

Ashery Mbilinyi

University of Victoria
Victoria, BC Canada V8W 2Y2
✉ ashery@uvic.ca
<https://asherymbilinyi.github.io>

Education

2017-2023 **Ph.D. Computer Science**, *University of Basel*, Basel, **Switzerland**

My research encompassed Machine Learning, Computer Vision, and Information Retrieval, with a focus on developing methods to improve medical image retrieval systems to accurately support diagnostic radiology. I published my findings in leading venues within Applied Computing and Bioinformatics, including SIGAPP, IEEE BIBM, and IEEE-EMBS BHI.

2015-2017 **M.Sc. Information Science**, *JAIST*, Nomi, **Japan**

Conducted research on Intelligent Tutoring Systems at the Japan Advanced Institute of Science and Technology (JAIST), where I developed a theoretical framework to address the "cold start" problem. I also implemented a web-based system that provided personalized learning recommendations to students. This work culminated in presentations at three international conferences, contributing to advances in the field of educational technology.

2007-2013 **B.Eng. Computer Engineering**, *Dar es Salaam Institute of Technology (DIT)*, **Tanzania**

Graduated 2nd out of 86 students in the class of 2013. For my final-year project, I designed and developed an online learning management system using PHP and MySQL, showcasing strong skills in software development and database management.

Relevant Experience

Research

Sept 2024–Present **Assistant Professor**, *University of Victoria*, Victoria, **Canada**

- Currently working on AI for healthcare, developing models to support clinical decision-making and improve patient outcomes.

June 2023–Aug 2024 **Postdoctoral Researcher**, *The University of British Columbia*, Vancouver, Canada

- Collaborated with Vancouver General Hospital and Providence Health Care—which operates 18 healthcare facilities across British Columbia—to develop models for supporting cardiovascular disease intervention and management.

2020–2023 **Research Assistant**, *University of Basel*, Basel, Switzerland

- Developed methods to improve medical image retrieval systems to accurately support diagnostic radiology.

Oct 2014–Mar 2015 **Research Assistant**, *Distance Learning Center at JAIST*, Nomi, Japan

- Worked at the Center for Innovative Distance Education and Research, analyzing lecture activity data and maintaining e-learning infrastructure.

Teaching

Apr–Aug 2017 **Assistant Lecturer**, *DIT*, Dar es Salaam, Tanzania

- Developed and delivered the course content for "Object-Oriented Programming," an undergraduate course covering fundamental principles, software design patterns, and practical implementation.

Apr 2013–Oct 2013 **Computer Lab. Technician**, *DIT*, Dar es Salaam, Tanzania

- Maintained computer equipment and peripherals in the lab and guided students during practical sessions.

2008, 2011 **Physics Teacher**, *Vwawa Secondary School*, Mbeya, Tanzania

- Volunteered to teach Physics at a local school that faced a shortage, with only one teacher for over 400 students.

Industry

Sept. 2015 **Business Analyst Intern**, *Ricoh Company Ltd*, Tokyo, Japan

- Worked with the emerging markets team to analyze data and formulate strategies for emerging markets.

- Nov. **Software Developer**, *India-Tanzania Centre of Excellence in ICT*, Dar es Salaam, Tanzania
- 2013-Sept. 2014
 - Led the development of a telemedicine application to connect doctors at referral hospitals with patients in underserved health centers.

