds was derived from 3D building footprints, and Least Cost Path analysis along with Monte Carlo simulations were applied to map out ventilation corridors. After overlaying the pathways with the substrictlevel elderly population ratio, a bivariate heatmap is generated to identify the 33 highly vulnerable subdistricts, concentrated in Jing'an, Xuhui, and Changning. Pocket parks and community service centers serve as targeted cooling interventions according to the different building environments of vulnerable areas.

Unequal Heat: Temperature and Vulnerability in Rio's Favelas

Gabriel Fernandes Mello Ferreira '28, Electrical and Systems Engineering Mentor: Kangning Huang

Rio de Janeiro's slums, more known as Favelas, are disproportionately affected by Urban Heat Islands (UHIs) compared to wealthier areas of the city. Higher temperatures show social and environmental vulnerability in Rio's communities. This research maps and analyzes UHIs in Rio's informal settlements using satellite data to obtain Land surface temperature (LST) and temperature reductions (ΔT) for Green and Cool Roofs obtained from literature. By identifying the hottest neighborhoods and modeling temperature, it evaluates the effectiveness of potential mitigation strategies such as Cool Roofs and Green Roofs. Results are presented in an interactive map, making the analysis accessible to policymakers and communities to guide heat risk reduction.

Project Abstracts

- Humanities

Global China Studies

Humanities

Interactive Media Arts

Other/Interdisciplinary

Economics

Unsettling Transition in Post-Mao China: Subjectbecoming of Youth in *Narrow Street* (1981)

Yuchen Zhang '26, Humanities Mentor: Laurence Coderre

The innovative narratology and cinematography of the film *Narrow Street* (1981) indicate the sense of precariousness among youth at the end of the Cultural Revolution, and encourage revolution of cinema as a mass-participatory art form. By emphasizing such a structure of feeling among youth in the cultural productions in the early 1980s, the film signals the breakdown of the grand narrative of socialism and meanwhile the subject-becoming of youth in both cultural and political realm, which is ahead of its time.

The Incompatibility of Potential Infinity and Indeterminacy in Kant's Second Antinomy

Puxuan Zhang '26, Humanities Mentor: Damian Melamedoff-Vosters

In this paper, drawing on the recent scholarship, I present Kant's mereology through a critical examination of the second antinomy and its solution in the *Critique of Pure Reason*. The paper is organized into three sections. First, I reconstruct the thesis and antithesis of the antinomy following the interpretations of van Cleve (1999, 1981) and Melamedoff (2023), and present Kant's proposed solution to the second antinomy, transcendental idealism. In the second section, drawing the works of Jauernig (2021), Chaplin (2024a, 2024b, forthcoming), Shapiro's influential work (2019) on the potential/actual infinity distinction, as well as Barnes and Williams' work on indeterminacy (2011), I introduce two prominent interpretations of Kant's resolution. Having surveyed the scholarly landscape, the final section raises an objection against Chaplin's claim that these two approaches are compatible with one another.

Unseen Wounds

Zhiyan Wan '26, Interactive Media Arts Shiyu Wang '26, Interactive Media Arts Mentor: Marcela Godoy

Unseen Wounds unfolds as an immersive encounter with what is too often silenced in Eastern culture. The project opens a virtual gallery where fluid sculptures and reimagined images hint at the hidden textures of menstruation and bodily memory. Beyond the screen, an interactive garment of pads threaded with ink-filled veins turns what is private into a shared presence. Pads reappear as powerful surfaces for audiences to write upon, layering the space with personal voices and collective resonance. Weaving together image, body, and testimony, Unseen Wounds creates a landscape where silence is unsettled, the unseen speaks, and vulnerability transforms into strength.

Contribution to Open Source Web-based Machine Learning: Enabling Sequential Data Modeling in ml5.js for Educational and Artistic Applications

Mathew Ponon '26, Computer Systems Engineering
Mentor: Gottfried Haider

Sequential data modeling remains largely inaccessible to educational and creative coding communities due to implementation complexity. This project addressed this gap by integrating LSTM and CNN architectures into ml5.js, an open-source machine learning library designed for accessibility. The implementation extended ml5.js's existing Neural Network method with additional tasks supporting temporal and spatial data processing. Practical applications were developed to demonstrate functionality, including real-time sign language classification and weather prediction systems. The feature abstracts TensorFlow.js operations into user-friendly APIs consistent with ml5.js design principles. Currently maintained as an experimental branch, the implementation has been adopted by students for course projects, validating its educational utility and demonstrating successful democratization of advanced machine learning techniques for non-technical audiences.

