



UNDERGRADUATE RESEARCH SYMPOSIUM





A Flagship Academic Event at NYU Shanghai

The NYU Shanghai Undergraduate Research Symposium is a university-wide celebration which showcases 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 NYU faculty.

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

- 02 Map & Schedule
- © 3 Social Science Projects
- **10** Business and Economics Projects
- 16 STEM Projects
- 22 Judges
- 25 Awards

Map & Schedule



Information Desk

5:00 - 6:00 PM

Presentations

- Social Science(E302)
- Business & Economics (E303)
- STEM (S301)

6:00 - 7:00 PM 7:00 - 7:15 PM

Poster Exhibitions and Q&A Awards Ceremony



Project Abstracts

Social Science Interdisciplinary Humanities

Critical Thinking and Family Socioeconomic Status among Chinese Undergraduates

Kelvin Qin '25, Sociology Mentor: Xiaogang Wu

This study sampled 111 undergraduates at ECNU in total through online recruitment. To evaluate their critical thinking levels, this study adopted the Critical Thinking Disposition Inventory -- Chinese Version (CTDI-CV) initiated by Pang. As for the assessment of their family socioeconomic status, this study applied the subjective self-assessed measurement. This study finds that there's a positive correlation between participants' CTDI-CV scores and their family SES. Moreover, the result demonstrates that family socioeconomic status serve as the mediator between maternal educational attainment and the critical thinking scores, underscoring the noteworthy role of the maternal factor in defining participants' subjective family socioeconomic status, potentially influencing their critical thinking levels.

Perceived Transgressions Predict Children's Eyewitness Memory and Suggestibility

Wenxin Shen '27, Undecided Mentor: Yuerui Wu

Experiences and perceptions of transgressions can affect children's subsequent memory report. In a pre-registered study, we used a staged transgression paradigm to examine 3- to 7-year-old Chinese children's memory (N = 52; M = 5.23 years; 60% male) for scripted adult-child interactions. Children who perceived the occurrence of a staged transgression were less suggestible on forensically relevant details of the interactions (e.g., actions involving touching and picture taking) than those who did not. Older age was also associated with increased accuracy. Findings highlight the role of transgression recognition and appraisal on children's eyewitness memory within fact-finding interview contexts.

Perceived Discrimination and Adolescent Migrant Workers' Psychological Adjustment: Protective Roles of Coping Strategies and Social Support

Doris Yuxuan Zhang '25, Social Science Morui Yu '25, Social Science Xiwen Li '25, Social Science Mentor: Lixian Cui

This study investigated the influence of perceived discrimination on the self-esteem of Chinese adolescent migrant workers, and the protective roles of coping strategies and social support. It was conducted in two phases, including questionnaires to assess self-esteem, perceived discrimination, coping strategy and social support, and in-depth interviews with selected participants. We found that perceived discrimination was negatively associated with self-esteem. Social support moderated this negative association. This research provides valuable insights into the psychological status of Chinese migrant adolescent workers and informs the development of appropriate intervention measures to alleviate adolescent migrant workers' mental health issues.

Risk Factors Associated with Postpartum Mental Wellness and Childbirth Outcomes among Pregnant People in Da Nang, Vietnam

Addie Dung Manh Nguyen '27, Neural Science, Social Science Mentor: Etienne Jaime

This cohort study examines postpartum depression and its association with sociodemographic factors, social support, self-perception, and childbirth outcomes among postpartum women in Da Nang, Vietnam. 155 participants were interviewed using the PHQ-9 scale to assess depression, the CTS-2 scale for intimate partner violence (IPV), and items on sociodemographic factors and self-evaluated perception. Descriptive statistics analysis suggests a significant prevalence of PPD symptoms and IPV experiences. Chi-square association tests and regression models confirm associations between PPD symptoms' severity with factors including negative perceptions of oneself and their familial-social relationships, recent IPV experiences, lower birth weight, and preterm birth.

