

Curriculum Vitae

Evan L. Kramer

10132 Community Lane
Fairfax Station, VA 22039

Education:

- University of Maryland, College Park - Aerospace Engineering and Physics
- Lake Braddock Secondary School, Burke VA, as a Senior, cumulative GPA: 4.38

Academic Enhancement and Online Courses:

- Selected and successfully completed in junior year, the Virginia Aerospace Science and Technology Scholars (VASTS) Online Course, December 2014 to May 2015.
- Johns Hopkins University Center for Talented Youth (CTY Online) courses:
 - Advanced Honors Algebra II – successfully completed 2011-2012.
 - Advanced Web Design – successfully completed 2012-2013.
- Kumon of North America Math Enhancement and Reading Program; completed all 14 Math achievement levels over 11 years - one of only 87 out of 130,000 students in North America to do so.

Honors and Awards: Academics

- National Honor Society President, 2015-2016; Lake Braddock Secondary School, Burke, VA
 - Organized locker cleanout of entire high school. Useable items were donated to needy children in Haiti.
- National Honor Society Member (2013-2014), and Junior Class Representative Officer (2014-2015); Lake Braddock Secondary School, Burke, VA
- Fairfax County Regional Science and Engineering Fair, 2015
Project Title: Asteroid Mining: The Next Generation.
My project focused on interstellar transit for spacecraft to determine the best orbital parameters for a transfer orbit. I devised curves for specific impulse and mass flow rate variations to monitor the efficiency of an idealized propulsion system. I performed surface area optimization calculations for solar electric propulsion engines and integrated asteroid transportation methods into the design of a mining spacecraft.
 - 3rd Place in 'Physics and Astronomy' category from the Regional Science and Engineering Fair, Fairfax, VA
 - Honorable mention from The Aerospace Corporation; Chantilly, VA
 - Honorable mention: The Massachusetts Institute of Technology (MIT) Club of Washington, D.C.
 - 2nd Place Award in category "Physics and Astronomy" from the Lake Braddock Secondary School Department of Science, Burke, VA
- Academic Excellence Award, 2013, 2014, 2015

Lake Braddock Secondary School, Burke, VA

- Fairfax County Regional Science and Engineering Fair, 2014
Project Title: Elementary Heavy Metal Lake Content.
My project focused on the heavy metal lake content of 4 local lakes to determine the overall health of these lakes. I measured the concentrations of Zinc, Copper, Iron, and Lead in lake samples using flame emissions atomic absorption spectrometer. I compared concentration data collected to the reported EPA allowable limits and conducted statistical analyses to determine the significance of my findings. I reported data to each lake's respective health monitoring personnel to help spur a restoration effort in lakes with statistically significant elevated metal concentrations.
My abstract and findings were published on the Northern Virginia Soil and Water Conservation District's newsletter and on its website.
 - 1st Place, Jean R. Packard Science Award from the Northern Virginia Soil and Water Conservation District (NVSWCD), Fairfax, VA
 - 3rd Place Award from The Federal Water Quality Association, Washington, DC
 - 3rd Place Award in category 'Environmental Analysis', Fairfax County Regional Science and Engineering Fair, Fairfax, VA
 - 1st Place Award in category 'Environmental Science, Lake Braddock Secondary School Science Fair, Department of Science, Burke, VA

- Fairfax County Regional Science and Engineering Fair, 2013
Project Title: Extraction Action.
My project focused on the differentiation between extraction methods to maximize yield of DNA samples collected from strawberries. Measurements were taken of both dry and wet DNA yield samples to determine the average weight variability between dry and wet DNA samples in octaploids. After analyzing results, a derivation for optimal DNA extraction methods from octaploids was deduced.
 - 3rd Place Award in category 'Molecular Biology', from the Fairfax County Regional Science and Engineering Fair, Fairfax, VA
 - 1st Place Award in category "Molecular Biology" from the Lake Braddock Secondary School Science Fair, Department of Science, Burke, VA

Honors and Awards - Community Service and Athletics

- Outstanding Performance and Dedication to Community Service Recognition Award from The Lake Braddock Parent -Teacher Association, 2013 and 2014 ; Burke, VA
- Outstanding Leadership Award from The Lake Braddock Parent -Teacher Association, 2012, 2013, 2014; Burke, VA
- Scholar Athlete Award, Lake Braddock Secondary School, Burke, VA, 2013, 2014, 2015
- Defensive Soccer Player of the Year, Athletic Department, Lake Braddock Secondary School, Burke, VA, 2014.
- Selected an 'All-Conference' 1st Team Soccer Player, 2015.