The Dynamic Effects of Transaction Fees and Block Rewards on Bitcoin Transaction Behavior

Zhuo Chen '26, Business and Finance Yuling He '26, Business and Finance Mentor: Sukjoon Lee

This research examines the dynamic effects of transaction fees and block rewards on Bitcoin transaction behavior using daily data and a vector autoregression framework. Impulse response analysis shows that fee shocks generate short-lived but statistically significant increases in transaction counts and volumes, particularly during periods of high network activity, while reward shocks induce brief changes in transaction size. Across both incentive types, effects dissipate within days, indicating limited long-run influence on user behavior. Robustness checks with BIC-optimal lag lengths and alternative variable orderings confirm the qualitative findings, highlighting the conditional nature of incentive effects and the role of congestion in shaping user responses.

The Devil Wears Pre-Loved: A Comparison of Auction Mechanisms in Social Media Thrift Shops

Francine Ty '26, Economics; Social Science Kaitlyn (Suhan) Weng '26, Mathematics; Economics Mentor: Eric Set

This study investigates bidder behavior in the Multiple Fixed-Price Auction (MFPA), a novel format common in Philippine online thrift shops. Unlike traditional auctions, the MFPA lets bidders choose from fixed-price options, ending immediately if the highest price is selected. A theoretical model was developed and tested through Qualtrics experiments, revealing discrepancies between predictions and observed behavior. While some actions aligned with theory, participants diverged most at intermediate price points and, contrary to neoclassical expectations, behaved less competitively under greater competition. By examining these gaps, this research advances auction theory and informs auction design in emerging digital marketplaces.

The Impact of Grading Mechanisms on Student Individual and Collaborative Outcomes

Jixuan Zhou '28, Business and Finance; Mathematics
Jinkun Huang '28, Economics
Mentor: Peio Zuazo-Garin

This study explores the impact of different grading mechanisms and collaboration expectations on students' effort allocation behavior. The results indicate that compared to the "Equal Grading" mechanism, the "Rank-Based Weighting" mechanism significantly reduced individual task effort and promoted more team collaboration. Additionally, the number of repeated collaborations and the strength of feedback also had a significant impact on students' collaborative behavior. Stronger feedback led to more effort being allocated to individual tasks, suggesting that excessive feedback may hinder cooperative spirit.

How Special Enrollment Period policies influence premium dynamics and enrollment outcomes in the individual health market?

Yihang Hu '26, Economics

Qifan Tang '26, Mathematics

Ke Dong '26, Economics

Mentor: Emiliano Catonini

This study examines how Special Enrollment Period (SEP) policies influence insurance premiums and enrollment outcomes in the U.S. individual health insurance market. Using data from 2023–2024 across 24 marketplaces, we first estimate a sparse linear regression to identify determinants of premium levels, then apply Difference-in-Differences (DID) and event-study designs comparing California, Colorado, and federal marketplaces. Results show that each additional month of SEP is associated with a 2.2% decline in subsidized premiums and that SEP extensions support enrollment stability in competitive markets. Our findings suggest that extended SEPs can enhance affordability and coverage continuity without destabilizing insurer participation.

Project Abstracts

- STEM

Computer Science/Data Science/ Engineering

Biology

Chemistry

Neural Science

Other/Interdisciplinary

Semantic Completeness Of Higher-Order Probabilistic Separation Logics

Puming Liu '26, Computer Science Mentor: Joseph Tassarotti

Various models of higher-order probabilistic separation logics have been developed, raising natural questions about their expressiveness. This work establishes semantic completeness theorems for Eris, Tachis, and Approxis, restricted to pure programs. These results, which can be seen as converses of adequacy theorems, are mechanized in the Rocq proof assistant.

Acoustic Embedding for Deepfake Detection and Prevention

Ashley Chen '26, Computer Science Mentor: Hua Shen

Falsified videos, in particular, deepfakes, have become widely popular and fairly easy to produce in the last couple of years. Deepfakes have the power to exploit the platform of highly influential figures by impersonating them, leading to many instances of financial loss and political disruption. We propose a physical signature framework to create and embed dynamic signatures physically in order to secure videos at their digital creation. Specifically, this project focuses on audio, using echo hiding to encode live transcriptions from speeches in audio playback.

