NOAH GALLANT

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EDUCATION

Amity Regional High School Class of 2015
Woodbridge, Connecticut 06525

Columbia University Class of 2019
New York City, New York 10027

INTERNSHIPS/VOLUNTEERISM

Nautilus Magazine, New York, NY, 2015-present
Technology and Development Intern

Nautilus is a monthly print and web magazine whose articles "combine the sciences, culture and philosophy into a single story told by the world's leading thinkers and writers." The magazine won the 2015 National Magazine Award for General Excellence in the category of Literature, Science, and Politics and the 2015 National Magazine Award for Website.

Projects:

- Designing and developing interactive web applications for articles.
- Assisting development of internal deployment and organizational software.

Design for America, Columbia University/Barnard College, New York City, NY, 2015- present
Director of Operations and Finance

Design for America is a collaborative learning environment where design, computer science, and engineering are used to develop products and services to have positive social impact. The Director of Operations and Finance role consists of managing resources for all of the teams within the studio, creating internal systems for optimizing the design process, and teaching the intricacies of bringing projects to implementation.

Projects:

- Designing and developing a social media campaign to help promote self-confidence in pre-teens through content such as Q&A's with college students, and relatable or inspiring television shows or media.
- Designing a programming language and accompanying drag-n-drop editor for elementary school students in order to explain, and make tangible, concepts in computer science.

Bonde Artificial Heart Lab, Yale School of Medicine, New Haven, CT, 2013- 2015
Lab Assistant

This role in the Bonde Artificial Heart Lab consisted of projects in computer science and electrical engineering to improve ventricular assist devices.

Projects:

- Designing and developing an integrated circuit board and iOS application for remote monitoring of artificial hearts
- Developing a machine learning algorithm for detecting anomalies in real-time patient data
- Developing an integrated chip and software to adjust artificial heart pump motor speed based on patient's real-time vitals.

United States State Department, Singapore/Malaysia, 2013
American Youth Leadership Program, Youth Leader

American Youth Leadership Program with Malaysia and Singapore in conjunction with the U.S. Department of State, Bureau of Educational and Cultural. The program offered a virtual and international exchange experience that exposes students and educators to U.S. – Singapore and U.S. – Malaysia.

Center for Research on Interface Structures and Phenomena Education and Outreach (CRISP EO), Yale University, 2012 – 2014
Program Leader, Volunteer

Through a volunteer program affiliated with Yale University, high school students participating in CRISP Education and Outreach travel to local elementary schools giving demonstrations of different scientific principles in fun, interactive presentations.

COMPUTER SCIENCE – PROGRAMMING EXPERIENCE

Fluent in the following languages: Java, PHP, HTML5, CSS3, JavaScript (jQuery, Ember, Angular), Python (PyBrain, Pystan), Objective-C, Swift, Arduino, C
Developed applications/extension for: OS X, iOS, Windows, Google Chrome, Safari, Web

A complete list of developed applications available upon request

COMPUTER FLUENCY

Well versed in the use of the following computer programs/services/architectures:

Design	*Development/Database*	*Git*	*Deployment*
Adobe InDesign	Eclipse	Github	Heroku
Adobe Photoshop	XCode	Bitbucket	AWS
Adobe Illustrator	Atom (Github)		- EC2
Sketch	Arduino		- EB
Pixelmator	PostgreSQL		- RDS
InVision	MySQL		LAMP/MAMP
AutoCAD			

PUBLICATIONS

Gallant, N., Giebisch, D., Bonde, P., (2015). iOS Based App for Control and Communication of a Wireless LVAD. Paper presented at American Society for Artificial Internal Organ Conference, Chicago, Illinois, June 26, 2015.

For more information, see attached abstract.

Gallant, N., (2016). Deciphering and Rethinking Neural Networks. Selected for publication as feature article in Columbia Science Review, Spring 2016.

Article examines re-structuring the architecture and processes of a neural network to better model anatomical systems.

SCIENCE – RESEARCH AND AWARDS

*For complete information on the research conducted, see attached abstracts.

"iOS Based App for Control and Communication of a Wireless LVAD" 2015

Selected for Presentation – American Society for Artificial Internal Organs Conference, 2015

1st Place, Computer Science Category
1st Place, Physical Science Projects – Connecticut Science & Engineering Fair

1st Place, Physical Science Projects – Southern Connecticut Invitational Science & Engineering Fair

Mentor: Dr. Pramod Bonde, Yale University

"Construction of a Renewable Energy Generator from Recycled Materials" 2014

2nd Place, Individual Physical Science Category – Southern Connecticut Invitational Science & Engineering Fair

Selected for Oral Presentation – Junior Science and Humanities Symposium

iOS Based App for Control and Communication of a Wireless LVAD

Noah Gallant
Daniel Giebisch

A left ventricular assist device (LVAD) is a heart pump device that maintains the cardiovascular system in cases of severe heart failure. Recently, a wirelessly powered LVAD has been developed that increases patient mobility and eliminates infection risk as a result of the introduction of wires traveling from the device to an external control module. Unfortunately, the new circuitry does not yet include external monitoring or control of the wireless LVAD. Additionally, LVADs utilize a continuous flow mechanism that does not account for changes in a patient's heart rate, leading to cases of ventricular collapse. The focus of this research was to combat both issues by developing new circuitry and software that controls the LVAD's speed based on ECG signals and pairs the pump to a mobile device. To begin the project, research was done to find power-saving and space-efficient electronic components. Next, a physical system was designed to combine ECG monitoring, motor control, and Bluetooth signaling. Then, the circuit board and mobile application were coded to send, receive, calculate, and display information. Finally, the new LVAD system was stress-tested for reliability. The mobile application successfully receives, analyzes, and controls the power use of the wireless LVAD. Additionally, ECG leads send signals that are interpreted to regulate the heart pump speed based on heart rate, reducing risk of a collapsed ventricle. This complete system demonstrates the possibility of complex, sensor-based, mechanical medical devices that can be easily monitored and controlled by patients and physicians via mobile devices. Research was completed independently within Bonde Artificial Heart Lab in the Yale School of Medicine.

Construction of a Renewable Energy Generator from Recycled Materials

Noah Gallant

Over a billion people in the world live without electricity; many of these people live in isolated communities, which would benefit greatly from having access to power. However, importing electricity or fuel would be difficult and costly, and solar panels and micro wind turbines are too expensive and nearly impossible to create in a developing country's environment. This project utilizes a new form of wind power, called a windbelt, to create a renewable energy generator that could be reproduced in the developing country's environment from recycled materials. A windbelt consists of an aeroelastic ribbon vibrating in the wind, moving magnets near or in a copper coil, thus generating electricity. The recycled windbelt's design features a packing tape ribbon suspended by two blocks of any material. The ribbon is attached to gears from a crank flashlight or radio, which provides a generator and electrical storage system. Results show that the system has a recharge time of approximately four minutes in 8 mph wind and can power a lighting system for around four hours. The generator additionally scales based on the availability of resources in the area, providing the potential to power more complex energy needs.