

YASH DAGADE



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Objective

To build cool and useful things

Patent

2023

Dagade, Y. A., Biswas, S., "passive alignment LTA shell for VAWTs" Provisional patent

Developed an innovative LTA shell enhancing VAWT cluster efficiency, leading to a 25% reduction in AWE system energy costs.

Publications

Manuscript
Accepted

Lecture Notes in Mechanical Engineering

Dagade, Y. and Dagade, V. A. "[Aerodynamic Performance Analysis of a Three-Bladed Vertical Axis Wind Turbine using Composite and Sandwich Materials.](#)" CDPMHM 2024

Manuscript
submitted

Renewable Energy

Dagade, Y. and Biswas, S. "[SkyWindFarm-Harnessing High Altitude Wind Power in a Scalable Way.](#)" Renewable Energy, RENE-D-23-06538

Manuscript
submitted

Applied Energy

Dagade, Y. and Hong, J. "[Optimizing Wind Turbine Performance in the Presence of Low-Level Jets: A Comprehensive Study of Impacts and Control Strategies.](#)" Applied Energy, APEN-D-23-03934

Honors and awards

Duke A.B. and Clark
Scholarship
May 2024

- **A.B. Duke Scholarship:** A full-ride merit-based scholarship to Duke University, including a 6-week study program at Oxford University. **Worth approximately \$400,000.**
- **Clark Scholarship:** An additional **\$40,000** awarded for leadership potential.

6 A.B. Duke Scholars are selected from a pool of roughly 50,000 applicants based on their intellectual accomplishments and exceptional potential for academic leadership. Clark Scholars are chosen based on their leadership and entrepreneurial potential.

ISEF Awards
May 2023 and May 2024

- 3rd Place Grand Award (\$1,000) in 2023 and 2024
- \$10,000 Sustainability Special Award in 2024

Grand Award and Special Award winners are selected from a global pool of participants representing over 70 countries.

Regeneron Science Talent Search Scholar
Jan 2024

The Regeneron Science Talent Search scholars were selected from 2,162 applications received from high schools across 46 states, Guam, Puerto Rico and ten other countries. Scholars were chosen based on their exceptional research skills, commitment to academics, innovative thinking and promise as scientists and awarded 2,000\$.

National Stem Champion
April 2024

Champions are selected from the best projects from all 50 U.S. states, the District of Columbia, and U.S. territories and win a trip to the National STEM Festival in Washington, D.C. Work received recognition from [President Obama](#) and Representative Dean Phillips.

National Merit Finalist and AP Scholar with Distinction
Dec 2023

Awarded to students in the top half- of one percentile based on PSAT performance. with no additional nominations required. AP Scholar with Distinction awarded.

USNCO Qualifier for national exam - 5th in State
May 2023

Selection based on top ten chemistry Olympiad scores in state-level competition. I secured a position among the top 10, ranking 5th in the state, qualifying for national level. I was not able to participate in national due to citizenship status.

JSHS Tri State Winner x2 + National's Invite
May 2023 and Jan 2024

Achievement based on scientific rigor, demonstrated in a 20-page research paper and a 10-minute video interview, followed by a 5-minute Q&A with a 3-judge panel. Nominated for a 7 day all-expense paid trip to Albuquerque, NM to present research at the National JSHS + 1,500\$ prize money.

MVP Challenge Winner
December 2023

Award of 5,000\$ for the development of a prototype or pilot that demonstrates innovative thinking in solving a challenging problem. The award comes with a partnership with Porto labs and UMN Carlson School of Management to support innovative ideas.

Towards Zero death oral presenter and nominee for emerging leader award
Nov 2023

Presented our research on EyeDa Maps using the Uber Hex algorithm to an audience of 40 at the towards zero death conference, University of Minnesota. Nominee for the Emerging Leader Award given to one person every year working in the field of distracted driving.

**Energy Tech
University Prize
Challenge Finalist**
January 2024

Sponsored by the Office of Technology Transitions (OTT) at the U.S. Department of Energy (DOE), the American-Made EnergyTech University Prize (EnergyTech UP) recognizes finalists from across the nation for innovative energy research initiatives.

**Norman Borlaug
Scholar**
May 2022

The Norman Borlaug Science Achievement Award recognizes deserving high school juniors who excel in science.

Non-Trivial Finalist
May 2024

Selected as one of 300 over 9,000 applications for an 8-week fellowship for young people to start an impactful research, policy, or entrepreneurial project.

**State and regional
Science fair awards**
March 2023

1. Northrop Grumman Sponsor Award
2. 3M Specialty Materials Development Lab + Invitation to 3M Inventor Event
3. Office of Naval Research
4. Naval Science Award
5. LHB Outstanding Engineering Award

Education

2024-2028

**Duke University | A.B. scholar Full Ride + \$40k
B.S. Mechanical Engineering, Computer Science**
Relevant Coursework:

2022-2024

**University of Minnesota, Twin Cities
PSEO Student | 48 Credits | 3.9 GPA**
Relevant Coursework: Fluid Mechanics, Thermodynamics, Machine learning fundamentals, Intro to AI, Advanced Programming Principles, Honors Physics I, Discrete Math, Linear algebra and Differential Equations, Functional Genomics and Bioinformatics

2022-2024

**Normandale Community College
PSEO Student | 8 Credits | 4.0 GPA**
Relevant Coursework: Multivariable Calculus, Stress Management

2020-2024

**Eden Prairie High School
Senior | 60 Credits | 3.9 GPA**
Relevant Coursework: AP Calculus AB + BC, AP Physics C Mechanics, AP Physics E&M, AP CSA, AP CSP, AP Human Geography, **Advanced Anatomy and Physiology**

Research and Volunteering

RESEARCHER AT PPP LAB UMN
2022-2023

Launched and led the SkyWindFarm project, partnering with Dr. Biswas at the University of Minnesota. Developed a lab-scale prototype, reaching TRL 4. Submitted a first author manuscript in a top energy journal and obtained a provisional patent. The project, surpassing current AWEs in economy by 25%, involved extensive wind tunnel testing, earning \$30,000 in grants.