Learning to Grade Under Uncertain, Drifting Rubrics

Baosheng Jin '28, Computer Science Jinhan Niu '28, Computer Science Yue Peng '28, Computer Science Mentors: Lihua Xu, Hongyi Wen

Educational platforms increasingly use auto-grading, but rubrics vary across instructors and drift over time. We address grading when the rubric is uncertain by learning the evaluator from instructor feedback rather than hard-coding criteria. We compare two approaches—TextGrad (optimizes decisions from textual feedback) and ACE (discovers and revises latent criteria via curate-generate-reflect)—and introduce an ACE×TextGrad hybrid. The hybrid uses ACE to surface transferable rubric features and TextGrad to sharpen decision boundaries, achieving higher instructor agreement under rubric shift and transferring to new instructors with minimal additional feedback.

The Nuclear Localization Signal of PTIP Protein

Ariana Arwen Fahl '26, Biology Mentor: Ching-jung Huang

Pax transcription activation domain-interacting protein (PTIP) is a protein best known for its essential role in embryogenesis, promoting the development of essential organs. Furthermore, PTIP's role in DNA damage response is a growing topic of research. Ongoing research suggests PTIP is necessary for the homologous recombination rescue of double strand breaks. However, its nuclear localization signal (NLS) is unknown. In this experiment, two potential NLS sequences are identified and tested for their ability to carry a target protein to the nucleus. Our research suggests that PTIP NLS B (amino acid sequence: KRARIEDVPPPTKK) is the genuine NLS.

The Localization of NonO Isoforms and Its Post-Translational Modification Site

Flora Shin '26, Biology Edwin Jiang '26, Biology Mentor: Ching-jung Huang

NonO (p54nrb) is a multifunctional RNA /DNA binding protein in the DBHS family that regulates transcription, RNA processing, and cell-cycle control. This study examined how domain structure and post-translational modifications affect the localization of NonO FL and its truncated isoforms 1-228aa with Nuclear localization signal (NLS) and without. NonO isoforms lacking the NOPS and coiled-coil domains failed to form paraspeckles and showed weak localization in nucleus, unlike the paraspeckles seen in full-length NonO, suggesting C-terminaldependent PTMs such as phosphorylation. These findings indicate that NonO's C-terminus is essential for both proper nuclear localization and PTM-mediated regulation, providing insight into how organization controls the activity of RNA-binding proteins.

Procedures for Exploring REGY's Localization to Chromosomes during Telophase

Sean Wang '26, Biology Suvi Biesinger '26, Biology Alora Linehan '26, Neural Science Jannie Nguyen '26, Biology

Mentor: Henry Li

REGy is an ATP-independent and ubiquitin-independent nuclear proteasome activator, but its role in chromosomal regulation is unclear. Additionally, its localization to chromosomes occurs specifically during telophase, one of the shortest phases of the cell cycle, making these interactions difficult to study. Our project focuses on enriching telophase cells, visualizing REGy's localization, creating useful constructs (GFP-REGy, GFP-REGy-fragment, and GFP-NIP30), and investigating REGy's possible binding interactions to HP1 β . The work in this project gives us the procedural tools to continue further study of REGy's relationship with chromosomes.

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N-Terminal Targeting of ATPAF1 to Mitochondria Mediates Cellular response of Aneuploidy

Sirie Peng '27, Biology Ruoxi Ren '27, Biology Mentor: Jungseog Kang

Aneuploidy creates metabolic stress that cancer cells must tolerate. ATPAF1, identified in a CRISPR screen, may regulate this response through mitochondrial oxidative stress signaling. In this project, we show that the N terminal sequence targets ATPAF1 to mitochondria. Under octanoate (ROS inducer)- or AZ3246 (aneuploidy inducer)- mediated stress, ATPAF1 knockdown produced a different response in cell proliferation, albeit not statistically significant. Our findings studied ATPAF1's mitochondriatargeting domain, and its stress-related regulatory function of cell proliferation.