"Post-Coal" Reality in Coshocton County

Keigan Carpenter '25, Social Science Mentor: Travis Klingberg

This pilot study examines the complexities of economic transition in Coshocton County, Ohio, which has been cited as a "success story" of moving away from coal mining and combustion. However, I illustrate that Coshocton's journey is more nuanced and its economic resilience cannot be solely attributed to the "post-coal" framework promoted by institutions like the World Bank Group. Coshocton's history reflects broader socioeconomic shifts, with the manufacturing sector and location playing vital roles before coal's decline. Ultimately, this work aims to challenge simplified narratives of "post-coal" success and highlight the need for a place-based understanding of coal transition in Appalachia.

Living Up to Names: Influence of Gendered Names on Gender Development

Jiaxi Nie '25, Social Science Jiaqi Feng '25, Psychology Mentor: Gu Li

This study investigates the influence of gendered names on gender development, with a focus on Chinese children. Similar to English, many Chinese given names carry gendered connotations, varying in their associations with masculinity or femininity. The hypothesis posits that children internalize gendered stereotypes and behaviors based on the gendered information embedded in their names, conforming to the societal expectations linked to those names. The study involved 21 participants, divided into two groups: 11 first-grade students (aged 6-7) and 10 fourth-grade students (aged 9-10). Findings suggest that the gendered nature of names impacts children's gender self-perception and reinforcement of gender stereotypes, confirming the initial hypothesis.

The Progressive Paradox: Exploring the Gap Between Explicit and Implicit Stigma Toward Non-Offending Pedophiles

Maylee Sexton '25, Social Science Mentor: Pekka Santtila

This study examines stigmatizing attitudes towards non-offending pedophiles (NOPs) through both explicit self-reports and implicit measures using the Implicit Association Test (IAT). Conducted with a U.S. sample, the research explores how political ideology influences attitudes toward NOPs. Notably, progressive participants exhibited a striking discrepancy: while reporting more positive explicit attitudes, their IAT scores revealed negative implicit biases. This finding suggests that implicit biases may persist despite self-reported progressive views, particularly around stigmatized groups. These results highlight the limitations of explicit measures in capturing underlying biases and suggest that more nuanced interventions may be required to address these inconsistencies.

Impact of Heatwaves on Urban Population Mobility: Focus on Chinese Megacities

Ziyun Xu '25, Social Science Mentor: Kangning Huang

This study examines the impact of heatwaves on urban mobility across four Chinese megacities—Beijing, Shanghai, Guangzhou, and Chongqing using phone signaling data to analyze socio-economic and demographic variations. Findings reveal significant decreases in travel activities during heatwaves, particularly among the elderly in Beijing (8.1%) and Chongqing (15.63%), while Shanghai and Guangzhou saw relative increases. These insights emphasize the need for urban resilience strategies to enhance quality of life amid increasing climate challenges.

Understanding Refugee Migration in the European Union through Game Theory: What Could Happen Next?

Margaret Czarnik '27, Social Science Mentor: Hongbo Wang

This research consists of applying game theory models to analyse and further understand refugee migration in the European Union. The work focuses on the newest (starting in 2015) history of migration to Europe, including the most up-to-date case studies such as the 2021 Polish-Belarussian border crisis and the 2022 Ukrainian refugee crisis. The research firstly assigns the case study events to the chosen game theory models and, second, provides deeper insight into the general European Union refugee policy. Moreover, the work analyses factors shaping the citizens' approach and, further, how this citizens' approach has shaped the policy-making processes.

An Intersectional Socialist Feminist Analysis on Transnational Commercial Surrogacy

Shuli (Julie) Wu '25, Political Science Mentor: Almaz Zelleke

In the past 20 years, the commercial surrogacy industry has reached beyond national borders and started to become a global phenomenon. In this political philosophy research project, I evaluate the practice of transnational commercial surrogacy from an intersectional socialistfeminist philosophical perspective, along with different feminist theories of TCGS. Building on existing theories, I propose understanding TCGS as the expropriation of gestational labor for the reproduction of capitalist social order. This research project contributes to academic discussions regarding the interplay of reproduction, gender subordination, and value expansion of capitalism by placing transnational commercial surrogacy as the focal point for analysis.

