

# STUDENT DESIGN CONTEST

**Eligibility:** Undergraduate and Graduate Students enrolled in any major

**Topic:** Material Empowered Data Systems for Agriculture Adaptation

**Abstract Submission Deadline:** December 5, 2018 at <https://easychair.org/conferences/?conf=ibe2019>

**Length of Abstract:** Maximum 250 words

**Design Submission Deadline:** February 6, 2019 to [info@ibe.org](mailto:info@ibe.org)

**Length of Submission:** Minimum 3000 words and 3 figures. Maximum 4500 words and 4 figures

**Cash Awards:** First prize = \$150; Second prize = \$100; and Third prize = \$75

**Travel Grants:** \$400/semifinalist

Sustainable use of land, water, and energy resources is imperative as evolving environmental stresses and expanding nutritional needs put increasing demands on agricultural productivity. Stress-resilient cultivars and real-time decision support systems to manage irrigation, fertilization, and pest control could ameliorate such factors. But cost, usability, and performance constraints of today's tools for precision agriculture and high throughput plant

phenotyping (HTPP) limit their resolution and scalability, preventing real-time, high-resolution, data-driven decision support systems. What innovative materials, sensors or systems could inform crop models and support machine learning to select resilient cultivars and sustainably manage crop yields?

Undergraduate and graduate students enrolled in any discipline are invited to compete in the 2019

IBE Student Design Contest. Innovative solutions to complex climate and ecological variability, extreme weather events, and abiotic and biotic stresses that constrain agricultural productivity and profitability are sought. Students should identify two faculty mentors from the natural, agricultural, data and social sciences, engineering, management, or humanities disciplines to provide guidance

**Abstract Submission Deadline: December 5, 2019**



## **IBE – The Society for Advancing Biology-Inspired Engineering**

IBE is a professional organization that encourages, in the broadest and most liberal manner, interest and inquiry in fostering international cooperation among engineers, scientists, technologists, and allied professionals in order to apply engineering principles to systems of biological origin to improve the quality of the human condition.

[www.ibe.org](http://www.ibe.org)

and feedback. Faculty mentors are to assist students to clarify their proposed design, identify its novelty, advantages, and risks relative to state of the art, and describe work needed to advance the design. What are theory, material, system, and performance aspects of the design? By what metrics should the design be validated? What software, equipment, or methods would be required to do so? Why is the design better than alternatives? What attribute(s) make it likely to disrupt or penetrate the market and be selected by profit- and sustainability-conscious growers to manage crop yields?

To submit a design, students must submit (to <https://easychair.org/conferences/?conf=ibe2019>) an abstract of ≤250 words to Student Design Contest by Dec. 5, 2018 including a title and name, email, street address, department, and institutional affiliation of student author(s) and mentors. The final proposed design must be received at [info@ibe.org](mailto:info@ibe.org) by Feb. 6, 2019. Finalists eligible to present at IBE will be notified by Feb. 20, 2019.

Evaluation will consider novelty, functionality, workability, and desirability of the proposed design. Is the design compatible with environment and market factors? What could affect implementation of proposed design elements? What is relevant existing intellectual property? Are scientific and engineering aspects addressed? Entries will be submitted to a plagiarism-checking service. IBE reserves the right to disqualify any entry judged as non-original or having a non-compliant topic, word length, student authorship or faculty mentorship. IBE is not responsible for any difficulties during submission. Only finalists will be notified of results.

Written feedback will be provided to finalists by competition judges. Finalists will then refine their arguments for an in-person oral presentation at the Student Design session at the 2019 IBE Annual Conference, Apr. 4-7, 2019, St. Louis, MO. Final competition rankings will be determined after a 10-minute, oral presentation of the design and ten minutes of Q&A with the judges and the audience. Finalists will be given complimentary registration to the 2019 IBE Annual Meeting and a travel grant not to exceed \$400, with support from NSF ERC Planning Grant: Engineering Research Center for Materials for Agriculture Resource Imaging Analytics at High Resolution (MARIAH). By submitting an entry, students agree that copyright of winning entries is assigned to IBE and that they will attend and present orally at 2019 IBE Annual Conference if selected as a finalist.