

# SPRING 2021 UNDERGRADUATE RESEARCH SYMPOSIUM



NYU  
上海



SHANGHAI  
纽约大学

## ABOUT

The NYU Shanghai Undergraduate Research Symposium is a university-wide celebration of research which showcases work from undergraduates spanning the Arts and Science, Engineering and Computer Science, and Business. The Symposium features recently completed projects by Major Honors students, as well as research papers and creative work by students for their Capstone Projects, Independent Study Courses and as part of the Dean's Undergraduate Research Fund(DURF).

Visitors will have the opportunity to cast a vote for the project that most impresses them, and a panel of NYU Shanghai faculty will select the winning projects.

# OVERVIEW

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## STEM

Computer Science	04
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## LIBERAL ARTS

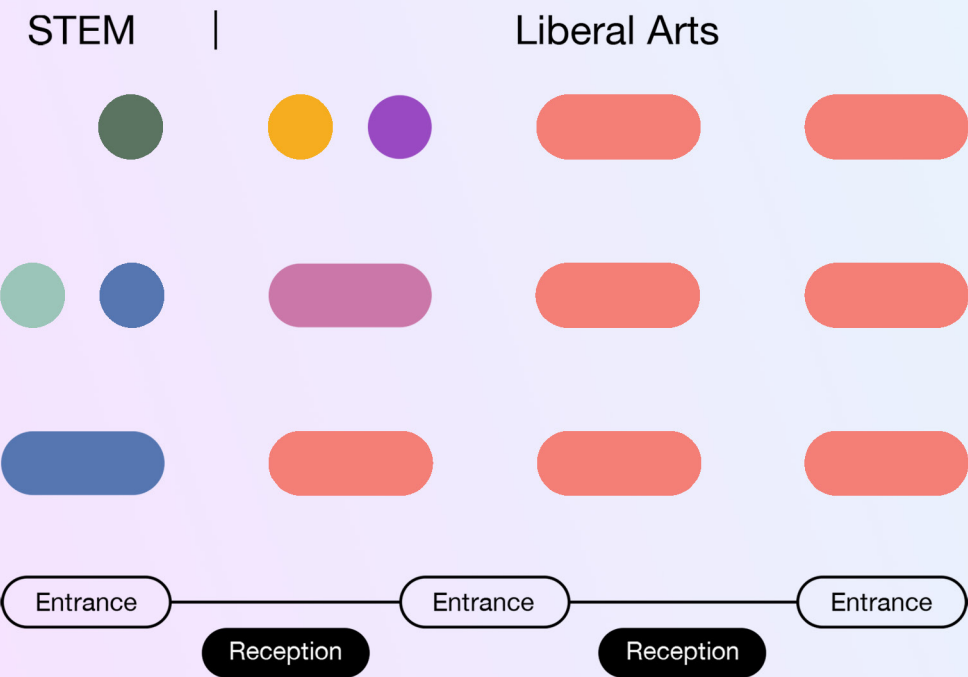
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# FLOORPLAN

Room 1503 - 1504



Computer Science

Humanities

Engineering

IMA

Natural Science

Philosophy

Social Science

# STEM

A large, stylized, light blue leaf pattern is overlaid on a purple-to-blue gradient background. The leaves are arranged in a fan-like shape, pointing towards the top right.

Computer Science  
Engineering  
Natural Sciences



## Hardware Conditioned Policy for Quadraped Robot

Mao, Zander

AREA: Computer Science

MENTOR: Romain Corcolle; Olivier Giles Marin

We design a locomotion policy for quadruped robots that's conditioned on the mechanical structure. The robot predicts its own structure using its sensor readings and compensate its morphological changes during action. We hope to use this method to close the gap between simulation environment and real world.

