NAVEEN DURVASULA

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EDUCATION

Montgomery Blair High School - Silver Spring, MD; GPA: 4.0/4.0   **Class of 2019**
> Coursework includes: Linear Algebra, Analysis, Analysis of Algorithms, AP Chemistry, Organic Chemistry, Magnet Physics, Optics, Quantum Physics, Magnet Biology, Magnet Earth Space Science, Principles of Engineering

Takoma Park Middle School - Takoma Park, MD; GPA: 4.0/4.0   **Class of 2016**

SKILLS

Software: LaTeX • Python • Java • UnityJS/C# • HTML/CSS • JavaScript/jQuery • PHP/SQL • ReactJS • C++ • C#
Operating Systems: Android • iOS • Windows • MacOS • Linux/Unix • Raspbian • Android Things
Tools: Visual Studio • IDLE • Unity3D • Eclipse • IntelliJ • Arduino • GitHub • Inventor/Blender (CAD) • Wireshark • Expo
Language: Proficient in written and spoken Spanish; 6 years experience

RESEARCH

General AI to Manipulate the Behavior of Intelligent Agents
UMD Department of Computer Science; Prof. Aravind Srinivasan, Prof. John Dickerson   **Jul 2017 - Present**
- Developing a general method to play optimally in any imperfect information game
- Includes a general method for finding the optimal policy for any on-demand agent in a Markov Decision Process

A Bayesian Optimization Approach to Estimating Expected Match Time and Organ Quality in Kidney Exchange
UMD Department of Computer Science; Prof. Aravind Srinivasan, Prof. John Dickerson   **Jun 2016 - Sep 2017**
- Created a quality metric for kidney paired donation, implemented a realistic kidney exchange simulator, and created a modified Bayesian optimization scheme to learn the output of the simulator
- One of four projects in the county to be accepted to the Intel International Science and Engineering Fair (ISEF)
- Received 1st place awards from the Washington Statistical Society and U.S. Department of Health & Human Services and 2nd place in the Computer Science category at the Montgomery Area Science Fair
- Awarded 2nd place by the AVASC Foundation at the International Science and Engineering Fair

The Muffin Problem
UMD Department of Computer Science; Prof. William Gasarch, Prof. John Dickerson   **Jun 2016 - Sep 2017**
- Used applied mathematics and optimization techniques to solve a fair division problem
- Invited presentation at the Joint Mathematics Meeting of the AMS and MAA

Analysis of Randomized Algorithms
UMD Department of Computer Science; Prof. Aravind Srinivasan   **Apr 2015 - Jun 2016**
- Studied concepts including probability theory, Bayesian statistics, game theoretic techniques, moments and deviations, sampling, tail inequalities, and martingales through the analysis of randomized algorithms

Developing and Evaluating a Novel Pathfinding Algorithm for Square Grid Graphs
Independent Research   **Sep 2014 - Mar 2015**
- Created a shortest path algorithm for square tessellation graphs, which is consistently more efficient than the A* algorithm and approximately 440 times faster than A* on sparsely populated graphs
- Received 1st place in the Computer Science category, 1st place from the Rockville Science Center and the MBHS Magnet Class of 2004, and the Robert H. Herndon Award from the Aerospace Corporation at the Montgomery Area Science Fair
- Awarded 1st place fair-wide and 1st place by participants' choice at the Herndon Memorial Science Fair

ACTIVITIES

Piano Student of Mrs. Batya Harel   **Aug 2004 - Present**

Currently working to perform the first movement of Beethoven's *Waldstein* and Schubert's *Trois Marches Militaires* (4 hands)

President, Co-Founder; MBHS Systems   **May 2017 - Present**

Founded a club to develop and release impactful products using advanced mathematics, currently working on a computationally-tractable system to model atmospheric dispersion from satellite imagery.

Driver, Mechanics, and Programming; FRC Team 449   **Sep 2015 - Present**

Primary driver for Montgomery Blair High School's First Robotics Team, attended the FRC World Championships in St. Louis

Member; MBHS Cybersecurity Club   **Sep 2015 - Jun 2017**

Applied packet tracing, binary exploitation, web exploitation, SQL injection, and debugging techniques for competitions
Part of the Capture the Flag (CTF) teams that placed 2nd at CryptoCTF, 3rd at SCTF, and 10th at LASACTF.