More Than Comedy: Exploring Character-Driven Narratives in Modern Adult Animated Series

Shauna Stewart '25, Humanities Mentor: Hye Eun Choi

This project aims to highlight the distinct characteristics of adult animation in the United States. The mature themes, multilevel plot progression, and character-driven storytelling apparent in modern adult animated series accompany a new understanding that encompasses a greater genre of adult animations and more accurately describes the types of content that adult viewers meaningfully engage with. Network television shows offer a more juvenile interaction while streaming platforms tend to incorporate more complex approaches. These approaches will be examined through a content analysis of Invincible (2021-) and Inside Job (2021-2022).

Guardians of the Maya: Preserving Heritage Through Animation Ixchel - A Journey into the Mayan Spiritual World

Yicheng Zhao '25, Interactive Media and Business Linger Ma '25, Interactive Media and Business Mingwei Li '25, Interactive Media Arts Mentor: Scandar Copti

"Guardians of the Maya: Preserving Heritage Through Animation" is a multifaceted project dedicated to documenting and amplifying the stories of local guardians committed to protecting Mexico's ancient ruins and Maya culture. Through immersive fieldwork, deep interviews, and comprehensive research, the project gathers authentic narratives that highlight the guardians' roles and challenges in heritage preservation. These stories will be transformed into a 2D animated short film, utilizing animation's visual storytelling power to reach a wider audience and foster appreciation for cultural heritage. The initiative celebrates the guardians' efforts, enhances cultural understanding, and underscores the importance of preserving our collective heritage for future generations.



Project Abstracts

Business

Economics

Finance

Interactive Media Arts

The Relationship Between QDII and International Financial Market

Yutian Dong '27, Economics Jiayi Hao '27, Mathematics Mentor: Geoffery Zheng

This study examines the relationship between investments in Qualified Domestic Institutional Investor (QDII) funds and their effects on financial activities, including stock market performance and currency exchange rates. Using regression analysis, the research finds that new QDII fund launches exert short-term pressure on the Chinese stock market, but have minimal overall impact on cumulative returns and the relative performance of Chinese and U.S. markets. While higher QDII premiums lead to more fund launches, the influence of fund numbers on premiums is weak. Additionally, QDII premiums show limited connections to stock market performance and RMB depreciation, suggesting other factors are more significant.

The Impact of Investors' Attention on Chinese Stock Return

Yunhe Zhang '25, Data Science, Business and Finance Zijin Su '25, Data Science, Business and Finance Yuxuan Xia '25, Business and Finance Mentor: Sukjoon Lee

Our research investigates the influence of investor attention on the returns of Chinese public bank stocks by leveraging the Baidu Search Index (BSI). Using Principal Component Analysis (PCA), we construct two indices: the Chinese Market Attention Index and the International Market Attention Index. The results reveal that both indices positively impact stock returns, with international attention exerting a stronger effect. Over time, the influence of attention diminishes, emphasizing the importance of timely decision-making in financial markets. These findings provide valuable insights for investors, highlighting the significance of market attention in driving stock performance.

China's Labor Market: Lying Flat

Hafsa Shahama Hilmi Samsudeen '25, Economics Dan Huynh '25, Data Science, Economics Mentor: Joseph Foudy

China's rapid and undisrupted growth during the past three decades has been the greatest engine of wealth creation and poverty alleviation the world has ever seen. This growth was enabled by China's massive and well-educated labor pool and informed allocation of capital. Yet, come 2020 and now, long after the pandemic, we are witnessing an earlierthan-expected slowdown in GDP figures as well as increasing unemployment, especially among new graduates. On paper, neither China's Labor pool nor its total amount of Capital is nearly tapped. Our paper seeks to capture that discrepancy, or how government policies and a decade of unbalanced economic growth have disproportionately and negatively impacted its labor force.

Strategic Timing of Implementation Interventions: Maximizing Impact with Varied School Event Incentives

Haozhan (Harvey) Jiang '26, Economics, Mathematics Tongyu (Stephen) Wang '27, Economics Mentor: Weiwei Weng

This experimental design is expected to look into the timing strategy of implementation intervention, in terms of school events with different incentive levels. This experiment will be carried out digitally through email, by sending out invitations as usual for campus activities with RSVP links but with different timing ahead of the events, and each experiment should be repeated among events with varied attractions to students. Experimenters should summarize the participation rate of each event and finally study the correlation between different incentive levels and the timing strategy. The report is expected to conclude with a general suggestion on timing strategy for different incentive levels of events.