## Experimental Characterization of ALD Grown $\text{Al}_2\text{O}_3$ Film for Microelectronic Applications

Chen, Yida

AREA: Engineering

MENTOR: Pingping Ding

The study of high dielectric materials has received great attention lately as a key passive component for the application of metal-insulator-metal (MIM) capacitors. In this paper, 50 nm thick  $\text{Al}_2\text{O}_3$  thin films have been prepared by atomic layer deposition technique on indium tin oxide (ITO) pre-coated glass substrates and titanium nitride (TiN) coated Si substrates with typical MIM capacitor structure. Photolithography and metal lift-off technique were used for processing of the MIM capacitors. Semiconductor Analyzer with probe station was used to perform capacitance-voltage characterization with low-medium frequency range. Current-voltage characteristics of MIM capacitors were measured on precision source/measurement system.

## Agency Attribution as Causal Inference along a Continuous Sensory Dimension

Chu, Qian

AREA: Natural Sciences

MENTOR: Xing Tian

The NYU Shanghai Qilin tennis team manifest strong agential control: as they skillfully hit the ball, it often goes along their desired trajectory. But what if it does not? Traditional theories of motor reinforcement learning posit that such prediction errors drive motor learning. This strategy is however implausible as there exist two causes of prediction error: self-motion variability and external perturbation (e.g., a sudden wind). Here we propose a Dual-Stream Attribution Model in which agency is causally inferred in a probabilistic manner using feedback along a continuous dimension. We also provide two paradigms for psychophysical experiments to verify the model.

## Microcircuits Involving the Dorsal Raphe-Projecting Pyramidal Neurons in Layer V of Medial Prefrontal Cortex Correlate with Murine Vulnerabilities to the Activity-Based Anorexia

Du, Muzi

AREA: Natural Sciences

MENTOR: Chiye Aoki

Anorexia Nervosa (AN) is an eating disorder characterized by voluntary food restriction and excessive exercise. While research have uncovered the roles of dorsal raphe (DR) in regulating murine feeding behaviors, its inputs from the medial prefrontal cortex (mPFC) haven't been studied in the context of AN. In this project, we selectively activated DR-projecting pyramidal neurons in mPFC with Designer Receptors Exclusively Activated by Designer Drugs (DREADDs) to investigate their roles in the anorexia-like behaviors of mice. Electron microscopic immunohistochemistry and immunofluorescence were used to quantify the innervations and the activities of neurons in mPFC following DREADD-mediated activation.

# Multiwavelength Study of Black Hole System Swift J1357

Caruso, Eleonora (Remote)

AREA: Natural Sciences

MENTOR: David Russell (NYU Abu Dhabi)

“Swift J1357.2–0933 is a black hole low-mass X-ray Binary (XRB). This source has a high inclination, an uncertain distance, and great variability in luminosity. We collected multiwavelength observations of the source’s outbursts in 2011, 2017, and 2019, the last one being the focus of this project. We analyzed optical data, constructed spectral energy distributions, color-magnitude diagrams, and optical/X-ray correlations. We found evidence of contributions from both the accretion disk and the relativistic jet to the spectra and put new constraints on the source’s distance.

This work results from a collaboration between NYU Shanghai and Abu Dhabi.







# Liberal Arts

Humanities

Interactive Media Arts

Philosophy

Social Science

## Embodied Memories of Chinese Feminism in Live Art: a Comparative Study on Performance Artists Xie Rong and Wen Hui Tang, Wenxin

AREA: Humanities

MENTOR: Monika Lin

Through shared semiotics Red and Hair in the reflexive live art, Xie Rong and Wen Hui shed light on the vulnerability and shared pain in Chinese female memories in the inferior site of the “kin-inflected category” of family and the state, and also their female memories of their hybrid identity of their entanglement of the juxtaposed narrative of Chinese communist education, the influential tide of western thoughts in China, and their rebellious urge to break free of the subordination of females in China as a “system of purpose”, and the propagandistic Chinoiserie in history.

## China's Selection Shows and Fan Culture

Liang, Jiayi; Li, Dan

AREA: Interactive Media Arts

MENTOR: Ezra Claverie

Today, selection shows go viral in China. To some extent, these shows tend to become a game of money. The capital-possessing party makes use of fans' mentality to achieve business purposes, while fans voluntarily create profit for the capital holders to prove the commercial value of their idols. Under such circumstances, this project will delve into the meaning of idols and the value orientation the idol industry has imposed on Chinese teenagers who take a large proportion of Chinese fan groups. Figuring out a sustainable and healthy commercial mode will be the ultimate goal of this project.

