

# Fall 2021 Undergraduate Research Symposium Winners

## Most Popular Project

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### Happy Spouse, Happy House: Collaborative Risk-Taking and Marital Satisfaction

Presenter: Yumeng Chen

Mentor: Eric Set

In this study we explore the links between marital satisfaction and how married couple's approach decision-making under risk. We gave out online surveys and conducted online experiments with married couples through WeChat video-chat. Couples first made some economic decisions apart, then brought together to make choices. Half of the couples were informed their partner's choices before they decided together; the other half were not informed. We are interested in whether marital satisfaction correlates to the aspects of individuals' preferences (e.g., the difference between husband and wife) and how couples make choices (e.g., if one member dominates), and whether awareness of one's partner's preferences influence the decision-making process and outcomes.

## Best Research Project

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### Finding the Best Parameters for Heston Model under Chinese Stock Market   Mentor: Wei Wu

Presenters: Jialin Wang & Yuchen Zhou

Our research centers around the question whether there is a probability model that can discover certain predictability behind the uncertainty of the stock market. We chose the Heston Model considering its accuracy in face of stochastic volatility. Selecting an option consisting of stocks of different industries, we applied its data of past two years to a simulated annealing code to calibrate corresponding Heston Model parameters, which we later used to predict the option price of the current year. Finally, we compared our predictions with the real price, got a generally consistent result and analyzed some observed errors.

## Best Presentation

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### Generalized Sorting with Vertex-Related Cost

Presenter: Yiyang Shao   Mentor: Siyao Guo

Based on the fundamental question of sorting in algorithm, generalized sorting is a more practical development, where comparisons have different costs. One intuitive way to build the cost model is to give each vertex a corresponding cost. In this project, we study the generalized sorting problem with vertex-related cost. In this project, we propose a randomized algorithm with an expected cost of  $O(\log n)S$ . Furthermore, we prove that our algorithm reaches the cost with a high probability. Finally, we prove  $O(\log n)S$  to be the lower bound of the problem.

# Liberal Arts & Business

## Best Research Project

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### How Does Sexual Dysfunction Relate to Relationship and Sexual Satisfaction among Chinese Adults?

Presenter: Sijia (Leslie) Huang      Mentor: Pekka Santtila

This study aims to investigate how sexual dysfunction affects relationship satisfaction and sexual satisfaction for Chinese adults who are currently in a relationship. We found that for both men and women, the happier they are with their relationship, the more satisfied they are with their sex life and the fewer sexual dysfunctions they have, and vice versa. Also, the longer the relationship is, the fewer sexual dysfunctions one has. For men, ejaculation problems are associated with erectile dysfunction. Those findings suggest that sexual dysfunction does cause dissatisfaction in people's sex life and longer relationship is likely to lead to less performance anxiety.

## Best Presentation

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### Gender Role Conflict as a Predictor: Depression & Help-Seeking among Chinese College Students

Presenter: Brandon Lin      Mentor: Pekka Santtila

Gender roles are present in all cultures around the world. However, individuals may not all conform to these roles, this causes gender role conflict. Previous research has indicated that American men with higher gender role conflict levels face double jeopardy, where they experience depression in more severity and are also more reluctant to engage in help seeking behavior. This study aims to examine this problem in the Chinese context.