Member, by staff invitation; MBHS SysOps   **Sep 2015 - Present**

Network and systems administrator for MBHS, responsible for handling web projects by student clubs

Member; MBHS Computer Team   **Sep 2015 - Present**

Represent Montgomery Blair High School at competitions such as Pennsylvania Classic

Member, by tryout; MBHS Tennis Team   **May 2016 - Present**

Doubles player for the Montgomery Blair High School Tennis Team

PROJECTS

Hackathons

CADVR; HackUMBC: Winner - Best Tool for Developers   **Spring 2016**

Views any imported 3D .obj model in Oculus Rift VR environment mounted with a Leap Motion for viewing controls

IMUCAP; HackUMBC: Winner - Most Innovative Game   **Fall 2016**

An affordable low-latency motion capture system powered by 9-axis IMUs and a quaternion filter intended for VR gaming

FridgeSight; PennApps XVI: Winner - Hasura Special Prize   **Fall 2017**

Converts any existing fridge into a smart fridge

Games/Simulations

EDVR: A Cardboard VR rendering of Mt. Fuji for the classroom built autonomously with heightmap and satellite data	**2017**
VR Field 449: A virtual reality practice field for FRC games with different drive systems and robot physics	**2016**
Racing: A 3D racing game with active mesh deformation upon collision and AI that reroutes in real-time	**2015**
Animation: Created, rigged (added a bone structure), and animated a 3D character	**2015**
3D Browser: A complete web browser in a playable 3D environment built using converted Chromium packages	**2015**
Tanks: Created a tank game and hosted it on a multiplayer server made from scratch	**2014**
ND Race/Flight Sim: A set of two action games sold for the benefit of Pratham USA, an education foundation	**2013**

Web Development

Personal Website: A static homepage made using jQuery and Bootstrap with a custom content generator	**2017**
MBHS Systems: The homepage for MBHS Systems, a research/entrepreneurship club that I founded	**2017**
Difference Makers: Wrote the front end and internal management system for a service organization	**2015**
Book Catalog: A piano book cataloging system built with PHP and SQL for my piano teacher	**2010**

Other Projects

Handwrite: Handwriting imitation synthesis and transcription machine for candidate Samir Paul's campaign	**2017**
Car: Controlled an RC car using a solenoid relay and a microcontroller	**2016**
LAN Scanner: A LAN map for network security, complete with hostnames, IP addresses, and MAC addresses	**2015**
Compiler+GUI: A compiler that handles strings, booleans, floats, loops, and if statements with a basic GUI IDE	**2014**
Linux Server: A Linux web hosting server built from scratch	**2014**

AWARDS

Second Place; AVASC Award; Intel ISEF	**2017**
International Science and Engineering Fair Award; Montgomery Area Science Fair	**2017**
First Place; Washington Statistical Society Award; Montgomery Area Science Fair	**2017**
First Place; United States Department of Health and Human Services Award; Montgomery Area Science Fair	**2017**
Second Place in the Computer Science Category; Montgomery Area Science Fair	**2017**
Hasura Special Prize; PennApps XVI	**2017**
Innovation in Control Award sponsored by Rockwell Automation; FRC Team 449; Greater DC Event	**2017**
District Event Finalist; FRC Team 449; Central Maryland	**2017**
District Championship Finalist; FRC Team 449; Chesapeake	**2017**
Second Place; CryptoCTF	**2017**
Third Place; sCTF	**2017**
Most Innovative Game; HackUMBC	**2016**
Best Tool for Developers; HackUMBC	**2016**
Tenth Place; LASACTF	**2016**
Broadcom Masters Competition Award; Montgomery Area Science Fair	**2015**
Aerospace Corporation Robert H. Herndon Award; Montgomery Area Science Fair	**2015**
First Place in the Computer Science Category; Montgomery Area Science Fair	**2015**
First Place; Rockville Science Center Award; Montgomery Area Science Fair	**2015**
First Place; MBHS Magnet Class of 2004 Award; Montgomery Area Science Fair	**2015**
First Place Award Fairwide; Herndon Memorial Science Fair	**2015**
First Place; Participant's Choice Award; Herndon Memorial Science Fair	**2015**
First Place Statewide and Internationally; Purple Comet Mathematics Competition	**2014**
Third Place Award; American Mathematics Competition	**2014**
National Capital Astronomers Award; Montgomery Area Science Fair	**2014**
Friends of Agricultural Research Award; Montgomery Area Science Fair	**2014**
Fifth Place Award; American Computer Science League	**2014**
Second Place Statewide and Honorable Mention Internationally; Purple Comet Mathematics Competition	**2013**
Second Place in the Computer Science Category; Montgomery Area Science Fair	**2013**
American Nuclear Society Award; Montgomery Area Science Fair	**2013**