## **Bad Words Good Art: An Explanation for the Non-Offensive Slurs in Paintings**

**Liu, Lily**

**AREA: Philosophy**

**MENTOR: Ines Crespo**

Some artworks have insulting phrases such as slurs on them, and slurs are especially offensive because of their non-displaceability. Looking at art from a philosophy of language perspective, my essay aims to provide an explanation for the non-pejorative slurs in paintings and thereby an exemption from non-displaceability. I develop the Integrity Test to found out whether slurs are successfully included in artworks. Using Ligon's and Ringgold's paintings as examples, I argue that, when slurs pass this initial test, their pejorative force is muted because they can be considered to be directly quoted under the demonstrative theory of slurs.

## **Externality and Accountability: Understanding Second-Person Standpoint in Meta-ethics**

**Wang, Eileen**

**AREA: Philosophy**

**MENTOR: Lu Teng; Sharon Street**

The paper is on Stephan Darwall's book *The Second-Person Standpoint*, and mainly addresses the following two questions: what is the second-person standpoint? How is it different from Korsgaard's first-person standpoint? I first explicate the notion of second-person standpoint from an analysis of the notion of reciprocal recognition. I then argue that the difference between Darwall's second-person standpoint and Korsgaard's first-person standpoint lies in externality. I respond to a challenge from Korsgaard, and argue that accountability to the self can only be known from the second-person standpoint, and therefore the second-person standpoint is irreducible to the first-person standpoint.

## The Effects of COVID-19 on Women's Position in Chinese Society

Anderson, Stephanie Marie; Li, Lanxin

AREA: Social Science

MENTOR: Yuan He

This study examines the effects of COVID-19 on Chinese women's living, social, working, and family status in China in 2020. The data collected from a surveyed group of 11,832 Chinese people points toward the most significant indicators of problematic, gender-related issues in Chinese society including female representation (or lack-there-of) in government-sponsored propaganda, lack of appreciation for women in the workforce, and traditional gender roles. This research presents the realities of women's living conditions in contemporary China, and it can be built upon in long-term, comparative studies to determine its progression overtime.

## Insight on Global Sex Worker Industry

Ballou, Matthew Vincent; Bland, Taylah; Kramer, Emily; Zhou, Angelina; Zou, Susan

AREA: Social Science

MENTOR: Yuan He

This study aims to provide an understanding of the relationship between how sex work is regulated and the level of violence against sex workers in a given area to better determine which is the most effective regulatory model in preventing violence against sex workers. This proposal will first present a global picture of sex work industry, then provide a multi-policy perspective on Australia, where legislation surrounding the sex work industry varies significantly in each jurisdiction in different territory. We propose to answer this question with a mixed-modes observational study. This study will be a mixed-modes observational study, using quantitative and qualitative data gathered from questionnaires, in-depth interviews, and existing datasets.

## **Do Depressive Symptoms Moderate The Effect of Perceived Controllability on People's Attitudes And Behavioral Intentions Towards Individuals With Depression?**

**Cai, Shuyang**

**AREA: Social Science**

**MENTOR: Gu Li**

This online study aims to examine how Chinese people perceive and treat individuals with major depressive disorder, as well as how such perception and behavioral intentions might be influenced by the level of perceived controllability and depressive symptoms. Based on previous literatures, the hypotheses were that the higher the perceived controllability is, the less positive attitudes and behavioral intentions people would show towards the individuals with depression, and that the level of depressive symptoms would be negatively associated with positive attitudes and behavioral intentions. A quasi-experimental between subject design was used to test these hypotheses.

## **Behind the Relationship Between Parents' Educational Experience and Their Expectations for Children's Education**

**Guo, Sophia; Huang, Violet; Zhu, Raye**

**AREA: Social Science**

**MENTOR: Xiaogang Wu**

This project aims to investigate, in a Chinese urban social middle class context, the influence of parents' educational experience on the expectations they hold for their children's educational experience. As higher education and social upward mobility become more prevalent and achievable, it is reasonable to imagine that most urban middle class parents would expect their children to obtain not only higher level of credentials and thus material success, but beyond that and more importantly, to achieve personal growth and eventually a higher quality of life defined in their own way.



