NYU SHANGHAI
上海 纽约大学

UNDERGRADUATE RESEARCH SYMPOSIUM

Undergraduate Research Symposium
NYU SHANGHAI

SPRING 2025

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 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.

Undergraduate Research Symposium

NYU SHANGHAI

Overview

Map & Schedule

Presentation Rooms

E303 **E304** **S301**

Poster Exhibition

STEM

Humanities & Social Science

Business & Economics

Magnolia House

Information Desk

4:30 - 5:15 PM	**Presentations** • Humanities & Social Science (E303) • Business & Economics (E304) • STEM (S301)
5:15 - 6:15 PM	**Poster Exhibition and Q&A**
6:30 - 7:00 PM	**Awards Ceremony**

Project Abstracts

- Humanities & Social Science

Social Science

Global China Studies

Humanities

Interdisciplinary

Zhangyuan: A Microhistorical Study of Urban Transformation in Shanghai

Yuyang Hu '25, Global China Studies; Interactive Media Arts
Mentor: Lena Scheen

This research explores the changes of Zhangyuan's social function, and how these changes reflect the broader history of Shanghai. I divide Zhangyuan's history into three main periods that showcase its functional transformation: its early years as a private garden (1882–1919), its transition to a Shikumen residential community and further development (1920s–1978), and its commercialization after the Reform and Opening-Up period and into a luxury commercial center (1978–present). Zhangyuan's history vividly illustrates Shanghai's transformation from a Qing-era merchant town into a cosmopolitan treaty port, then a socialist industrial city, followed by its market-driven economy and redevelopment as a global metropolis nowadays.

How Do Heatwaves Impact the Daily Travel Patterns of the Elderly in Shanghai?

Ziyun Xu '25, Social Science
Mentor: Tyler Haupert

This study investigates how heatwaves affect the daily travel patterns of elderly populations (aged 60+) in Shanghai using mobile phone signaling data across heatwave and matched non-heatwave periods. Analyzing over 10 million elderly trips, the study finds that, contrary to expectations, elderly travel increased by 8.07% during heatwaves. Spatial analysis reveals a distinct directional pattern: travel rose more in northeastern districts and declined in the southwest. A clear gradient emerges with metro access—trip volumes increased by 18.34% in areas with no metro coverage, 6.79% in low-coverage areas, and only 1.97% in high-coverage areas. These findings suggest that limited metro accessibility areas may drive elevated travel needs during heatwaves. The results underscore the importance of expanding last-mile transit and neighborhood-scale cooling interventions to support climate resilience among aging urban populations.

Genocide and memory - Exploring the Volhynia memory politics in Poland

Anna Lipiec '27, Political Science
Mentor: Camilla Boisen

The politics of memory have always been invoked in the creation of national identities. Sacralization plays an important role in it, imbuing official narratives with moral weight, demanding collective veneration to unite the nation. The Holocaust memory regime is the most prominent example of such sacralization. In Poland, the Volhynia massacre gained similar political salience over the last decade, as politicians labeled it genocide. This study examines how this exploitation of memory politics has increased nationalist rhetoric and exacerbated the tensions between the Poles and Ukrainians, emphasizing the continued significance of Volhynia for political mobilization.

The impact of Psychological First Aid (PFA) on university students' knowledge, attitude, and practice to support peers in need and their self-efficacy

Morui Yu '25, Social Science
Mentor: Brian Hall

This study evaluated the effectiveness of a hybrid psychological first aid (PFA) training intervention on NYU Shanghai students' knowledge, attitude, and practice of supporting others and their self efficacy. It was conducted with a formative trial and a main trial, including questionnaires to assess PFA knowledge, PFA skills, self efficacy, psychological distress, and resilience, and interviews to assess PFA practice. The quality of intervention was approved by the formative trial. Main trials and analysis will be conducted soon. This study explored the potential of adopting PFA in universities to promote students' well-being.

Belonging Otherwise: Chinese Bisexual Women Reworking Space and Community

Leqian Huang '25, Social Science; Global China Studies
Mentor: Zhiqiu Benson Zhou

This project investigates the experiences of bisexual women in Shanghai and Guangdong as they navigate social spaces and build community ties. Through a 5-month ethnographic study with 6 bisexual women, I discovered they struggle with heteronormative expectations in domestic settings and compromises within lesbian spaces. In Shanghai, bisexual women remain passive on platforms like Weibo due to aversion to structured matchmaking events. Conversely, those in Guangdong are embedded in LGBTQ+ grassroots organizations, engaging in micro-activism and creating tight networks through key community figures. This research highlights how Chinese bisexual women utilize digital technologies to craft connections in politically challenging environments.