Bargaining with Reciprocity Preferences

Dionysios Papadakis '25, Economics Mentor: Kyle Chauvin

This paper explores the impact of reciprocity on Rubinstein bargaining outcomes, where the second player's preferences are given by a utility function inspired by Charness and Rabin (2002). The model examines scenarios in both complete and incomplete information settings with a focus on how misbehavior affects bargaining dynamics. In the case of complete information, the misbehaving mechanism restricts how much the player making the first offer can get in equilibrium in cases where the social norm is too strict. In the case of incomplete information, the acceptance threshold for the first mover is further reduced, and agreements can be delayed.

Finsum: AI-Powered Financial Report Summarization and Analysis Platform

Tiansheng Hu '27, Computer Science Mentor: Chen Zhao

The rise of LLM offers a new way to retrieve, analyze, and summarize information. Its high information extraction and summarization efficiency becomes particularly evident when dealing with financial reports. The annual and quarterly financial reports of companies provide information rich in breadth and depth for investment analysis. However, when evaluating particular aspects of companies, much of its information is scattered throughout the lengthy reports, making it expensive and potentially inaccurate to feed entire financial reports to LLMs. The Finsum Platform aims to deal with the problem and generate trustworthy summarizations of particular aspects of companies.

Live-Diffusion

Jinran Ye '25, Interactive Media Arts Chenxuan Wu '25, Interactive Media Arts Mentor: Jung Hyun Moon

The Live-Diffusion project focuses on developing a real-time interactive Algenerated image system. By leveraging sensor and camera data, the system dynamically responds to user interactions, enhancing creative expression through Al-generated imagery. Integrating platforms like TouchDesigner and ComfyUI, the project emphasizes real-time interactivity and customizability, aiming to create a more inclusive and intuitive environment for creators. The system's design allows for flexible user inputs and is intended to encourage broader participation in Al-driven creative processes.

Beyond the Halo Effect: Dual Impacts of Corporate Social Responsibility - A Cross-Cultural Analysis of China and the USA

Samvel Davtyan '25, Marketing Mentor: Vivian (Jieru) Xie

The concept of the halo effect has been extensively studied in psychology, describing how a single positive attribute can lead to the perception of broader, unrelated positive qualities. In marketing, health, environmental, and ethical halo operate similarly by creating perceptions of beneficial attributes-such as healthiness, sustainability, and ethical sourcing-even when evidence for these attributes is lacking. These halos are powerful tools for influencing consumer choices, often misleading them into believing that products offer greater benefits than they truly do. Companies exploit these halos through ambiguous legal definitions and deceptive marketing practices, capitalizing on consumers' growing interest in Corporate Social Responsibility (CSR), health, and ethical issues.

China's Bond and Stock Market Interaction Between Interbank Market and Centralized Exchange

Mateusz Klepacki '25, Business and Finance, Economics Marlena Sołtysińska '25, Business and Finance Mentor: Aleksandar Stojanović

A solid financial system is a foundation of modern economies based on market rules, like China. This paper analyzes the development of Chinese securities markets from 1979 to 2023, and the analysis includes corporate and treasury bonds and stocks within China's financial system. The main findings are that the securities market, after an initial period of liberalization and rapid increase as an outcome of Chinese economic growth, has experienced limitations due to government intervention after each stock crisis, tracked by size analysis in these markets and two newly introduced indicators for the treasury and corporate bonds.

Harvesting Wartime Whispers

Jingchen Gao '27, Interactive Media Arts Jiaxiang Yuan '27, Interactive Media Arts Mentor: Xingchen Zhang

Our project blends VR and AR to create a novel experience using AR glasses that display a virtual world only in the central field of vision, allowing players to physically walk while exploring. By combining real-world navigation with virtual immersion, we enhance freedom of movement and safety. The low-poly art style contrasts with reality, and seamless transitions deepen immersion. A fragmented narrative explores the impact of war on a 20th-century American family, fostering reflection on peace. The experience lasts 10-15 minutes.