## **SEL Programs and Their Implications for Migrant Children In China**

**Li, Yi Jie (E'jane)**

**AREA: Social Science**

**MENTOR: Lixian Cui**

Although the benefits of Social Emotional Learning (SEL) has been demonstrated in current research literature, especially for at risk populations, little of its effects has been studied to the same extent in cultural contexts outside of the United States. In China, the population of migrant children has steadily increased, but governmental policies have yet to address the structural barriers which they face as they move to urban cities. This project overviews the current literature on SEL programs and the situation of migrant children in China, highlighting some of the most prevalent concerns and implications for future practice.

## **Feminine Health and Hygiene on the Chinese Woman's Position in Chinese Society**

**Li, Yipu; Liu, Yufei; Ruffolo, Nina**

**AREA: Social Science**

**MENTOR: Yuan He**

In order to understand women's societal positioning in China, our research analyzes feminine health's impact. Our data comes from over 13,000 respondents in the 2020 survey of "Living Status of Women in China's" section on feminine health. Through MaxQDA our group used loop coding and grounded theory to qualitatively analyze our data. Responses included inequitable access to contraceptives, sex education, and medical services, while reporting high levels of stigma surrounding their health. Most interestingly, we found many responses surrounding the government trying to increase fertility by pushing aphrodisiacs into the healthcare system, simultaneously moving contraceptives out.

## **Unfolding The Patriarchy from the Female Perspective: A Text-based Analysis on Education in China 2020**

**Peng, Yiming; Rodriguez, Dagla; Wang, Anran**

**AREA: Social Science**

**MENTOR: Yuan He**

This study explores the influence of patriarchal sentiments prevalent in educational institutions, families, and society on Chinese women's education and potential suggestions and solutions from the female perspective. By conducting qualitative text-based analysis based on grounded theory on the 2020 “Living Status of Women in China” survey responses, we recognize the three most commonly addressed factors are education attainment, higher education enrollment, and gender stereotypes. This study, as a channel for Chinese women to self-assess their own living conditions, precisely captures a broader scope of gender inequality within Chinese education from women's perception in 2020.

## **Experiences of Discrimination and Psychological Well-Being Among Chinese Students in China and the US during the Covid Pandemic**

**Tang, Shirley; Cai, Shuyang**

**AREA: Social Science**

**MENTOR: Pekka Olavi Santtila**

Since early 2020 the Covid pandemic broke out has resulted in 121 million confirmed cases, including about two million deaths, by March 20, 2021. As the pandemic was initially associated with Wuhan, China (Lee & Waters, 2021), and because infection rates and mortality were higher among minority communities in the US (Laurencin & Walker, 2020), we looked at differences in Covid related discrimination among different ethnic groups. As a highly global but also relatively homogeneous population, we recruited undergraduate students aged 18 to 24 for the present study.

## Fanfiction Writing Under Censorship: The Communal Aspect of Writing

Wang, Ran

AREA: Social Science

MENTOR: Carly Knight

This study leverages the case of how Chinese fanfiction writers respond to online censorship to better understand fundamental mechanisms of art creation. Using the lens of a gift economy model of cultural production, I argue that community is both the means for art creation and the ends for art consumption. I find that writers react to censorship in diverse manners: clinging to the native community, searching for new communities, withdrawing from the community life, and switching to communities other than fandom. Ultimately, writers demonstrated their agency by adopting various strategies to continue creating and maintain the community for cultural production.

## The Effect of Generic Language on Social Categorization

Wang, Wendy

AREA: Social Science

MENTOR: Marjorie Rhodes

Generic language refers to abstract kinds rather than specific individuals, for example, saying: “boys like sports” instead of “this boy likes sports.” Previous research has shown that generic language can influence children’s social categorization. However, it is not clear if the influence of generic language on children is a universal phenomenon. In order to replicate the effect of generic language, as well as to validate online research methods in young toddlers, we plan to test 100 English-speaking and 100 Chinese-speaking children between 28 and 36 months old via our online research platform PANDA. Results from the current research will help us understand the nature of linguistic effects on social categorization.

