

Dear IIT Community,

We are thrilled to present to you the 4th issue of Undergraduate Research Journal at IIT (URJiit), an annual publication highlighting the extraordinary research completed by undergraduates at the university. The URJiit team has been working hard to engage undergraduates in the numerous research opportunities here at IIT while encouraging communication and discussion with faculty ever since our founding in Spring 2010.

It is our hope that this journal continues our mission of publishing undergraduate research on thought-provoking and experience-based submissions from all disciplines at IIT, Shimer College, and VanderCook College of Music while displaying the vibrant intellectuality and curiosity found in undergraduates throughout the IIT community. The outstanding work of the undergraduate researchers in this issue will no doubt make a positive impact on the IIT community and the scientific community at large. Fall 2014 marks the first time URJiit collaborated with Program for Undergraduate Research Education (PURE) under Armour College of Engineering, with this issue featuring research articles from three Engineering Themes: Energy, Health and Security, where PURE participants provide solutions of global impact that advance society.

While URJiit does provide a platform for students to publish and showcase their work, we also give students the opportunity to learn about the publication process from start to finish through positions as editors, designers and executive officers. We are truly committed to enhancing the undergraduate experience, and we continually seek to engage as many undergraduate students in our organization as possible.

The dedication and support of a wide variety of individuals is reflected in every issue to ensure a high quality journal. We would like to thank all of the student researchers, authors, editors and designers for their tireless contribution. We would also like to thank you for your valuable readership. We hope you enjoy this issue, and find elucidation and inspiration in its pages.

Sincerely,

*Sijia Wu*

Sijia Wu

Editor-in-Chief