Project Abstracts

- **Computer Science/Data Science/Engineering**
- **Mathematics**
- **Neural Science**
- Interdisciplinary

Revitalizing Object Detection: Integrating COCO-SSD into the ml5.js Ecosystem

Sherab Ghale '25, Computer Science Douaa Zouhir '25, Computer Science Mentor: Jung Hyun Moon

This research enhanced the object detection capabilities of ml5.js by exploring a novel implementation using existing machine learning models and offline training techniques. The original ml5.objectDetection() function faced performance constraints and limited detectable classes. The study developed a new implementation offering improved flexibility and performance, including support for custom classes. This enhancement addressed existing limitations, benefitting various applications like surveillance and augmented reality. The project involved literature review, model selection, offline training, integration with ml5.js, and performance evaluation, significantly advancing the ml5.js ecosystem and contributing to the fields of machine learning and computer vision.

Evaluation of Perceived Urgency from Single-Trial EEG Data Elicited by Upper-Body Vibration Feedback Using Deep Learning

Jiacheng Shen '25, Computer Science Mentor: Mohamad Eid

Notification systems must convey urgency without adding cognitive strain. Haptic feedback, especially vibration, is an effective solution, but its urgency levels need real-time evaluation. Traditional methods rely on subjective feedback, which can distract users. This study introduces a deep learning model using EEG data to assess urgency from single-trial vibrations on the upper body. The model, combining 2D convolutional and temporal convolutional networks, achieved 83% accuracy across three urgency levels. Key brain regions involved include the prefrontal and central areas, with theta band synchronization increasing as urgency rises. The model's generalizability is limited to the vibration dataset.

Mixture-of-Expert LoRAs for Sequential Recommendations

Xin Teng '27, Computer Science Mentor: Hongyi Wen

In the field of recommender systems, traditional sequential recommendation models, i.e. SASRec, lacks the ability of identifying and applying common traits within users for prediction. In our project, we made various improvement by grouping users and using different techniques to enhance the model's prediction accuracy using features attained from subgroups. In particular, this research focused on boosting the performance of sequential recommenders by leveraging techniques like Low Rank Adaptation(LoRA) and Mixture of Experts gating(MoE). By integrating patterns from predefined subgroups, we achieved some improvement and had some interesting findings. Additionally, we also explored whether end2end models could automate the procedure of predefining subgroup, making the prediction process ready in one click.

ToMA: Token Merging with Attention for Diffusion Models

Shaoyi Zheng '25, Computer Science Wenbo Lu '25, Data Science Mentor: Shengjie Wang

Diffusion models have excelled in image generation but face high computational costs due to transformers' complexity. Existing tokenmerging methods fall short by neglecting efficient attention mechanisms and ignoring token relationships, ultimately compromising efficiency and image quality. In this paper, we propose Token Merging with Attention (ToMA) with three key innovations: (1) submodular-based token selection for diverse merge destinations, (2) attention merge, utilizing efficient attention with negligible overhead, and (3) abstraction of token (un-)merging as (inverse-)linear transformations, shareable across layers and iterations. Additionally, we propose potential further acceleration by performing attention on tokens in local tiles based on image locality.

Markov Chain Dynamics of Infection: Spatial Analysis and Game-Theoretic Strategies for Epidemic Control

Hanna Zhang '27, Mathematics Xinyu Fan '27, Data Science Siying Ni '27, Computer Science Mentor: Eric Endo

We investigated the dynamics of infection spread using mathematical models, primarily focusing on Markov chain dynamics and game theory. The project aimed to explore the relationship between spatial distance and infection probability by simulating the spread of infection across different population densities and distances. We adapted the Ising model from statistical mechanics to simulate the infection process. This model represents individuals as spins on a lattice, with infected individuals spreading the infection to their neighbors based on certain probabilities, while some may recover. We explored how spatial interactions among individuals influence the infection spread using one- and two-dimensional simulations.

Structural Neural Basis of Speech Motor Control During Human Vocalization

Huixuan (Sunny) Liu '27, Undecided Mentor: Xing Tian

Auditory and somatosensory feedback controls are essential for monitoring speech production, but their behavioral and neural mechanisms are not well understood. We hypothesize that individuals rely on distinct feedback controls, with this separation linked to brain connectivity between motor and sensory cortices. Our study will use a behavioral experiment to differentiate individuals who prefer auditory or somatosensory feedback, followed by structural imaging to assess differences in neural fiber connections between these groups. This research aims to reveal the relationship between sensory feedback preference and brain structure, providing insights into speech-motor control theories.

