

Avani Tara Bansal

OVERVIEW

Sharing an overview of my path so far to encourage and empower others to explore and pursue their academic, research, entrepreneurship, service, sports and creative interests. It is challenging to juggle it all, but with a little time management and a lot of passion, you can enjoy each step of the journey!

RESEARCH

Science & Engineering Research Center (SERC), The Potomac School Grades 10-12 8 hrs/wk for 39 wks
1 of 9 students selected in SERC. Investigate different scientific topics through lab experiments and projects, summarizing work in formal reports and presentations. Synthesized aspirin and used the Bradford Assay to quantify protein. Reviewed 100s of articles on prosthetic abandonment in amputees and numerous mechanical designs using PubMed. Summer '24 consulted biomedical engineers, doctors, prosthetists, and patients on research feasibility and gained 3D-printing proficiency at Rochester Institute of Technology (RIT). Spent summer '25 developing skills in Arduino coding and electric circuitry. Pivoted from rigid metal panels and built a novel, stretchable, self-adjusting silicone sleeve that inflates or deflates based on patient discomfort (arm interface pressure) via electrical circuitry. Collaborating with amputee military veterans to ensure prototype functionality and comfort. Participated in the Regeneron 2026 competition.

Research Fellow, RIT (NY) and George Mason University (VA) Summer 2024 & 2025 30 hrs/wk for 6 wks
Under guidance of Dr. Jade Myers, utilized RIT's AMPrint Center to 3D-print patient arm models and fabricate a soft, inflatable silicone bladder sleeve for upper-arm prosthesis. Mentored by Dr. Quentin Sanders at GMU's ImPoWeR Lab, built a pneumatic circuit for the silicone bladder to automatically adjust pressure ranges based on a patient's needs.

Student researcher, SCOOP Program at Walter Reed National Military Medical Center, Bethesda, MD
March 2024: 40 hrs/wk for 2 wks Summer 2024: 10 hrs/wk for 4 wks
Selected in the Student Clinical Observer Opportunities Program (SCOOP) in 10th grade. Observed radiologists, orthopedists, prosthetists, and biomedical engineers. Learned amputee care, physical rehabilitation, molding, and casting of prosthesis. Assisted fellows and co-published a Nuclear Cardiology research paper by performing literature search and creating images and tables.

Observer, National Institutes of Health and Walter Reed Military Medical Center. Grade 11 Aug & Dec. 40 hrs/wk for 4 wks
Shadowed Cardiologists and Radiologists, observed how Positron Emission Tomography and Computer tomography (PET-CT) scans are performed and assessed. Entered data into Excel for analysis, performed literature search, and created images and tables for research publication. Co-authored two publications 1) research article on PET/ CT imaging and Gallium-68 Dotatate scans 2) Research poster emphasizing the role of PET/CT imaging in diagnosing occult metastasis not detected by routine CT scans which was presented at the American College of Cardiology conference in April 2024.

ENTREPRENEURSHIP

The Creative Power, www.TheCreativePower.org March 2025 - Present 2 hrs/wk
Established an online initiative "The Creative Power" that celebrates the symbiotic power of art and science. Published original writings/blogs, designed and launched a website with informational content for youth-led creative ventures.

Inventor, Chrome Extension 'TermTruster', <https://termtruster.com/> January 2025 - Present 3 hrs/wk
U.S. Patent Pending (Provisional United States Patent and Trademark Office Application # 63/728,181,64, 2025)
Leangap Entrepreneurship Program Summer 2024 30 hrs/wk for 4 wks
The Indus Entrepreneurs (TiE) DC Program Grade 9 Spring 8 hrs/wk for 18 wks
Selected for TiE DC Program, conceived a web browser extension that simplifies online terms and conditions and led pitch as team's CEO. Won 3rd place (\$1000). Via Leangap Program, created an app extension prototype "InfoTruster" which was voted "Most Outstanding Company." Founded TermTruster LLC to develop a practical AI-powered Chrome browser extension utilizing a custom-built NLP API to demystify online agreements and simplify understanding of risks.

