

Resume of Vishnu Murthy

Contact Information

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Summary

I am a junior at Thomas Jefferson High School for Science and Technology. I am interested in both Computer Science and Biomedical Engineering/laboratory research. I have experience in algorithms, programming with Object Oriented languages including Java and Python and web development technologies. I have actively participated in many Computer Science competitions including ACSL, FIRST Robotics. I have also done many laboratory research projects involving Artificial Intelligence and Bioinformatics and competitions and Science Fairs at Middle and High school levels.

Education

Thomas Jefferson High School for Science and Technology (TJHSST) - Student

Graduating in June 2019

I attend the nationally-accredited Thomas Jefferson High School for Science and Technology governor's school. TJHSST is No.1 ranked High school in science, technology, engineering, and math in the country.

Areas of Interests

- **Computer Science** - Artificial Intelligence, Algorithmic Programming, Web Development, Systems, Applied Mathematics
 - Programming Languages - Java, Python, C, HTML, HTML5, Javascript
 - Relevant Courses - AP Computer Science A with Data Structures, Artificial Intelligence (post AP-CS), Mobile/Web Application Development (post AP-CS).
- **Biomedical Engineering** - AP Biology
- **Robotics and Electronics** - Design & Technology

Awards and Achievements

- **Test Scores** - SAT (1540, Math: 800, Reading: 740), Math Subject Test - 800, Chemistry Subject Test: 780
- **Catholic University of America** - Research Intern
- **Jefferson Underclassmen Multidisciplinary Lab** - Researcher
- **Conrad Spirit of Innovation** - Semifinalist
- **IEEE Conference at Princeton University** - Presenter and Author
- **Givology Nonprofit Organization** - Software Intern
- **Kaveri Youth Committee Service Organization** - President
- **BioCode Bioinformatics Hackathon** - Organizing Committee
- **HackTJ** - 2nd Place Palantir Social Impact Award
- **FIRST Technology Challenge** - 2nd Place State Champion, East Coast Super regional Qualification
- **Technology Student Association** - National Competitor, Placed in various events (below), Treasurer, Parliamentarian
- **American Computer Science League** - Top 10 Team in Nationals
- **Science Cosmos** - Program Developer

Experience

Catholic University of America - Research Intern

August 2016 - September 2016

- During the summer of 2016, I was offered an internship at the Integrated BioMicroFluidics (iBMF) Lab in the Mechanical Engineering department of Catholic University of America. The internship included working on experimental procedures, calculation and manipulation of mathematical formulas, and the lab's research papers. The internship was an unforgettable and enriching experience because not only was I able to learn about the field of Microfluidics (including its vast applications to multiple fields of science), but I also had the opportunity to develop and refine the skills required to pursue a career in both laboratory research and applied mathematics.

Jefferson Underclassmen Multidisciplinary Laboratory (JUMP Lab) - Researcher September 2015 - Present

- The JUMP Lab is a highly selective lab in our school that aims to provide a research environment for underclassmen. Last year, I worked on a project called "The Effect of Various Factors on the Mixing of a PDMS Microfluidic Device" where I researched the most effective method of inducing mixing in a Microfluidic chip using fluid mechanics laws and calculations. I submitted my project to the Intel Science Fair (where I won the honorable mention award) and presented my research at several research conferences and symposiums

(including the tJSTAR research symposium in our school). I am currently working a project that uses neural networks and other machine learning algorithms to predict myocardial infarctions.

Conrad Spirit of Innovation Challenge - *Semifinalist* Present

- I was recently announced as a semifinalist of the Conrad Foundation Spirit of Innovation Challenge. My team developed an innovative solution to a problem among peripheral neuropathy patients called the "TeCNail".
- Description of TeCNail: Over 42 million people suffer from peripheral neuropathy: the deterioration of the nerves in the peripheral nervous system. A symptom of peripheral neuropathy is a delayed response to a high temperature, meaning that if a patient with peripheral neuropathy inserts their finger into a high temperature environment, their finger cannot detect this temperature, which leads to burns and ulcers in many patients. Using cutting edge technology and electronics, the TeCNail solves this problem by alerting patients if their finger enters an unsafe temperature range.

IEEE Conference at Princeton University - *Presenter and Author* March 2017

- I wrote a scientific research paper for the TeCNail product and published in the IEEE Xplore Digital Library: <http://ieeexplore.ieee.org/document/7910256/>
- I presented this research at the IEEE Conference at Princeton University in March 2017

Givology Nonprofit Organization - *Software Intern* March 2017 - Present

- I am a software development intern at the Givology organization, which is a nonprofit organization dedicated to promoting education in underprivileged communities around the world. As a developer, I have had the opportunity to work on many interesting software development projects, such as front-end development, data processing, and server management. One project that I am currently working on is our own mobile application, in which valuable data about user donation needs to be wrangled and modeled so that financial donation projects can be made for future years.

BioCode Bioinformatics Hackathon - *Organizing Committee* February - April 2017

- I was on the organizing committee for the BioCode Bioinformatics Hackathon hosted by the TJHSST Bioinformatics Society. This hackathon had over 200 participants from many different schools, middle and high school. I was in charge of assigning teams, registration, organizing presentations and workshops for the participants, and awards compilation. This position was incredibly demanding, but a rewarding experience as I learned many valuable skills necessary for effective leadership and organizational skills.

Hack TJ - *2nd Place Palantir Social Impact Award* March 2017

- My team developed a Facebook messenger bot that updates users with current political news and used sentiment analysis to find political alignment. We won the 2nd Place Social Impact Award and had the chance to speak with a lead developer at Messenger.

Technology Student Association - *School Treasurer, Regional Parliamentarian, & National Competitor* September 2015 - Present

- Leadership Position: Treasurer (School), Parliamentarian (Northern Virginia)
- Technology Student Association (TSA) is an competition for individuals interested in science, technology, engineering, and Math. I have competed against hundreds of students and won in many events in TSA. The following is a list of awards that I have received from the regionals, states and national level.
- Regionals: Extemporaneous Speech - 3rd place
- States: Geospatial Technology 5th place, On Demand Video - 3rd place, Software Design - 3rd place
- Nationals: Software Design - 6th place
 - In the software design challenge, my team and I developed an online-offline interface computer program which helped students organize their classwork and track homework assignments. The project won 6th place out of hundreds of other projects from around the nation.

FIRST Technology Challenge - *Super regional Finalist and Competitor* September 2015 - April 2016

- Last year, I competed in the First Technology Challenge (FTC) competition. My team and I developed and programmed (both autonomous and remote controlled) robot which competed against other robots in an on-demand robot competition.
- Awards: Our won the 2nd place Inspire Award (Overall Award), 2nd place Systems Control Award, the 2nd place Rockwell Collins Innovate Award, and the 3rd place Community Outreach award at the Virginia State tournament. We qualified for the extremely competitive super regional tournament in Pennsylvania, competing against teams from the East Coast.

American Computer Science League - *All Star National Competitor* August 2013 - September 2016

- I have competed in the American Computer Science League, a competition that consists of multiple rounds of programming and theory-based testing. Every year that I have competed in ACSL, my team has placed in the Top 10 and qualified for the All-Star competition.

Computer Web Development Club (Dev Club) - *Developer* September 2016 - Present

- I am a developer in our school's CS Web development club. In the club, I have worked on many unique programming projects using many different web development softwares and packages.

Other Activities and Interests

- I am also an active competitor in the following clubs:
 - Model United Nations - International Relations and Public Speaking
 - Senior Computer Team - Algorithmic Programming
 - IEEE Member
 - Boy Scouts - Life Scout