Initial Report

Last Modified: 03/01/2017

1. Name (first and last)

Text Response

Daniel Wilkin

Statistic	Value
Total Responses	1

2. VT Email

Text Response

dwilk93@vt.edu

Statistic	Value
Total Responses	1

3. Contact Phone

Text Response

540-797-7568

Statistic	Value
Total Responses	1

4. Essay (up to 500 words): “What do you want to get out of this experience?”

Text Response

As a Biological Systems Engineering student, I have had the opportunity to gain a basic understanding and knowledge of the importance statistics and programming have on the field of engineering. The first thing I'd like to get out of the program is diversification of my experiences and skill set I currently possess in order to have greater knowledge and understanding of fields I may not necessarily get to experience in the core curriculum of my education. Through the major of Biological Systems Engineering, we learn about, as stated in the name, systems throughout the biological world. That can entail tiny protein structure manipulation on a molecular level, up to epidemiology of E. Coli in the New River, which spans across multiple states. No matter the size of the system being studied, statistics and data collection play a large role in the system. Through the Data Science for the Public Good program, I would have the ability to further my knowledge of data collection, analysis, and manipulation which I could later translate to my career in engineering. For example, learning about emergency alerts in Arlington County would allow me to apply principles I learned during a project with DSPG to projects I work on in the future. I would like to learn more about data collection, analysis, and manipulation in the DSPG program to enhance and expand my knowledge and experiences with large amounts of data for use in my future endeavors. In the working world today, almost all projects are completed using a collaboration of people from various backgrounds in order to confront a project from all perspectives. If granted a position within DSPG, I would look forward to the opportunity to work with fellow undergraduate students, graduate fellows, and faculty from multiple disciplinary backgrounds. Working with such diverse groups allows for collaboration and discussion that would not typically occur without it. I would have the ability to learn from statisticians, computer scientists, and others to gain knowledge of fields I would otherwise not be able. Working in teams is a critical skill to have, and my time at DSPG would further enhance my skill set by working within diverse groups to accomplish one goal. I also look forward to the opportunity to further my knowledge of statistics, computer science, data analytics, and many other fields through DSPG. If granted the opportunity to work with the Data Science for the Public Good program, I would gain valuable experience and understanding of fields I potentially wouldn't learn about through my major, as well as working in diverse teams with people from multiple backgrounds. Having the opportunity to work with DSPG would supplement my current skill set and further prepare me for future opportunities in the work force. Not only do I hope to gain from this experience, but I also hope to lend my knowledge and strengths to help solve the problems within the communities with whom we work.

Statistic	Value
Total Responses	1

5. Essay (up to 500 words): "Please describe any previous research experience and/or work experience you may have.”

Text Response

Most recently, I worked in the Pediatric Medical Device Institute, led by Dr. Andre Muelenaer, MD. My team's goal was to design a pediatric resuscitation device for use in third world nations such as Malawi, and Rwanda. Hospitals and clinics in these nations are much different than here in the US; they do not always have access to modern equipment, or technicians for operation and repair. In some situations, hospitals do not have electrical power running at all times. Faced with this and other challenges, we challenged were to design a resuscitation device for infants that didn't rely on electrical power, was easily constructed and repairable by anyone, built with parts readily available in the region, and utilizing a budget of no more than $50. Our device had a positive pressure propulsion system, and a negative pressure suction system. The device was constructed out of a five gallon paint bucket, and used a self-constructed PVC piping system that acted as a pump for both the propulsion and suction system. Working on this project required creativity due to parameters placed on the project. During my time with PMDI, I learned how to think outside of the box, work in collaboration with a small team, and the importance engineering methodology is for a successful project. It was also an important learning experience in working with diverse people and cultures. My other research experience included working at the Nutritional Immunology and Molecular Medicine Laboratory, under the guidance Dr. Josep Bassaganya-Riera. My main task while working in this lab was to assist graduate students and PhD candidates on research projects focused on Inflammatory Bowel Disease. I assisted in all facets of the lab, from maintaining lab equipment, and working extensively with lab mice, to extracting organs from mice during necropsies. I helped manage the mice colony, which at points, had over 600 mice at one time. I was in charge of genotyping the mice in order to classify which mice were to be used with different types of experiments. On experiment days, I assisted with proper euthanasia techniques of the mice, and with cell collections of different organs. I was also the manager of multiple rooms for maintenance/upkeep, and kept inventory of all lab equipment. After experiment days, I observed data collection from organs of mice, and the analysis in relation to the therapeutic we were testing at the time. My experience at NIMML allowed me to work within interdisciplinary teams that I wouldn't have the ability to do otherwise. I learned the importance of management within a lab to operate at its highest efficiency. Given that the lab was so large, I learned how critical communication among individuals can be in order for an experiment to run smoothly. Overall, my experience at NIMML helped reinforce the principles of earnest work, time management and efficiency, and the ability to collaborate among people with differing thoughts as how to complete tasks.