Founder "Derm Aware", <https://youtu.be/r5NCzGQdvjo> Summer 2023: 40 hrs for 2 wks Summer 2025 - Present: 2 hrs/wk
Received scholarship to attend Kode with Klossy's AI/ML program in Washington DC. Built an iOS app prototype "Derm Aware." Used machine learning image classification algorithms (XCode, Create-ML, Swift UI) to triage skin lesions mistaken for melanoma in varied skin tones and seek timely medical care. App demonstrated over 80% accuracy in correctly identifying skin lesions.

SERVICE

Founder & CEO, Everyone's Library, 501(c)(3) National Charity Organization Grade 8 - Present 16 hrs/wk for 48 wks
<https://everyoneslibrary.org/>, Instagram: <https://www.instagram.com/everyoneslibrarynonprofit/>

Promoting literacy and easy access to books by establishing 46 free, 24/7 libraries across the nation. Donated 4,600+ books resulting in 15,700 people gaining unrestricted access to reading materials. Fundraised \$28,000, crafted and installed libraries using recycled plastic. Mentoring 21 national youth chapters for broad outreach and long-term mission success. Design and manage the website using WordPress, organize fundraisers and book drives, and communicate with city leadership, school principals, and homeless shelters. Received multiple national and local news recognition (FOX5DC, WJLA/ABC7, Prince George's Community Television, Fairfax Times, McLean Living Magazine). <https://www.youtube.com/@EveryonesLibrary>

Girl Scout (GS) Ambassador: Troop #6769 Grade 6 - Present 2 hrs/wk for 48 wks
Silver Award (Summer 2021): 7 hrs/wk for 9 wks **Gold Award** (Summer 2025): 14 hrs/wk for 6 wks

Advanced marketing, social, and financial skills by selling GS products. Foster sisterhood and mentor younger scouts. In summer '25, taught an interactive 2-day math camp at William W. Hall Academy Title 1 school. Pre and post camp evaluation demonstrated exemplary improvement with the average pre-test scores increasing from 17.5% to 42.5% on the post-test, a 25-point gain, resulting in my curriculum being adopted as an annual camp. The highest GS honor (the Gold Award) was awarded to the project.

Volunteer, SAYVA (South Asian Youth Volunteer Association) Grade 9 - Present 1 hr/wk for 30 wks
Website Director and Editor-in-Chief, SAYVA Teens Grade 10 - Present 1 hr/wk for 30 wks

140-member youth-led service organization. Participate in leadership meetings, package meals for RISE Against Hunger, host fundraisers for the National Center for Children and Families shelter. As website director and editor-in-chief, maintain the website using WIX platform, publish blogs, and mentor younger volunteers.

Act to Change Asian American Pacific Islander and Smithsonian Partnership Grade 10 Sept - Dec 4 hrs/wk for 12 wks
 Selected as 1 of 30 Youth Ambassadors to combat bullying against Asian American, Native Hawaiian, and Pacific Islander (AANHPI) youth. Partnered with the Smithsonian Asian Pacific American Center to amplify AANHPI representation in digital spaces, writing and publishing a Wikipedia article on Minh Dang, a human rights activist.

Volunteer, World Culture Festival on the National Mall in DC Grade 10 August 2 hrs/wk for 4 wks
 Conducted email-based outreach and information gathering to help mobilize participation for the 4th World Culture Festival via SKY Campus Happiness, which brought 250K people to the National Mall, Washington DC.

WORK EXPERIENCE (PAID)

Apprentice, Infotek Consulting LLC August 2025 4 hrs/wk for 4 wks
 Researched Artificial Intelligence (AI) applications in government contracting and Enterprise Resource Planning (ERP) systems. Examined back-office challenges and AI's role in managing complex processes and automating error-prone tasks. Created a professional master slideshow presentation for company meetings.

Tutor, NOVA Piano (LLC) July 2025 - Present 2 hrs/wk
 Selected by piano teacher to independently tutor two students facing learning challenges. My student-focused lessons improved their playing technique, confidence, and resulted in rapid advancement through pieces in their method books.

Lead Apprentice (paid), Start to End Networks, LLC Summer 2024 & 2025 1 hr/wk for 8 wks
 Maintain website and create marketing brochures/presentations for an IT network company, improving their social presence.

SCHOOL CLUBS AND EXTRACURRICULARS

Leader, Fem N' Stem Club (103 members) Grades 9-12 2 hrs/wk for 35 wks
 Empower females to pursue science and engineering. Coordinate exciting STEM activities such as egg drop and bridge-making challenges, plan lower school events, organize activity stalls in local communities (McLean Project for the Arts), and distribute STEM kits to The Affordable Homes & Communities Nonprofit.

