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2016 DAVIDSON FELLOWS
Positive Contributions to Society

Davidson Fellows are students 18 and under who have completed a significant piece of work in science, technology, engineering, mathematics, music, literature, philosophy or outside the box. The work of a Davidson Fellow must have the potential to make a positive contribution to society. Since 2001, the Davidson Institute has recognized more than 280 Davidson Fellows, each receiving a $50,000, $25,000 or $10,000 scholarship.

Positive contributions to society made by the 2016 Davidson Fellows include:

- Designing a smartphone-based pulmonary function analyzer that can be used to measure lung function and diagnose various respiratory illnesses.
- Exploring the crossover of algebra and combinatorics, which has applications in computer-based image recognition.
- Developing a cost-effective thermoelectric device that has the potential to enable generation of electricity from industrial waste heat.
- Creating a portfolio of writing portraying positive depictions of young people of marginalized identities based off racial, gender, and cultural markers.

Contributions of Davidson Fellows recognized since 2001 include:

- Creating a blood-testing device for the early diagnosis of cancers.
- Inventing a low-cost wearable sensor for real-time, reliable detection of Alzheimer's patients' wanderings out of bed.
- Creating a biological tool to visualize diseases at the molecular level.
- Combining computational modeling and simulation with biological and structural studies to speed the discovery of new flu medicine.
- Investigating interactions between quantum dots and photons in multijunction solar cells to identify fundamental limiting factors of solar cell efficiency.
- Development of a low-cost method of converting wastewater to potable water.
- Creation of a cancer therapy that specifically targets only the cancer cells, potentially eliminating the side effects of traditional cancer treatments and increasing drug potency.
- Developing a model of a beating heart by using fluid mechanics to derive equations that naturally handle the changing shape of the heart to study cardiac arrhythmias.
- Designed an efficient and inexpensive method for detecting landmines.
- Developing an affordable arsenic water filter and test that is exponentially cheaper than current methods.
- Developed algae as an effective oil source for biodiesel.
- Created an algorithm that automates the diagnosis of bladder cancer.
- Developed a new drug delivery method to increase the efficiency of chemotherapy treatments, thereby controlling tumors in areas where surgery is not an option.

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