# Economic and Employment Status of Women in China 2020

Yan, Zhiying; Zhan, Jinyi

AREA: Social Science

MENTOR: Yuan He

This study aims at figuring out how different social groups, especially women and gender minorities, think of the economic and employment status of women in contemporary China. The Data comes from the “Economic and Employment Status” section of the survey “Living Status of Women in China 2020”. The analysis of this survey suggests that female fertility acts as a primary obstacle to economic equality both in the workplace and family. Additionally, special female groups such as elderly women suffer more unfair treatment. Findings suggest that future studies can focus more on these problems and how to further improve the overall economic status of women through dealing with these problems. This study aims at figuring out how different social groups, especially women and gender minorities, think of the economic and employment status of women in contemporary China. The Data comes from the “Economic and Employment Status” section of the survey “Living Status of Women in China 2020”. The analysis of this survey suggests that female fertility acts as a primary obstacle to economic equality both in the workplace and family. Additionally, special female groups such as elderly women suffer more unfair treatment. Findings suggest that future studies can focus more on these problems and how to further improve the overall economic status of women through dealing with these problems.

## How Do People Reason From “Is” to “Ought” in Gender Stereotypes? The Effects of Social Role Perception and Self-construals

Ying, Yurun (Ellen)

AREA: Social Science

MENTOR: Friederike Funk

The is-to-ought tendency is a cognitive tendency to treat what is typical (the “is”) as what is good and right (the “ought”). The present research studied whether social role perception and self-construal may enhance the is-to-ought tendency in the context of gender stereotypes, which usually convey both descriptive and normative judgments about gender. Through an online experiment involving two novel groups, I found social role perception did not affect the is-to-ought tendency. However, the interdependent self-construal (i.e., seeing oneself as connecting to others) enhanced the is-to-ought tendency, but only when judging typical traits associated with women.

## Survey on Gender-based Violence in China 2020

Zha, Yuhong; Zhuang, Feiyang

AREA: Social Science

MENTOR: Yuan He

This is qualitative research about 2020 gender-based violence in China. The research examines 12,083 answers to an open question in section 5 “gendered violence” from the 2020 survey “Living Status of Women in China”. Using MaxQDA, we applied the method of systematic analysis of the qualitative text that is based on grounded theory into the coding process. After inter-code confirmation and conclusive discussion, we classified six perspectives from the answers: definitions, laws, current situations, attitudes, forms, and suggestions. This research indicates a generally permissive attitude towards China’s gender violence issues, some tough situations, and problems need to be resolved.

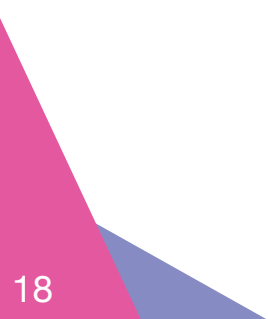
# Living in Precarity: Biopower and Security Mechanism in Post-Covid-19 China

Zhang, Liyuan (Karen)

AREA: Social Science

MENTOR: Mohamed Yunus Rafip

Health Code, this everyday technology designed during the Covid-19 pandemic, is a black box for contact tracing and risk assessment. Drawing on my fieldwork in Shanghai and Hangzhou, this article explores how this technocratic response by using big data to control the pandemic fails to cover the whole population with no omissions. A large number of poor and marginal homeless people were made invisible in the nationwide contract-tracing system and, without evidence to prove their health status, they were faced with further social exclusion.







# JUDGES



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**Olivier Marin**

Professor of Practice  
in Computer Science



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**Xianbin Gu**

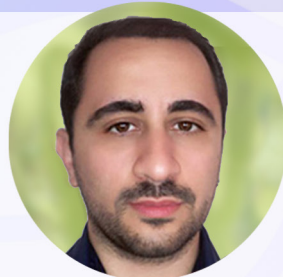
Assistant Professor of  
Practice in Computer  
Science



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**Xingyu Wang**

Associate Professor  
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**Stavros Didakis**

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Professor of IMA



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**Jacqueline Armijo**

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