Yash Dagade

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Education

Duke University — Durham, NC
B.S. in Mathematics and Computer Science (A.B. Duke Full-Ride Merit Scholar) — *2028* — *GPA: 4.0*

- **Coursework:** ECE 685D Intro to Deep Learning*; ECE 689 Advanced Topics in Deep Learning*; ECE 687D Theory & Algorithms of Machine Learning*; COMPSCI 572 Natural Language Processing; COMPSCI 590 Advanced Topics in Computer Science (Advanced Web App Development); MATH 501 Algebraic Structures I*; MATH 221 Linear Algebra; MATH 281S Problem Solving Seminar; THEATRST 242S The Art of Improvising.

* Duke: course number $\geq$ 500 indicates graduate-level.

University of Minnesota, Twin Cities — Minneapolis, MN
Dual Enrollment (PSEO) — *2022 – 2024* — *GPA: 4.0*

- **Coursework:** CSCI 1133 Introduction to Programming Concepts; CSCI 2011 Discrete Structures; CSCI 1933 Introduction to Algorithms and Data Structures; CSCI 2041 Advanced Programming Principles (OCaml); CSCI 3003 Introduction to Computing in Biology; CSCI 4511W Introduction to Artificial Intelligence; CSCI 5521 Machine Learning Fundamentals*; CSCI 5461 Functional Genomics, Systems Biology, and Bioinformatics*; MATH 2373 Linear Algebra and Differential Equations; PHYS 1401V Honors Physics I (Top 10%); ME 3331 Thermodynamics; ME 3332 Fluid Mechanics.

* UMN: course number $\geq$ 5000 indicates graduate-level.

University of Oxford, New College — Oxford, UK
Visiting Student (A.B. Duke Scholarship): Ethics and Philosophy of Artificial Intelligence — *Summer 2025* — *Grade: A–*

- **Coursework:** Ethics and Philosophy of Artificial Intelligence.

Experience

Deep Learning Visiting Researcher — NYU CILVR — New York, NY
Mentors: Yilun Kuang, Tim Rudner, Randall Balestriero, Yann LeCun — *May 2025*

- Worked on **Radial-VCReg**, a self-supervised learning method augmenting VCReg with a radial Gaussianization loss to better approximate maximum-entropy representations in high-dimensional feature spaces.
- Proved theoretical guarantees showing Radial-VCReg transforms a broader class of feature distributions toward normality compared to VCReg; demonstrated consistent empirical improvements on synthetic and real-world benchmarks.
- Presented at **NeurIPS 2025** workshops: Symmetry and Geometry in Neural Representations and UniReps; poster.

Research Engineer — University of Minnesota, Twin Cities — Minneapolis, MN
SkyWindFarm Project (First Author & Primary Contributor) — *2022 – 2024*

- Led development of **SkyWindFarm**, an airborne wind energy system; first author and inventor on a utility patent.
- Applied Reynolds-Averaged Navier–Stokes equations with **SST** k–ω **turbulence modeling** to optimize vertical-axis wind turbine configurations.
- Conducted full **6-DoF** CFD simulations, wind tunnel experiments, and outdoor field tests to validate models and advance the system to TRL 4.
- Secured **$30K+** in awards, including **3rd Place Grand Award at ISEF 2023 & 2024**, $10,000 Special Prize (ISEF 2024), and **Regeneron Science Talent Search 2024 Finalist**.
- Project paper; prototype flight video; technical explanation.

Projects

ConnectU.ai
Founder & Lead Engineer — *2025*

- Built **ConnectU.ai**, a mentor–mentee pairing platform; formulated matching as a **constrained optimization problem** and implemented assignment using the **Hungarian algorithm** over embedding similarity.
- Deployed end-to-end on **AWS** using EKS, EC2, ECR, Route 53, ALB, ACM, HPA, and S3 with scalable Kubernetes-based infrastructure.

EyeDa
Founder & Technical Lead — *2022*

- **Mathematically Optimized Route Planning Algorithm:** Designed a momentum-based routing algorithm leveraging **22 years (3.1M+)** of historical accident records to balance safety and efficiency. Live demo at idontwannadie.lol; demo video.
- Won **Best Use of Statistics** and **Best Community Impact** awards at **PennApps XXV**.
- **EyeDa Device:** Prototyped a real-time distracted-driving detection system; led a **15-person** team through design and deployment.
- Presented at the **Minnesota Towards Zero Deaths Conference** to law enforcement and policymakers.
- Media coverage: KARE11, CBS, Star Tribune; device video.

Other

Skills: Python, PyTorch, Slurm, Weights & Biases, C/C++, JavaScript/TypeScript, React.js, Node.js, Express.js, HTML/CSS, Java, Django, SQL, GraphQL, MongoDB, Apache Spark, Docker, Kubernetes, AWS, Julia, MATLAB, SolidWorks, ANSYS Fluent.
Languages: English (Fluent), Hindi (Fluent), Love (Informally Proficient).
Interests: Philosophy (Nietzsche, Girard), Building and Understanding Intelligence, Mathematics, Rowing, Long-Distance Running.