

# Jeanine Ohene-Agyei

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## EDUCATION

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### University of California, Davis

*Master of Science in Computer Science (Thesis)*

Davis, CA, United States

*May 2027*

### University of Toronto

*Honors Bachelor of Science in Computer Science and Mathematics*

Toronto, ON, Canada

*June 2025*

## PROFESSIONAL EXPERIENCE

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### Research and Development Intern

*Pytri*

Sept. 2024 – Apr. 2025

*Montreal, QC, Canada (Remote)*

- Developed a comprehensive blood work report structure using AI for clinical hematologists by integrating Pytri's RBC and WBC detection data, ensuring alignment with clinical standards
- Implemented essential hematology metrics, calculations, and a user-friendly interface to transform raw detection data into actionable, comprehensive blood work reports

## RESEARCH EXPERIENCE

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### Université du Québec en Outaouais

*Research Intern (LPVS Research Group)*

Gatineau, QC, Canada

*May 2025 – Present*

- Selected as an NSERC-USRA award recipient and returning intern, continuing to develop algorithms for pain detection
- Designing a LangChain-based Retrieval-Augmented Generation pipeline with transformer LLMs to identify pain instances in movie scripts while mitigating cultural and gender biases

*Research Intern (LPVS Research Group)*

*May 2024 – Aug. 2024*

- Implemented reverse correlation genetic algorithm to create individual's mental representations of emotions using the open-source MakeHuman software
- Developed two experiments exploring cultural differences in emotion intensities between different ethnicities and genders

### University of Toronto

*Research Assistant (AICONS Research Group)*

Toronto, ON, Canada

*Dec. 2024 – Jun. 2025*

- Developing novel scalable 3D Self-Supervised Learning algorithms for medical imaging, trained on a massive unlabeled dataset
- Evaluating the SSL-trained networks on downstream tasks, including real-world medical data and online challenges, optimizing performance for clinical applications such as detection, diagnosis, and risk profiling

*Undergraduate Researcher (embARC Research Group)*

*Aug. 2024 – Jun. 2025*

- Developed TuneShift-KD, a data-free distillation pipeline for transferring domain-specific knowledge from fine-tuned LLMs to new foundation models
- Engineered a perplexity-based filtering method and validated across open-source LLMs, achieving strong performance on specialized tasks without access to original training data

*Machine Learning Researcher (BMO Lab)*

*Sept. 2023 – Apr. 2024*

- Applied Neural Architecture Search techniques to Variational Auto-Encoders on the AMASS body motion dataset for optimal design and performance
- Created new pointing UI to existing body motion and text-to-image technology to control the display of images on a screen

## PUBLICATIONS

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- Guan, Y., **Ohene-Agyei, J.**, Kwan, D., Dandurand, JS., Zhang, Y., Vijaykumar, N.  
*TuneShift-KD: Knowledge Distillation and Transfer for Fine-tuned Models. ICLR 2026.* Under Review.

## POSTER PRESENTATIONS

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- St-Pierre, É., **Ohene-Agyei, J.**, Richer, A., Bellerose, A., Gingras, F., Mharchat, Z., Saumure, C., Fiset, D., Caldara, R., & Blais, C.  
*Conceptual knowledge and individual differences in facial emotion perception using genetic algorithms*. Poster presented at the Vision Sciences Society (VSS) Annual Meeting, 2025. Abstract published in *Journal of Vision*, 25(8):2439. <https://doi.org/10.1167/jov.25.8.2439>

## PROJECTS

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### **Computational Complexity in Machine Learning** | *PyTorch, NumPy, Scikit-learn*

- Developed a new benchmark called EcoNAS aimed to optimize computational complexity, interpretability and accuracy in Deep Neural Networks using Neural Architecture Search algorithms
- Utilizing NSGA-II and multi-objective optimization to evaluate and produce high performing DNNs
- Found architectures that increased accuracy and interpretability and lowered computational cost, contradicting previous research

### **Interpretability of Machine Learning Models** | *Python, NumPy, PyTorch*

- Compared the performance of Deep Neural Networks and Convolutional Neural Networks as uninterpretable models against Logistic Regression and Support Vector Machines as interpretable models
- Evaluated model several accuracy metrics to assess predictive performance and trade-offs between model interpretability and predictive power
- Quantified the concept of statistical parity to address fairness and bias considerations in machine learning models
- Presented findings that showcased the advantages and limitations of interpretable and uninterpretable models

## RELEVANT COURSEWORK

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**Computer Science:** Computational Linguistics, Software Design and Engineering, Data Structures and Analysis, Artificial Intelligence, Theory of Computation, Operating Systems

**Mathematics:** Linear Optimization, Multivariable Calculus, Statistics, Linear Algebra

**Science:** Advanced Biology, Psychology

## LEADERSHIP AND EXTRACURRICULARS

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### **Kulen Outreach English Tutor**

Feb. 2023 – Oct. 2023

- Aid in fundraising events to supply schools in Cambodia educational materials
- Volunteer as an English tutor to students in Hong Kong on the weekends

### **Computer Science Student Ambassador**

Sept. 2022 – Aug. 2023

- Mentored high school students on preparing for computer science university life
- Provided my experiences on 300/400 level computer science courses for second year students
- Aided the Department of Computer Science in first year orientation

## AWARDS AND HONORS

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### **NSERC Undergraduate Student Research Award**

Feb. 2025

- Awarded an NSERC-USRA for Black researchers in the amount of \$7,900 by the Institut National de la Recherche Scientifique

### **The Isabel Bader In-Course Scholarship**

Aug. 2024

- Awarded an in-course scholarship in the amount of \$1,000 for excellent academic performance in the third group of 5.0 courses

### **INRS Excellence Scholarship**

Mar. 2024

- Awarded an institutional research scholarship in the amount of \$6,125 for excellent academic record and research skills

### **Vector Institute Professional Development Award**

Dec. 2022

- Received a Professional Development Certificate by the Vector Institute for Artificial Intelligence
- Awarded a \$500 award for completion of a significant project in machine learning

### **Victoria College Clara Flavelle Mcheachren Scholarship**

Sept. 2021

- Awarded Victoria University entry scholarship in the amount of \$3,000 for an outstanding academic record