Statistic	Value
Total Responses	1

6. In Fall 2017 you will consider yourself to be a:

#	Answer	Bar	Response	%
1	Freshmen Undergraduate Student		0	0%
2	Sophomore Undergraduate Student		0	0%
3	Junior Undergraduate Student		0	0%
4	Senior Undergraduate Student		1	100%
	Total		1	

Statistic	Value
Min Value	4
Max Value	4
Mean	4.00
Variance	0.00
Standard Deviation	0.00
Total Responses	1

7. What degree(s) and major(s) are you pursuing?

Text Response
BS in Biological Systems Engineering

Statistic	Value
Total Responses	1

8. List any Minors you are pursuing.

Text Response
Biomedical Engineering

Statistic	Value
Total Responses	1

9. List any honors and/or awards received:

Text Response
James Reed Scholarship, Circle K International, Peter H. Fitzgerald Scholarship Endowment, BSE: Jim & Elizabeth Lillard Scholarship Endowment, BSE: Dean's List- Spring 2014 to Spring 2016, Eagle Scout

Statistic	Value
Total Responses	1

10. Please indicate which position you are interested in:

#	Answer	Bar	Response	%
1	For pay		0	0%
2	For VT credit (you are responsible for contacting your department to obtain advisor approval for research credit. This form should be submitted to BI once you have been matched.)		0	0%
3	either for pay or VT credit		1	100%
	Total		1	

Statistic	Value
Min Value	3
Max Value	3
Mean	3.00
Variance	0.00
Standard Deviation	0.00
Total Responses	1

11. Please rank in order of preference which labs you are interested in:

#	Answer																	Total Responses
1	Mathematical Biocomplexity Laboratory	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2	Network Dynamics and Simulation Science Laboratory	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3	Nutritional Immunology and Molecular Medicine Laboratory	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4	Social and Decision Analytics Laboratory	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5	Biochemical Networks Modeling Group	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
6	Dickerman Research Group	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7	Epigenomics and Computational Biology Laboratory	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8	Hoeschele Research Group	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
9	Michalak Research Group	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
10	Capelluto Research Group	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
11	Cimini Research Group	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
12	Finkielstein Research Group	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
13	Hauf Research Group	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
14	Kojima Research Group	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
15	Data Science for the Public Good Summer Program	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
30	Metagenomics: Environmental Genomics and Informatics Summer Program	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-

Statistic	Mathematical Biocomplexity Laboratory	Network Dynamics and Simulation Science Laboratory	Nutritional Immunology and Molecular Medicine Laboratory	Social and Decision Analytics Laboratory	Biochemical Networks Modeling Group	Dickerman Research Group	Epigenomics and Computational Biology Laboratory	Hoeschele Research Group	Michalak Research Group	Capelluto Research Group	Cimini Research Group	Finkielstein Research Group	Hauf Research Group	Kojima Research Group	Data Science for the Public Good Summer Program	Metagenomics: Environmental Genomics and Informatics Summer Program
Min Value	5	3	10	2	8	11	6	12	13	14	9	7	15	16	1	4
Max Value	5	3	10	2	8	11	6	12	13	14	9	7	15	16	1	4
Mean	5.00	3.00	10.00	2.00	8.00	11.00	6.00	12.00	13.00	14.00	9.00	7.00	15.00	16.00	1.00	4.00
Variance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standard Deviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Responses	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1