Tears behind the Brave Smiles: An Untold Experience of Breast Cancer Survivors in Shanghai

Jingxuan Xu '27, Humanities
Yuxuan Feng '27, Data Science
Mentor: Shuang Wen

In summer 2024, a team led by Professor Shuang Wen launched an oral history project on breast cancer survivors in Shanghai. 15 interviews were conducted, lasting from 1.5 to 3 hours. This study fills a gap in both English- and Chinese-language literature by documenting survivors' experiences from a historical perspective. Our pilot findings reveal how women navigated diagnosis, treatment, and recovery with resilience, especially during long-term endocrine therapy. Survivors faced challenges related to body image, intimacy, and work, though most avoided financial hardship due to social medical insurance. This project enriches non-Western and female narratives in the history of medicine and illness.

Unveiling the Past: Transcribing and Analyzing Chinese Immigrant Litigation Records

Margaret Czarnik '27, Social Science
Uurdmandakh Munkhbayar '28, Computer Science
Annie Church '26, Global China Studies; Social Science
Mentor: Heather Lee

This project transcribes handwritten San Francisco federal district court documents related to Chinese migrants, the first group targeted by discriminatory federal immigration policies. These court ledgers contain crucial data about Chinese migrants litigating for their right to enter the U.S. Our team focuses on transcribing key information such as litigants' addresses, legal representatives, case types, and dates into a database. This work is part of a broader digital humanities initiative aimed at creating a dataset that will train algorithms to automate future transcriptions of similar historical documents, improving both archival preservation and AI accuracy in document recognition.

Enhancing Urban Livability: Using Community Detection to Assess the Accessibility and Utilization Patterns of Pocket Parks in Shanghai

Zihan Xu '25, Data Science; Social Science
Mentor: Zhaonan Wang

This study investigates the role of urban pocket parks in fostering accessible environments for elderly populations. Utilizing the Two-Step Floating Catchment Area (2SFCA) method, we calculated an accessibility index for each park. We then applied unsupervised machine learning models, including bipartite graph analysis and community detection methods, to explore the characteristics of urban pocket parks and how they can better serve elderly communities. Our findings underscore the importance of pocket parks in urban settings and their potential to offer more accessible green spaces for older adults, thereby promoting both mental and physical well-being among local residents.

Project Abstracts

- Business & Economics

Business

Economics

Interdisciplinary

Stock Overreaction To Market Shocks Reveals Asymmetry In Investor Behavior On The Hang Seng Index

Athar Ali '26, Business and Finance
Mentor: Michele Geraci

This study examines the overreaction effect in stocks listed on the Hang Seng Index by applying a time series analysis of cumulative abnormal returns (CARs) within a unified framework over the period from January 2013 to December 2023. To capture this effect, loser and winner portfolios are constructed, and a contrarian strategy is employed to create an arbitrage portfolio, defined as the difference in mean reversion between these portfolios. An extreme event is identified using a moving-window Value-at-Risk approach. Our findings indicate that stocks tend to overreact following both positive and negative events, with the effect being more pronounced in the latter case.

Calm Stocks, Wild Hopes: Explaining the Low-volatility Anomaly in China's A-share Market through Lottery Preferences

Zijin Su '25, Data Science; Business and Finance
Yunhe Zhang '25, Data Science; Business and Finance
Mentor: Xin Zhou

This study provides a comprehensive cross-sectional examination of the low-volatility anomaly in China's A-share market spanning 30 years. We investigate both systematic (beta) and idiosyncratic (IVOL) risk anomalies through univariate and bivariate portfolio analyses. By controlling for lottery-related variables such as MAX, SKEW, and KUR, we assess whether investor preference for lottery-like stocks can explain the anomaly. We confirm the existence of beta and IVOL anomalies in certain time periods. Further, the anomaly's significance weakens or strengthens after controlling for different lottery proxy variables, highlighting the explanatory power of lottery preferences in the A-share market.