Leader, Investment Club (52 members) Grades 9-12 4 hrs/wk for 35 wks

Run weekly meetings, teaching investing strategies and market analysis. Present financial literacy programs at school assemblies. Organize MarketWatch and investment simulations. Member of Board of Investors, empowering female participation in finance. Manage a \$40K school stock portfolio and propose and vote on trades to grow assets.

Editor-in-Chief, Chief Designer, Inlight Magazine Grades 9-12 1 hr/wk for 15 wks
Chosen by teacher to rekindle the dormant 'Inlight', our school's literary and art magazine promoting diverse voices. Contribute to writing/artwork and magazine design. https://issuu.com/thepotomacschool/docs/inlight_2024_3

Robotics Team: Builder, VEX Robotics Grades 9-12 8 hrs/wk for 15 wks
VEX Robotics Team member, compete in local and state competitions, qualified for Virginia State Championship '25. Design, construct, and refine robots. Maintain engineering notebook, documenting designs, progress, and results.

Leader, South Asian Student Alliance (35 members) Grades 9-12 2 hrs/wk for 35 wks
Coordinate with leadership and engage students in celebrating South Asian culture by organizing school-wide assemblies. Inform school community about festivals, including cooking food for others to enjoy. Choreograph and perform Bollywood dances.

Alumni Association "Blair Society" Grade 12 1 hr/wk for 35 wks
Foster a culture of philanthropy within school by planning and executing educational events and activities in collaboration with the Offices of Alumni Relations and Annual Giving.

Tutor, Math & Science Collaboration Center (MSCC) Grades 10-12 1.5 hrs/wk for 35 wks
Nominated by faculty to tutor other students Honors Algebra 2, Advanced Calculus 1&2, & Advanced Chemistry.

SPORTS

Field hockey, Forward player, Metro Hockey Travel Club Grades 5-9 8 hrs/wk for 30 wks
Field hockey, Starter and Forward, Potomac School Varsity Grades 9-12 10 hrs/wk for 13 wks
Starting in 5th grade, played for nationally ranked travel team Metro Hockey Club, whose head coach trained the U.S. Women's National Hockey Team. Varsity team starter, playing as a forward. In 10th grade, I was the team's second-highest scorer. Compete in State and Independent School League (ISL) and ranked #6 in Virginia in 2024.

INDEPENDENT EXTRACURRICULAR ACTIVITIES

Classical Dancer, Bharatnatyam, Natananjali School Kindergarten - 10TH Grade 4 hrs/wk for 44 wks
Learned the rigorous Indian classical dance, mastering facial expressions, hand gestures, yoga, balance, intricate poses, rhythm, and some Sanskrit vocabulary. Performed public showcases. Presented "Nrityanjali", a 2-hour dance performance marking the end of my 11 years of formal training. https://www.youtube.com/watch?v=vaxzonN1Qgg&list=RDvaxzonN1Qgg&start_radio=1

Pianist (ABRSM Grade 7 Certified), NOVA Piano Age 5 - Present 3 hrs/wk for 48 wks
Pianist for 11 years, performing Classic, Romantic, Contemporary symphonies at public recitals. Grade 7 (out of maximum 8) certified by the Associated Board of the Royal Schools of Music (ABRSM), consistently passing with merit/distinction. Currently in Grade 8, the highest ABRSM piano certification.

Poet: Grade 2 - Present 1 hr/wk for 12 wks
Use poetry as a medium to explore and express thoughts. Poem "Ignorance" published in 'Quilted Voices' anthology. Online repository can be found at <https://thecreativepower.org/>

Artist: Elementary school – Present 1 hr/wk for 12 wks
Create art using different mediums (digital, charcoal, pencil). Painted a symbolic large wall artwork for high school. My art has won local awards and has been displayed in Walter Reed Medical Center's exhibition for patients and staff. Illustrated a children's book on female empowerment 'ROAR'. These can be found at <https://www.instagram.com/taras.art.life/>

Tae Kwon Do: Second degree black belt Grades 2 – 9 2 hrs/wk for 40 wks
Strengthened my discipline, presence of mind, and quick reflexes in addition to self-confidence and self-defense. Volunteered at my Dojang to teach younger students a varied skill set, which in turn improved my patience and teaching skills.