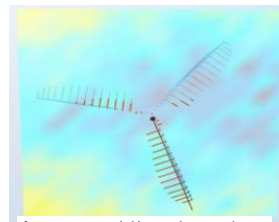
SKYWINDFARM DESIGN and LAB SCALE PROTOTYPE

Founder and President of EyeDa
2021-2023

As founder and president of EyeDa, I led a team of 20 students in creating AI solutions to prevent distracted driving. Our work gained recognition on ABC, NBC, and Star Tribune. We presented a demo to the MN Senator and at the state capitol. I was the keynote speaker at the Towards Zero Death conference and the Emerging Leaders Award Nominee.

Research Volunteer - Flow Field Imaging Lab
2023

Initiated a project on pitch control strategies for wind turbines during Low-Level Jets (LLJs), increasing power efficiency of offshore wind turbines by 1.5%. Submitted a first author manuscript in a top energy journal. Worked alongside Dr. Jiarong Hong at the University of Minnesota. Enhanced LLJ detection algorithms using MATLAB and used AI algorithms for LLJ optimization. Currently in the process of implementing the algorithm on a 2.5MW Wind Turbine.



improved thrust vectors during LLJ.



Comparison of total thrust at 0° and at 3.5° for R.2 LLJs

Research Internship Director – Shreya Dixit Foundation
June2023-August2023

I lead 8 high school interns to pioneer a novel route planning algorithm that analyzes previous accident data to identify unsafe intersections and predict safer routes. Partnered with MnDOT and Google Engineers.



EyeDa App



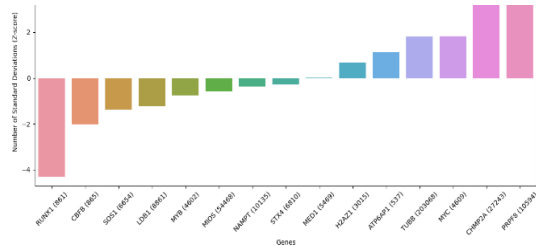
EyeDa Maps



Accident Heatmap used for AI data Training.

Research volunteer at Myers lab
Sep2023-Dec2023

Conducted research at Chad L Myers lab UMNTC on Polycythemia Vera (PV). (Research motivated by personal reasons) Discovered two new therapeutic genes (RUX1 and CFBF) that could be used to target the mutation that leads to PV. Ongoing collaboration with Dr. Zoho at UMN, TC to find potential drugs that can target these genes.



z scores for RUX1 and CFBF

State Fair Co Lead for Team 2502; Founder and Mentor FLL team Red Pickles
2021-2023

Design and cad lead for Talon Robotics. Lead the drivetrain switch and designed the intake systems. Held lectures on CAD and taught FEA and FEM methods in Ansys to the team. Presented for and won the Excellence in Engineering Award for the team. Won Regionals and Placed in State and qualified for Worlds during 2022.

FLL Team Red Pickles Founder. Invited industry experts to give talks on the importance of energy and supervised 6 elementary school kids in a project about implementing renewable energy. Helped supervise the build of the FLL team robot and taught coding concepts from scratch.



2023 Robot



2022 Robot

Flying cloud airport – Wings of the north air museum restoration airplane volunteer
2021-2023

Wings of the North specializes in restoring vintage airplanes through volunteer efforts. I contributed to the restoration of a 1940s WW2 plane Vultee Aircraft Bt-15 Valiant. Worked on the spark ignition and piston assembly for the Wright R-975-11. Further calibrated and tested anemometers and the control system on the flight.



BT 15 VALIANT PICTURE

Projects and Presentation

[THE POTENTIAL FOR WIND ON RENEWABLE ENERGY AND SKYWINDFARM](#) – Lecture given for ME:4431W Energy Conversion – Class for UMN Mechanical Engineering Seniors.

[IDENTIFYING THERAPEUTIC DRUGS AND TARGET COMPOUNDS FOR POLYCYTHEMIA VERA AND JACK2 V617F MUTATIONS](#)

[EYDA MAPS: THE FUTURE OF SAFE DRIVING AND SAFE NAVIGATION](#) – Oral presentation given at TZD on EyeDa Uber hex Algorithms and The Impact of EyeDa Maps.

[COMPARATIVE STUDY OF AI BASED CUBE SOLVING ALGORITHMS](#) – Research Report for ‘Intro to AI’ Class.

[NO CAMERA TO KNOW\(ING\) DISTRACTION: AN UNIVERSALLY COMPATIBLE DEVICE UTILIZING A NOVEL CNN TO COMBAT DISTRACTED DRIVING](#)– Manuscript freely available on GitHub.

Blogs and Media coverage

[News Appearances](#)

[Yash Dagade Blogs](#)

[Shrey Dixit Non- Profit Homepage](#)

Community service

2021- Present

Shreya R. Dixit. Memorial Foundation
7535 Alcove Circle Eden Prairie, MN 55347 USA

Languages

English

Native or bilingual proficiency

Hindi

Native or bilingual proficiency