China's VIX and Skew Index: Indicators of Market Sentiment and Option Returns

Jiale Zheng '25, Humanities; Data Science
Kaiwen Hu '25, Data Science; Finance
Yiwei Cao '25, Computer Science
Mentor: Xin Zhou

This study investigates the China Skew Index and VIX, derived from tail risk pricing in SZ50, HS300, and CSI1000, to evaluate their predictive capability for index option returns and market trends. Using data from 2015 to 2024, we investigate the statistical properties of these indices and their forecasting power under different market conditions. Employing ARIMA-GARCH models and regression frameworks, we assess whether these indices can be used as indicators of future market trends and returns. Our findings aim to enhance risk assessment tools for Chinese markets, addressing gaps in volatility and tail-risk measurement absent in existing financial instruments.

Signals from Nature: Pricing Biodiversity Risk in China's Equity Market through News-Based Indices

Jiaqi Wang '25, Business and Finance
Mu Zhong '25, Business and Finance
Qiyong Wang '25, Data Science
Mentor: Xin Zhou

This research investigates whether biodiversity constitutes a priced risk factor in China's equity market by examining the impact of biodiversity-related news, captured through novel indices built from the People's Daily, on stock returns. Using NLP and ML techniques, we develop a China-specific biodiversity news index and apply the Fama-French factor model to assess sector-level sensitivities. We further analyze whether firms in high-exposure industries exhibit stronger reactions to environmental news shocks. By filling a critical gap in biodiversity risk quantification, particularly in emerging markets, this research offers practical insights for investors, regulators, and firms integrating environmental risks into financial decision-making.

Impact of Minimum Standard Living Scheme (Dibao) on Poverty Alleviation in Rural China

Iva Radoman '25, Economics
Mentor: Amanda Zhou

This study examines China's Rural Dibao program's impact on 431 rural households using an IV approach. Findings show Dibao reduces necessary consumption, acting as a short-term safety net, but boosts necessary investments, credit access, and subjective well-being. While effective for immediate poverty relief, long-term economic mobility requires additional policies.

Distribution of water on the Colorado

Huynh Sy Dan '25, Economics; Data Science
Mentor: Kyle Chauvin

This paper aims to introduce a novel market-based mechanism for water allocation that builds on historical insights yet responds to contemporary challenges. By integrating uniform price auctions with a robust mathematical framework, the proposed model addresses the inherent inefficiencies and inflexibilities of prior appropriation. It prioritizes essential residential water demand while dynamically allocating remaining resources among agricultural, industrial, and ecological users. Moreover, the inclusion of an inter-temporal penalty function ensures that over-extraction is curbed, thereby promoting long-term river stability. Simulation results demonstrate that this approach not only enhances social welfare by reflecting true user valuations but also mitigates environmental degradation—a key advancement over historical practices.

Cannibalization, Agglomeration and Competition: Evidence from the Shanghai Beverage Shop Market

Taorun Zhu '25, Economics; Social Science
Mentor: Yu Zhou

The recent surge in store openings and closures within Shanghai's drink and beverage industry has highlighted the market entry dynamics of chained beverage brands, making it the focal point of our study. This paper examines market entry decisions through a spatial entry model with spatial lag and evaluates the cannibalization effect in Shanghai beverage market. My findings indicate that the cannibalization effect is not statistically significant, whereas the agglomeration effect within the same brand is significantly stronger than the competition deterrence between different brands. These results contribute to a deeper understanding of spatial economics in urban environments through empirical analysis.

Multiple Cutoffs Regression Discontinuity in Time Analysis of Major Events Effects on the Shanghai Stock Exchange

Mateusz Klepacki '25, Business and Finance; Economics
Mentor: Yu Zhou

This paper introduces a Regression Discontinuity in Time (RDiT) framework for stock markets that captures multiple event effects without relying on control groups. It endogenously identifies key trading dates via a fixed-effect RDiT with a rolling-window approach and then builds a multiple-cutoff model using these dates. Empirical evidence from the Shanghai Stock Exchange shows its effectiveness in detecting significant events over long intervals, 2020 was notably eventful. This framework eliminates arbitrary cutoff selection and supports long-term market event analysis.

An Analysis of Bitcoin's Volatility in Response to Macroeconomic Factors

Patricia Troncoso Riveira '25, Economics
Mentor: Ilaf Elard

This study examines how macroeconomic variables such as interest rates, exchange rates, money supply, and financial market indicators affect Bitcoin volatility. A GARCH model is used to estimate daily volatility, capturing its persistence and clustering. Monthly averages of this volatility are then analyzed using ARDL regressions. The results show that traditional macroeconomic variables do not significantly explain changes in Bitcoin volatility. These findings suggest that Bitcoin's volatility may not follow the patterns observed in traditional financial assets, raising questions about the role of macroeconomic forces in shaping the behavior of new asset classes like Bitcoin.

