

Bhargav Srinivasan

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RESEARCH INTERESTS

I am interested in machine learning methods and theory for genomics, focusing on modeling and mechanistic interpretation of structural, epigenetic, and regulatory variation.

EDUCATION

University of Maryland

B.S. in Computer Science & B.S. in Biological Sciences

College Park, MD

Expected May 2027

- Computer Science + Entomology Departmental Honors, Gemstone Honors Program

GPA: 3.8/4

SELECT RESEARCH EXPERIENCES

Complex SV Identification — Kolmogorov Lab, National Cancer Institute

May 2026 – Present

Student Intern

Bethesda, MD

- Developing a deep learning method to identify and localize complex structural variation in cancer genomes.

Raw Signal Analysis Methods — Firtina Lab, UMD

Oct 2025 – Present

Student Research Assistant

College Park, MD

- Building methods for nanopore sequencing raw signal analysis: methylation detection, error correction, assembly.

Molecular Surveillance — AstraZeneca, Vaccines & Immune Therapies

May 2025 – Aug 2025

Bioinformatics Intern

Gaithersburg, MD

- Engineered and deployed a bacterial genome-processing pipeline supporting vaccine R&D surveillance efforts.
- Developed an unsupervised learning approach to identify non-typeable *Haemophilus influenzae* cell-type clusters.

US Department of Agriculture – Agricultural Research Service

Apr 2024 – Jan 2025

Biological Science Aid

Beltsville, MD

- Applied plant breeding methods to generate improved strawberry cultivars emphasizing disease resistance.
- Deployed computer vision models for real-time detection of diseased plants and stray animals with drones.

Insect Genome Bioinformatics Pipeline — Fritz Lab, UMD

Feb 2024 – Present

Computational Biology Research Assistant

College Park, MD

- Analyzing WGS short-read data to determine basis of pesticide resistance through copy number variation.
- Benchmarking short-read structural variation and copy number variation callers in collaboration with Molloy Lab.

Host-Pathogen Evolutionary Dynamics Model — Bruns Lab, UMD

Jan 2024 – Present

Student Research Assistant

College Park, MD

- Building ODE models to simulate host-pathogen coevolution to study temporal adaptation and allelic variation.

Fish Behavior Classification — Gemstone Program, UMD

Aug 2023 – Present

Student Research Assistant, Mentor Liaison

College Park, MD

- Developing a computer vision aided classification model to identify the social behaviors of Lake Malawi Cichlids.
- Team leader for 11 students and the main point of contact between PI Abhinav Shrivastava and team.

HONORS & AWARDS

1. ISMB HiTSeq Best Poster Award

RawMod: A Deep Learning Approach to Modification Agnostic Classification in Nanopore Sequencing

[ISMB: Intelligent Systems for Molecular Biology](#), Washington, D.C., USA. July 2026.

2. Entomological Society of Washington Student Showcase Best Poster Award

*Correlations between Read Depth, Copy Number Variation, and Bt Resistance in *Helicoverpa Zea**

[Entomological Society of Washington Student Showcase](#), Washington, D.C., USA. May 2026.

3. Crop Science Society of America Poster Competition 2nd Prize

*Correlations between Read Depth, Copy Number Variation, and Bt Resistance in *Helicoverpa Zea**

[PAG33: Plant and Animal Genome Conference](#), San Diego, CA, USA. January 2026.

4. University of Maryland Gemstone Library Awards Best Talk Award

*Investigating the Link between the *Ora4* Gene and Social Behaviors in African Cichlids through the Use of Computer Vision* — awarded \$2,000 in research funding.

[University of Maryland Gemstone Library Awards](#), College Park, MD, USA. April 2025.

5. Recipient of the Honors College Research Grant, CS Professional Development Fund, GO Fund, and Ernest N. Cory Undergraduate Scholarship

Funds collectively totaling over \$5,000 in support of independent research and conference travel.

