# Dhruv Patel

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## Professional Experience

- Research Intern at **University of Maryland, College Park, A. James Clark School of Engineering**, Fischell Department of Bioengineering, Laboratory for Control in Mechatronic, Biological, and Clinical Applications
  - Assembled microfluidic devices for magnetic nanoparticle testing in variable tesla fields
  - Designed (using Autodesk Inventor) and printed Inner Ear (Cochlea) Model for enhanced particle perception, aggregation mechanics, and magnetic configuration
  - Analyzed variable surface charge by controlling experimental chemicals in PLGA/PVA Magnetic Nanoparticles and tested using aggregation kinetics, zeta potential, and other physical properties
  - Worked directly with Autodesk Inventor (CAD) to design medical device for proper injection

- Medical Unit at Civil Air Patrol, United States Air Force Auxiliary, Tri-Wing Encampment 2014
  - Gained valuable clinical experience providing emergency assistance to attendees
  - Directly monitored the health and safety of all cadets in the assigned squadron at all times.
  - Maintained Cadet Medical Records

- Howard Hughes Medical Institute, and UMCP College of Computer, Mathematical, and Natural Sciences: Biomedical Science Internship
  - Extract, digest and analyze DNA sequences using electrophoresis
  - Use RNAi (interference) to silence a genome (Particularly the presence of Green Fluorescent Protein)
  - Used procedures to slice a brain, and reconstruct it on advanced electronic modeling software (In order to take precise measurements, and calculations)

- Walter Reed Army Institute of Research, Gains in the Education and Mathematics
  - Used Proposed, designed, and built a high torque-powered crane that could lift large amounts of weights.

- Aristotle Circle Peers: Brand Ambassador
  - Created innovative ways to recruit new clients and employees at the community, and high school level

- Sea Perch Capstone, Annapolis Naval Academy Research Center:
  - Used circuitry and engineering to build and design a remote-controlled submarine to perform tasks

## Extracurriculars

- Civil Air Patrol (United States Air Force Auxiliary):
  - Awarded "Jimmy Doolittle" Achievement 7, Promotion to the ranks of Cadet Senior Master Sergeant
  - Participated in the United States Air Force Auxiliary Honor Guard
  - Completion of 5 orientation flights rendering advanced knowledge of small aircraft operation
- First Robotics
  - Designed multi-thousand dollar robot using electronic modeling software
- Honor Societies
  - National Junior Honor Society, National Honor Society, National Science Honor Society

- Appointed to the Executive Board on Maryland Youth Advisory Council (MYAC) by Governor Martin O' Malley
  - Recommended legislative proposals such as implementing college readiness programs, increasing HIV and teen pregnancy awareness programs across the state

- Provided annual reports to Governor, and General Assembly
- Initiated and analyzed survey data about college readiness from students across MoCo

- School Government Association: Vice President (3 Years)
  - Utilized strategic planning and logistic skills to plan and hold events that tripled spending budget over period of 1 year

- Captain of Poolesville Debate Team:
  - Utilized public speaking, and critical thinking skills to lead 30 pairs to win more than a majority of debates on international diplomatic topics

- Participated in Mock Trial
  - Developed organizational, and research skills while having to utilize public speaking strategies to persuade a judge

## Honors and Awards

- Awarded National Honorable Mention for Volunteer Work in Source America Designed Challenge
- United States Air Force Auxiliary: Honor Mission Support Non-Commissioned Officer
- Science Montgomery: Received 1st prize from Rotary Club of Rockville at Science Montgomery
- Science Olympiad:
  - 2nd place in Fermi Questions at Regional Championships in 2013
  - 2nd place in Microbe Mission, 3rd in Dynamic Planet, 3rd in Experimental Design at State Championships in 2012
  - 3rd place in Ecology at State Championships in 2011
  - 2nd place in Microbe Mission at Regional Championships in 2011
- Debate Team: Entered playoffs (Top 32) with a competitive record
- Kumon: Achieved rank of 298 out of 16,119 students in Advanced Mathematics (Top 2 percentile)

## Skills

- Software Skills: Autodesk Inventor, CAD, ArcGIS (Geoinformational Data Systems Analysis), Robo-Lab
- Computer Languages: Visual Basic, GUI-Based
- Research Skills: Research Paper Synthesis, Data Analysis

## Education

- Poolesville High School, a Whole School Magnet (Ranked 7th STEM School in the Nation, and 1st overall in Maryland)
  - Global Ecology (Magnet) Studies Program
  - Very rigorous and provides students with the knowledge and understanding of the scientific, cultural, social, political, economic, and technological conditions that affect the quality of life on our planet.

- Parkland Magnet Middle School for Aerospace Technology
  - Outstanding achievement in: Comparative Planetology and Orbital Mechanics, Mission Planet Earth, Manned Space Exploration, Introduction to Engineering Design