Project Abstracts

- STEM

Computer Science/ Data Science/ Engineering

Natural Science

Neural Science

Regulating Carbon with Confidence: An Empirical Study of MRV Impacts on Market Behavior in China's National Emissions Trading Scheme

Yuxin Shi '25, Data Science; Finance
Mentor: Xin Zhou

This study examines the impact of the Monitoring, Reporting, and Verification (MRV) process on price volatility and trading activity in China's national carbon emissions trading market. Using monthly data from eight regional markets (2013–2023), we apply fixed-effects regression and event study methodology to assess whether market participants respond to MRV reporting periods. Findings show that while MRV periods significantly increase trading volume, they have limited influence on price levels and returns. The results underscore the importance of improving MRV transparency to enhance market efficiency, offering regulatory insights into how compliance mechanisms shape behavior in emerging carbon markets.

Open-Domain Fact Checking With NEI Label

Yiyi Chen '27, Data Science; Mathematics
Qi Sun '27, Computer Science
Mentor: Chen Zhao

In this study, we investigate the challenges of detecting insufficient evidence in large language model (LLM)-based open-domain fact-checking systems. Focusing on model reasoning and evidence retrieval, we reveal that LLMs often exhibit inconsistent reasoning in low-evidence scenarios, while current retrieval methods struggle to identify the absence of relevant information. Through systematic experiments across diverse datasets and a novel retrieval evaluation framework, we highlight limitations in handling "Not Enough Information" (NEI) cases. Our findings underscore the need for enhanced reasoning and retrieval mechanisms, offering insights to improve the reliability of automated fact-checking systems in real-world applications.

Significance of Even-Skipped Intron in Gene Expression Regulation in Early Drosophila Embryos

Lan Zhang '25, Biology
Mentor: Danyang Yu

Intron of a gene is supposed to have no effect on the function of the gene product. However, the fitness of Drosophila melanogaster decreases when the intron of even-skipped gene is cut out. The denticle belt patterns of wild type or intron-less Drosophila melanogaster were compared. The intron-less fruit flies and fruit flies with a pp7 tag addition had more denticle deficiency than the wild type drosophilas. Eve intron was further mutated to be shorter, longer or with the reversed sequence will be compared in the future studies.

The non-Canonical Histone Variant H2A.Z Exhibits Interactions with Mitotic Kinase AuroraB and Post Translational Modifications

Tyson Dao Phonesavanh '25, Biology
Mentor: Jungseog Kang

The histone variant H2A.Z is implicated with many functions such as DNA damage repair, mitotic chromosome segregation, centromeric transcription regulation, and more. However, functional differences between H2A.Z isoform variants H2A.Z1 and H2A.Z2 has yet to be thoroughly investigated. In this study, we showed novel, isoform specific association to mitotic kinases Mps1 and AuroraB, mitotic and interphase co-localization to the kinases in vitro, and post translational modifications in response to DNA damage and mitotic arrest. Results indicate non-redundant functions and regulation of the variants that have potential for further investigation.

Cellular localization of Non-POU domain containing octamer binding protein (NonO) naturally occurring isoform 91-471aa

Vilius Schmidt '25, Biology
Flora Shin '26, Biology
Jenny Chen '27, Biology
Mentor: Ching-Jung Huang

P54nrb, also known as Non-POU domain-containing octomer-binding protein (NonO) is implicated in many important functions and pathways within human cells. These included the MAPK signaling pathway, cellular senesce (also called cellular aging), and mitosis. To study the post translational modification of NonO protein as well as study the cellular localization of NonO, we performed a series of experiments. NonO full length 1-471aa was purified alongside 2 other isoforms isoforms 91-471aa and 1-466aa. All 3 isoforms were purified into PCS-GFP expression vectors. The vectors are transfection into Hela cells. The NonO gene expression was evaluated using fluorescent microscopy and western blot.