Information Gain Guides Attention Allocation in Multiple Object Tracking

Shucheng Li '25, Neural Science Mentor: Zhong-Lin Lu

The human brain constantly processes dynamic visual input but has limited computational resources. Attention plays a critical role in selectively tracking relevant stimuli while ignoring distractions. A key question is how the brain efficiently allocates attention to track multiple objects in dynamic environments. This research develops a process model using Bayesian adaptive estimation and information gain to explain attention allocation in multiple object tracking (MOT). The findings may advance cognitive science and inspire AI systems that predict attention or aid in training individuals with attention disorders like ADHD.

Effects of Heat Waves on Urban Slum Transportation Mobility

Sarah Zenere '25, Data Science Mentor: Kangning Huang

The "urban heat island" effect impacts urban slums disproportionately due to dense structures and lack of greenery, leading to higher temperatures than rural areas. With limited studies on heat waves' effects on slum communities' mobility and services access, the vulnerability of residents, often reliant on walking, biking, and public transit, is underscored. This study uses machine learning on Shanghai slums' transportation data to predict mobility changes in varying climate conditions. Heat waves negatively affect transportation, causing congestion, service accessibility issues, and economic downturns. By highlighting these impacts, the research aims to leverage machine learning for informed policy decisions to enhance slum resilience to climate change.

How Long Does It Take to Save the Planet? Mapping the Time-Penalty for Low-Carbon Travels

Mingya Zhang '27, Computer Science Huayuan Hu '27, Honors Mathematics Mentor: Kangning Huang

This research addresses rising transportation carbon emissions amid urbanization by providing a framework to measure urban infrastructure design, using Shanghai as a case study. Instead of altering commuting habits, the study emphasizes enhancing city architecture to reduce time trade-offs for low-carbon transportation modes. By utilizing QGIS, the Gaode API, and population flow data, we establish a measurement system to assess the carbon efficiency of neighborhoods. The project identifies high-impact areas for potential infrastructure improvements and evaluates transportation modes' energy consumption and emissions. Ultimately, it equips urban planners with insights to inform sustainable development strategies while improving residents' quality of life.

MAE-BERT VQA: A Hybrid Model for Visual Question Answering

Syed Ali Haider '25, Computer Science Junyi Li '25, Computer Science Mentor: Li Guo

This project focuses on advancing VQA by integrating cutting-edge techniques and models. We start by fine-tuning the BLIP-VQA model, incorporating LoRA layers specifically at the decoder level to enhance model adaptability while maintaining computational efficiency. In parallel, a custom VQA model is developed, using the MAE ViT for image representation and a pre-trained BERT model for text processing. The model architecture is further augmented with a cross-attention mechanism that is first trained for image captioning tasks and subsequently fine-tuned for VQA, ensuring a deep semantic understanding of both visual and textual inputs.

Judges



Daniel Jin Blum

Research Assistant Professor of Psychology, NYU Shanghai



Angran Li

Assistant Professor of Sociology, NYU Shanghai



Jiayong Liang

Assistant Professor of Practice in Environmental Studies, NYU Shanghai

Judges



Junnan Chen

Assistant Professor Faculty Fellow of Interactive Media Arts (IMA), NYU Shanghai



Sterling Huang

Professor of Accounting, NYU Shanghai



Peio Zuazo-Garin

Associate Professor of Economics, NYU Shanghai

STEM

Judges



Mathieu Laurière

Assistant Professor of Mathematics and Data Science, NYU Shanghai



Sukbin Lim

Assistant Professor of Neural Science, NYU Shanghai; Global Network Assistant Professor, Center for Neural Science, Faculty of Arts and Science, NYU



Prométhée Spathis

Professor of Practice in Computer Science, NYU Shanghai





Best Research Project

Social Science Business & Economics STEM

Best Presentation

Social Science Business & Economics STEM

Most Popular Project



UNDERGRADUATE RESEARCH SYMPOSIUM

Contact: shanghai.academicassociates@nyu.edu