- Interviewed as the 1st place awardee in the High School Science Fair, and this was published in school newspaper, 2014.
- Selected by the Physical Education Department in Lake Braddock SS as Outstanding Athlete to make a presentation via School TV focusing on the 'No Texting and Driving' Campaign, 2013.

Clubs and Extracurricular Activities:

- Founder and President-The Lake Braddock Secondary School Astronomy Club, Fall 2015. Members meet monthly for presentations and discussion of astronomy-related topics and hold public outreach events. I coordinated an outreach program to local elementary schools in Fairfax County to encourage the pursuit of STEM fields, specifically astronomy (Fall 2015–Spring 2016). I contacted a number of elementary schools in Fairfax County, and my 1st presentation was at Sangster Elementary School where I (individually) presented to 5th and 6th grade students. I demonstrated using my own telescope, how telescopes work, presented astrophotography pictures I have taken, and talked about the field of astronomy and space exploration and showed students smart phone apps to identify stars and constellations in the sky. I also shared my experience and work I completed during the summer on a self-sufficient energy harvesting robot. I was asked to give more talks in the future by both teachers and students - this allowed me to introduce the Lake Braddock Astronomy Club to Sangster. We have volunteered at their science fair, sharing the joy of astronomy with the Sangster community in an effort to encourage the pursuit of STEM related careers. We have also taught fifth grade classes the basics of circuits and sound waves and plan to supplement more fifth grade lessons with demonstrations in the future. We also attend public observing nights held by the Northern Virginia Astronomy Club where we learn about astronomy from experienced astronomers.
- Team America Rocketry Challenge member, 2015-2016; one of 9 members working on the National launch competition to be held in May 2016.
- Northern Virginia Astronomy Club (NoVAC) member, Spring 2015 to present. Attend monthly membership meetings and seminars given by experts in the field, and participate in public outreach events.
- Key Club member, 2014. Helped lay wreaths at the Arlington National Cemetery for our fallen veterans.

Summer Camps:

- Aerospace Engineering Career Exploration Program
Rensselaer Polytechnic Institute, Troy, NY, 2014.
Learned the basics of airfoil and rotor design. I built model airplanes and tested them using wind tunnels on RPI's campus.
- Youth Conservation Camp at Virginia Institute of Technology (Virginia Tech), Blacksburg, VA, 2014.
Selected by the Northern Virginia Soil and Water Conservation District to attend a Youth Conservation Camp. I was awarded a partial scholarship for attendance as a result of winning the 1st place award at the Fairfax County Regional Science and Engineering Fair, 2014.

Laboratory Work Experience at The George Washington University

- Professor Adam Wickenheiser's Smart Systems Lab at the Department of Mechanical and Aerospace Engineering, The George Washington University, Washington, DC. Student Volunteer, Spring and Summer, 2015.
Project: I worked independently on an energy harvesting robot and wrote motion algorithms and integrated energy harvesting methods into the robot including thermoelectric pads, solar panels, and rechargeable battery storage. I also installed and calibrated infrared and sonar sensors to improve robot navigational functionality. I transferred the original code, written in Arduino coding language (C), to Python to improve readability of robot commands. In the end, a self-sufficient and self-driven robot was developed. For my contributions to this project, I am included as a co-author on a manuscript and a poster to be published in Spring 2016.
- Professor Mathew Kay's Lab in the Department of Biomedical Engineering, The George Washington University, Washington D.C., Student Volunteer, Summer and Fall, 2014.
Project: I was in charge of one of the lab research projects, which determined the Fluorometric spectral properties of the experimental dye, rh237, using a spectrofluorometer. I analyzed the emission spectra using computer software and created curves to indicate peaks in emission spectral fluorescence. My data and calculations were used later in studies to investigate cardiac action potentials of myocytes. In the end, I prepared a formal report on the emission spectrum of this voltage sensitive dye to be used by the lab in perfused heart studies.
- Professor Anthony-Samuel LaMantia's Lab of Molecular Biology at the Department of Pharmacology and Physiology, Institute of Neuroscience, The George Washington University, Washington, D.C., Student Volunteer, Summer 2013.
Project: Under the guidance of a pre-doctoral graduate student, I extracted DNA from rat brain cells, performed cloning, bacterial transformations, and Gel electrophoresis (sample and standard preparation). I analyzed experimental data and plotted graphs in preparation for scientific presentation.