Economics For Leaders Program by The Foundation for Teaching Economics Summer 2024 1 wk

Awarded attendance to the program. Learned leadership skills, public policy decisions, economic concepts, and reasoning.

Scuba Diver, PADI Open Water certified (July 2024): Obtained PADI Open Water Scuba Diver certification. A chance encounter with sharks reinforced my ability to stay calm during stress. Ambassador for PADI, which seeks to protect endangered reefs.

AWARDS

- Academic
- National Merit Semi-finalist (September 2025)
 - AP Scholar With Distinction Award (2025)
 - College Board National Recognition Program. School Recognition Award (Aug 2025)
 - RIT Women in STEM Award Merit-based Scholarship (May 2025)
 - The Rensselaer Medal (May 2025)
 - Scholastic Writing Award (Poetry): "Ignorance" Honorable Mention & finalist in National Poetry contest.
 - Science Olympiad National medalist. (not offered at Potomac school): Nationally placed 3rd in Ping Pong Parachute (2022) and 6th in Chiropterology (2021). 1st in Virginia State in Anatomy, Physiology and Experimental design (2022)
- Service
- Girl Scout Gold Award (2025)
 - Girl Scout Silver Trefoil Award (2025)
 - Gold Presidential Volunteer Service Award, SAYVA (2024)
 - Girl Scout Silver Award Recipient (2021)
 - Virginia Governor's Volunteerism and Community Service Awards: Serve Virginia Honor Roll 2026
- Other
- National Field Hockey Coaches Association High School Scholars of Distinction (March 2025)
 - "Most Outstanding Company" in Leangap Business Program pitching online agreements (2024)
 - Won 3rd place (\$1000) at Business Pitch competition for plan to simplify terms (TiE DC 2023).
 - Poetry featured in Eber & Wein Publishing Anthology "Best Poets of 2024"
 - ABRSM Piano Certification 7/8: Merit in Level 6 (2024). Distinction in Level 5 (2023).

TECHNICAL / COMPUTER SKILLS

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| CODING | <ul style="list-style-type: none">▪ Python Proficiency▪ C++▪ Arduino Microcontrollers▪ SWIFT UI + Xcode proficiency▪ Image classification algorithms via Create-ML | DESIGN | <ul style="list-style-type: none">▪ Advanced Computer-Aided Design (CAD)▪ Rapid prototyping skills▪ Breadboarding▪ Wordpress, WIX, Squarespace website editor▪ Knowledge of filaments & 3D printers |
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PUBLICATIONS

1. Illuminating the Hidden: Standardizing Cardiac MIBG Imaging for Sympathetic Dysfunction: Justin Peacock, Haley Majot, **Avani T. Bansal** et. al. J Nucl Med Technol 2025; 00:1–11 <https://doi.org/10.2967/jnmt.124.269436>
2. Time-of-Flight PET/CT Imaging of Ga-68-Dotatate: Normal Pattern, SUV Quantification, and Differences from Non-Time-of-Flight Imaging." Matthew Clifton Miller, **Avani T. Bansal**, Daniel Wingard et al. World Journal of Nuclear Medicine 2024. DOI: <https://doi.org/10.1055/s-0044-1786529>
3. Hiding in Plain Sight: Myocardial Metastasis from Melanoma. Nitin Rao, **Tara Bansal**, Timothy Banks, et al., Walter Reed National Military Medical Center, MD, National Institutes of Health, Bethesda, MD. Case report and Presentation. American College of Cardiology Conference, March 2023.
4. Poem titled "Ignorance" selected as a finalist in the National Poetry contest and published in Quilted Voices, an official poetry anthology published by Eber & Wein Publishing.
5. Illustrator and co-author, Roar (Spring 2020) <https://www.amazon.com/Roar-Arya-Bansal/dp/B088MYPZGN>. During the COVID lockdown, illustrated, designed, & Co-published **Roar**, a picture book centered around women's rights and gender equality. Book encourages girls to find their voice and believe in themselves.
6. Reducing trans-humeral prosthetic abandonment in amputees by a novel, self-adjusting, comfortable pneumatic socket. **Avani T. Bansal** et al. The Potomac School. Regeneron competition 2026 submission.