SELECT PUBLICATIONS

1. Simon Ambrozak, Ulysse McConnell, Bhargav Srinivasan, Burak Ozkan, Ernest Zhang, and Can Firtina, “*CRANE: Correcting Errors in Raw Nanopore Signals Using Hidden Markov Models*,” **arXiv**, 2026. [\[link\]](#)
2. Bhargav Srinivasan, Archana Venkataraman, and Srinivasa N. Raja, “*Artificial Intelligence and Pain Management: Cautiously Optimistic*,” [Editorial] **Pain Management**, Sep. 2024. [\[link\]](#)
3. Bhargav Srinivasan, Simon Ambrozak, and Can Firtina, “*RawMod: A Deep Learning Approach to Modification Agnostic Classification in Nanopore Sequencing*,” **in preparation**.
4. Bhargav Srinivasan, William Lamousin, Charles Phan, Jason Liu, Shubh Sharma, Vijay Jayasuriya, Ariel Bazan, Cade McGeehan, Ofure Osunbor, Tahir Haroon Pulkit Kumar, and Abhinav Shrivastava, “*FSHFormer: A Computer Vision Model for Automated Cichlid Behavior Annotation*,” **in preparation**.
5. Bhargav Srinivasan, Sam Hulse, and Emily Bruns, “*When should a pathogen strike? Navigating the landscape of birth pulses and mating season*,” **in preparation**.

SELECT PRESENTATIONS

1. **RawMod: A Deep Learning Approach to Modification Agnostic Classification in Nanopore Sequencing**
Poster Presentation, **ISMB: Intelligent Systems for Molecular Biology**, Washington, D.C., USA. July 2026.
2. **A Deep Learning Approach to Identifying Complex Structural Variation in the Genome**
Poster Presentation & Flash Talk, **NCI Summer School on Algorithmic Cancer Biology**, Bethesda, MD, USA. July 2026.
3. **A Deep Learning Approach to Identifying Complex Structural Variation in the Genome**
Invited Seminar Talk, **Cancer Data Science Laboratory**, National Cancer Institute, Bethesda, MD, USA. July 2026.
4. **A Machine Learning Approach to Identify Unique Non-typeable Haemophilus influenzae (NTHi) Clusters Using Lipooligosaccharide (LOS) Biosynthetic Genes**
Poster Presentation, **ASM Microbe 2026**, Washington, D.C., USA. June 2026.
5. **Unsupervised Learning for DNA Modification Profiles from Nanopore Sequencing Data**
Invited Talk, **Algorithmic Bioinformatics Seminar**, University of Maryland, College Park, MD, USA. April 2026.
6. **Correlations between Read Depth, Copy Number Variation, and Bt Resistance in Helicoverpa Zea**
Poster Presentation, **PAG33: Plant and Animal Genome Conference**, San Diego, CA, USA. January 2026.
Poster Presentation, **Entomological Society of Washington Student Showcase**, Washington, D.C., USA. May 2026.
7. **When Should a Pathogen Strike: Navigating the Landscape of Birth Pulses and Mating Season**
Poster Presentation, **Ecology and Evolution of Infectious Diseases North-East Meeting**, University Park, PA, USA. November 2025.
8. **Developing a Molecular Surveillance Dashboard**
Invited Talk, **AstraZeneca Vaccines & Immune Therapies Intern Symposium**, Gaithersburg, MD, USA. August 2025.
9. **Host Life History vs. Pathogen Optimization**
Invited Talk, **Quantitative Ecological & Evolutionary Dynamics Seminar**, University of Maryland, College Park, MD, USA. April 2025.
10. **Investigating the Link between the Ora4 Gene and Social Behaviors in African Cichlids through the Use of Computer Vision**
Poster Presentation, **University of Maryland Gemstone Library Awards**, College Park, MD, USA. April 2025.

OPEN SOURCE TOOLS (MAIN CONTRIBUTOR)

All tools listed are actively in progress and under continuous development.

- **RawMod:** <https://github.com/bds062/Nanopore-Modification>
- **FSHFormer:** <https://github.com/jay11256/fsh-cluster>
- **Complex SV Detection:** <https://github.com/bds062/complex-SV>
- **Host–Pathogen Evolutionary Dynamics Model:**
<https://github.com/bds062/Host-Pathogen-Evolutionary-Dynamics-Model>