The Role of Sugar Conformation on Uridine's Photorelaxation Dynamics

Angel Montoya '25, Chemistry
Mentor: William Glover

Following a bottom-up approach to unraveling the complexities of DNA damage, recent experiments on aqueous pyrimidine nucleosides have discovered a high-energy ground-state intermediate formed following UV absorption. The intermediate persists for up to ~400 picoseconds before relaxing to the planar ground state, representing a possible doorway to photodamage (e.g. pyrimidine dimer formation). Curiously, the intermediate's lifetime is longer in uridine than uracil. To understand this, we used quantum chemical modeling to explore how the transition-state barrier to planarization depends on the sugar group and hydrogen bonding. This knowledge could aid in the design of photodynamic therapy sensitizers for cancer treatment.

Somatosensory-auditory integration during speech vocal production

Yiduo Lu '27, Neural Science
Mentor: Xing Tian

This study investigates hierarchical somatosensory-auditory integration during speech production through a behavioral experiment. Results show a delay in compensation timing in the auditory-only group compared to the combined perturbation group, suggesting faster somatosensory processing. Additionally, most participants exhibit distinct compensation-perturbation patterns under the conditions of with and without somatosensory perturbation, indicating a dominant role of somatosensory feedback.These preliminary findings suggest that somatosensory feedback may modulate auditory feedback processing, aligning with the hierarchical model. To further validate this hypothesis, an DTI experiment during summer vacation will assess whether somatosensory feedback influences auditory cortical activity, providing stronger evidence for the proposed hierarchy.

Object Representation Guides Attention: Evidence from Single-feature Search

Shucheng Li '25, Neural Science
Mentor: Xing Tian

While attention is guided by low-level features like orientation and color and high-level factors such as scene context, task history, and reward, the role of object representations remains unclear. We investigated this using an eye-tracking experiment where Chinese readers searched for a fixed orientation within normal and scrambled Chinese characters, isolating object representation. Longer reaction and dwell times for scrambled characters suggest that object representations influence attention even in single-feature search. These findings extend Guided Search Theory, demonstrating an interaction between high-level object representations and feature-based guidance, offering new insights into visual attention.

Decoding Emotional Lies in Bilinguals: A Behavioral and fNIRS Study

Adler Cao '26, Neural Science
Tianyi Zhu '25, Psychology
Mentor: Xing Tian

Communication across languages is trendy, yet understanding deception in multilingual settings remains limited. The study explores language and emotion on deception in bilinguals. Through behavioral assessments and fNIRS neuroimaging, the research found that deception increases cognitive load compared to truth-telling, evidenced by longer reaction times and enhanced activation in prefrontal and language-related brain regions. Additionally, deception under emotional settings and non-native language increases cognitive demands by engaging additional neural networks. This study aims to give insights into deception mechanisms in multilingual individuals, advancing our understanding of communication across diverse linguistic contexts.

E-I Balance Change across Cognitive States and Seizure Risk

Ruoyu Wu '25, Neural Science; Data Science
Mentor: Xing Tian

The uneven spatial distribution of seizure onsets during sleep has been well-documented, but the underlying functional or structural basis hasn't been fully discussed. The stronger fluctuations of the aperiodic exponent identified among mesial temporal lobe epilepsy patients with better recovery after responsive neuromodulation shed light on the role of excitation – inhibition (E-I) equilibrium in seizure onsets. Therefore, in this study, the aim is to investigate the preictal backgrounds, in terms of aperiodic exponent which measures the E-I balance, at seizure onset locations for sleep and probe where the abnormality arises compared to seizures during wakefulness and interictal periods.

Judges

Humanities & Social Science

Sangeeta Banerji
Assistant Professor of Human Geography, NYU Shanghai

Jing Qian
Assistant Professor Faculty Fellow of Political Science, NYU Shanghai

Ka Lee Wong
Assistant Professor of Global China Studies, NYU Shanghai

Business & Economics

Chen Chen
Assistant Professor of Operations and Business Analytics, NYU Shanghai

Nan Xu
Assistant Professor of Practice in Economics, NYU Shanghai

Geoffery Zheng
Assistant Professor of Finance, NYU Shanghai

STEM

Tim Byrnes
Associate Professor of Physics, NYU Shanghai; Global Network Associate Professor, NYU

Li Guo
Area Head of Data Science, Associate Professor of Practice in Data Science, NYU Shanghai

Xingyu Wang
Professor of Practice in Physics, NYU Shanghai

Awards

Best Research Project

Humanities & Social Science

Business & Economics

STEM

Best Presentation

Humanities & Social Science

Business & Economics

STEM

Most Popular Project

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