Volunteering Community – Public Service

- Participant and Fundraiser in the Turkey Trot for Hunger – SOME (So Others Might Eat) 5K run, 2014, 2015 (I raised over \$800 with the team goal of \$1000 which was exceeded).
- Outreached to Lake Braddock students and families to donate Shoe Boxes filled with specified essential items to be gifted to men, women and children in the Washington, DC area through the charity, SOME (So Others Might Eat); I collected and delivered over 65 boxes. Fall-Winter 2015
- Coordinated Lake Braddock Locker Clean-out, June 2015; 4000+ lockers cleared and cleaned; collected any useable belongings and donated to children in Haiti.
- Initiated an outreach program to local elementary schools in Fairfax County to encourage pursuit of STEM, specifically astronomy (Fall 2015–Spring 2016). I contacted a number of elementary schools in Fairfax County, and my 1st presentation was at Sangster Elementary School where I presented to 5th and 6th grade students. I demonstrated using my own telescope, how telescopes work, presented astrophotography pictures I have taken, and talked about the field of astronomy and space exploration and showed

them smart phone apps to identify stars and constellations in the sky. I also shared my experience and work I completed during the summer on a self-sufficient energy harvesting robot.

- Volunteer at the nonprofit environmental organization, Earth Sangha, Springfield, VA; Conservation and ecological restoration of park grounds: 30 hours. Spring-Summer 2015 and Spring 2016.
- Volunteer in completion of an Eagle Scout project; Invasive species removal at South Run Recreation Center. Summer 2015, 8 hours
- Coach and mentor to children with special needs at the United States Youth Soccer TopSoccer Program; Annandale, VA, Fall 2013 & 2014. 20 hours.
I coached children soccer skills and helped build their confidence through the enjoyment of soccer.
- Student Class Representative to the Parent Teacher Association; Lake Braddock Secondary School; Burke, Virginia. 2013, 2014, 2015.
Conduct student surveys and present student issues of concern to the Parent-Teacher Association Board and School Principal. Helped pioneer the reinstatement of self-choice Bruin Block Study Hall for the 2015-2016 school year.
- Volunteer Tutor at Kumon Math and Reading Center; 2012; 40 hours. Springfield, VA
Tutored students ages 5-14 years in Math and Reading.
- Political Campaign Volunteer for a US Delegate, and a Virginia State Congressman; 10 hours. Springfield, VA. 2012.
Canvassed sections of Fairfax County for political surveys through phone calls and door-to-door surveys.

Paid Jobs:

- Tutor, Kumon Math and Reading Center; Summer 2013, Springfield, VA
Tutored students ages 5-14 years in Math and Reading.
- Lawn, garden care, and house-watch for neighborhood; Fairfax Station, VA 2012-present

Formal Presentations:

- As one of only a handful of students nationwide to complete all levels of the Kumon Math Enrichment Program, I was a featured speaker to an audience of more than 80 parents and children, sharing my experiences with the Kumon program and to encourage students to continue their learning offered by this organization, Burke, VA, Fall, 2015.
- To the Board of Directors of the Northern Virginia Soil and Water Conservation District; 2014, Fairfax County Government Center, Fairfax, VA. 1st Place Awardee of Regional Science Fair Project (Elementary Heavy Metal Lake Content).
- Presentation to undergraduate and graduate engineering students during volunteer internship at the lab of Professor Adam Wickenheiser, Department of Mechanical and Aerospace Engineering, The George Washington University. Summer 2015.
- National Honor Society Inaugural Speech, June 2015; and presided over the induction ceremony of new NHS members, Spring 2016.

- Presentation to 5th and 6th grade students at Sangster Elementary School encouraging the pursuit of STEM-related fields; Springfield, VA, Fall 2015.
- Provided oral reports regarding student issues brought to my attention through surveys I conducted to the Parent-Teacher Association Board and School Principal (2013, 2014, 2015).

Computer Skills:

- Experienced in Matlab, C, C++, Java, Arduino, Python, HTML 4.0, Microsoft Windows, Word, Office, Excel, Powerpoint.