Synthesis of Ylide Polythiophene

Siqi Li '27, Chemistry Mentors: Lu Zhang, Qilong Shen

This project explores a novel strategy for synthesizing polythiophene via catalyst-transfer polycondensation using ylide-functionalized а thiophene monomer. The ylide group introduces steric hindrance to aggregation polymerization. Although control during polymerization attempts failed, a model reaction identified optimal conditions with Pd(dba)₂, TMSOK, and THF, achieving a 25% yield. A pretransmetallation strategy is proposed to improve reaction efficiency and enable the synthesis of uniform conjugated polymers for electronic applications.

Fluorinated Ylide Monomers (3-Cl & 4-Cl): Synthesis, Radical Polymerization Screening

Yanzhe Yang '26, Chemistry Xuanyan Du '27, Chemistry Mentors: Lu Zhang, Qilong Shen

We prepared multi-gram batches of two chlorinated fluorinated-ylide monomers (3–Cl, 4–Cl) and confirmed identity/purity by 1 H/ 19 F NMR. A first-pass free-radical polymerization (FRP) screen across common thermal initiators and solvents did not yield isolable homopolymer; select trials showed 19 F line-loss consistent with side reactions under radical flux. Strict oxygen control and initiator/temperature matching emerged as the dominant levers for FRP feasibility in these systems. Findings align with known oxygen inhibition in FRP and with the growing interest in polymeric ylide materials.

Hierarchical Somatosensory-auditory integration during speech vocal production

Antonia Chen '28, Neural Science Yiduo Lu '27, Neural Science Mentor: Xing Tian

Speech production relies on predictive sensorimotor control, where the brain generates a motor efference copy to anticipate sensory consequences and compare them with actual feedback. While auditory pitch-shift and somatosensory perturbation studies each reveal compensatory motor responses, how these feedback systems interact remains unclear. Using behavioral and SEEG experiments, we investigated whether somatosensory feedback modulates downstream auditory control. A serial feedback hierarchy is demonstrated in which the motor efference copy is first evaluated within somatosensory regions before influencing auditory cortical processing, suggesting that somatosensory feedback plays a dominant role in maintaining vocal stability.

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Neural Dynamics and Representations of Imagined Speech

Yolanda Huang '26, Neural Science Mentor: Adeen Flinker

Current speech neuroprostheses rely heavily on the decoding of neural representations in the motor cortex, which may be impaired in severely paralyzed patients. On the other hand, imagined speech activates non-motor areas but remains understudied. We applied machine learning approaches to analyze electrocorticography (ECoG) data, investigating what brain areas and neural features are active during imagined speech. We identified pre-articulatory and articulatory activity in the inferior frontal gyrus (IFG) and precentral gyrus (PrCG). Encoding models revealed acoustic-specific representation in IFG. Our findings highlight the potential of non-motor cortical signals to advance speech neuroprostheses for individuals with severe paralysis.

The Fairness of the Banning Mechanism in Asymmetrical Competitive Games—A Case Study Of Identity V

Joanna Guo '28, Mathematics Mentor: Xianbin Gu

In recent years, video games have continued to evolve as one of the primary forms of entertainment among adolescents, showcasing increasing diversity in both genres and gameplay mechanics. Asymmetrical multiplayer games, where players differ in roles, resources, rules, and win conditions, creating strategic imbalance and diversity in gameplay. This article takes Identity V, a popular Chinese asymmetrical multiplayer game developed by NetEase, as a case study to examine the fairness of its banning (Ban) mechanism. From the perspective of gameplay equity, this study analyzes how the Ban system influences competitive dynamics and overall balance while also exploring its strategic significance and potential directions for optimization in asymmetrical game design.

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Judges

Social Science



Lucas Drouhot
Assistant Professor of
Sociology, NYU Shanghai



Jin HanAssistant Professor of
Global Public Health, NYU
Shanghai



Tyler HaupertAssistant Professor of
Urban Studies, NYU
Shanghai

Humanities



Kyle ChauvinAssistant Professor of
Economics, NYU Shanghai



Mariann Ollár Assistant Professor of Economics, NYU Shanghai



Mengdie Zhao Assistant Professor of Global China Studies, NYU Shanghai

STEM



Mingyuan Wang Assistant Professor of Computer Science, NYU Shanghai



Zhaonan Wang
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Linmin Zhang
Co-Area Head of Neural
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Professor of Practice in
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Shanahai

Awards

Best Research Project

Social Science Humanities STEM

Best Presentation

Social Science Humanities STEM

Most Popular Project