Selected Publications

- Julia Handra; Hannah James; **Ashery Mbilinyi**; Ashley Moller-Hansen; Jason Andrade; Marc Deyell; Cameron Hague; Nathaniel Hawkins; Kendall Ho; Ricky Hu; Jonathon Leipsic; Callum O'Riley; Roger Tam, "The Role of Machine Learning in the Detection of Cardiac Fibrosis from Electrocardiogram: A Scoping Review," *JMIR Cardio*, 2024
- Abdul-Hakeem Omotayo, **Ashery Mbilinyi**, Lukman Ismaila, Houcemeddine Turki, Mahmoud Abdién, Karim Gamal, Idriss Tondji, Yvan Pimi, Naome A. Etori, Marwa Matar, Gbetondji Dovonon, Daniel Ajisafe, Mennatullah Siam, "The State of Computer Vision Research in Africa," *Journal of Artificial Intelligence Research*, 2024
- **Ashery Mbilinyi**, Heiko Schuldt, "CheReS: A Deep Learning-Based Multifaceted System for Similarity Search of Chest X-rays," *In Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing (SAC 2022)*, Brno, Czech Republic, 2022 (Acceptance rate = 22.29%)
- **Ashery Mbilinyi**, Heiko Schuldt, "Retrieving Chest X-rays for Differential Diagnosis: A Deep Metric Learning Approach," *In Proceedings of the 2021 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, Athens, Greece, 2021 (Acceptance rate = 32.7%)
- **Ashery Mbilinyi**, Heiko Schuldt, "Cross-Modality Medical Image Retrieval with Deep Features," *In Proceedings of the 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Seoul, South Korea, 2020 (Acceptance rate = 19.4%)
- **Ashery Mbilinyi**, Heiko Schuldt, Nicolas Maire, Thomas Smith, "Analysis of Malaria Risk based on Housing Conditions in Sub-Saharan Africa," *In Proceedings of the 2018 ACM International Conference on Digital Health (DH)*, Lyon, France, 2018
- **Ashery Mbilinyi**, Shinobu Hasegawa, Akihiro Kashiara, "Estimation and Adaptation Method for Students Learning Styles on Web-based Learning," *In Proceedings of the 9th International Conference on Mobile, Hybrid, and Online Learning (eLmL)*, Nice, France, 2017
- **Ashery Mbilinyi**, Shinobu Hasegawa, Akihiro Kashiara, "Design for Adaptive User Interface for Modeling Students Learning Styles," *In Proceedings of the 18th International Conference on Human-Computer Interaction (HCI)*, Toronto, Canada, 2016

Research Projects

- June 2023 **Detection of Myocardial Scarring from ECGs and Cardiac MRIs**
- Working with the UBC Division of Cardiology, Department of Radiology, and Department of Emergency Medicine on multi-modal machine learning methods to predict myocardial scarring using ECGs and Cardiac MRIs.
- 2021-2022 **Multimodal Representation Learning for Case-Based Medical Image Retrieval**
- Developed a representation learning method that seamlessly combines medical imaging data and electronic health records, enabling the accurate retrieval of similar medical images based on specific patient cases.
- 2020 **Deep Metric Learning for Differential Diagnosis of Chest X-rays**
- Developed a deep learning system that enhances the process of differential diagnosis for chest X-rays. This system allows radiologists to perform a guided search, using medical images and narrative texts for more accurate diagnostic evaluations.
- 2019 **Feature Representations of Medical Images for Cross-Modality Retrieval**
- Conducted an in-depth study, exploring a range of representation learning techniques to acquire a better understanding of how to discern medical image features that are responsive to their respective imaging modalities.
 - I employed TensorFlow, Faiss, and Django to create a robust retrieval system capable of functioning across diverse modalities of medical images.

- 2019-2022 **Analysis of Mansonella Perstans Infections in Equatorial Guinea**
- Collaborated with a team from the Swiss Tropical and Public Health Institute (Swiss TPH) and partners in Equatorial Guinea to employ machine learning techniques in discovering risk factors associated with Mansonella Perstans infections in the region.
- 2018 **Assessing Malaria Risk in Sub-Saharan Africa through Housing Conditions Analysis**
- Built a data processing pipeline using Python, PostgreSQL, and scikit-learn. Subsequently, I trained an XGBoost model to identify risk factors for malaria infections in Rusinga Island, Kenya.

Selected Technical Projects

- July.– Oct. 2023 **RSNA 2023 Abdominal Trauma Detection**, Kaggle Challenge
- Collaborated with a Radiologist from St. Paul's Hospital, to develop a model for the detection and classification of traumatic abdominal injuries.
- July. 2021 **Acceleration of Microstructure Imaging in Diffusion MRI with Deep Learning**
- As a participant in the University College London 2021 Medical Image Computing Summer School (UCL-MedICSS), I collaborated with a team of three to create a Convolutional Neural Network (CNN) model that can accurately reconstruct Diffusion Tensor Imaging (DTI) from highly accelerated scans.
- June. 2021 **Generating Synthetic Patient-reported Outcomes to Foster Collaboration in Clinical Settings**
- I was among top-2 finalists among participants from 24 European universities in the Roche Healthcare Xplorers program competition, where I developed a GAN model to generate patient-reported outcomes for cancer patients.
- Sept. 2020 **"Save Life": Connects First Responders to Medical Emergencies**
- Selected to participate in HackZurich, the largest hackathon in Europe, with an acceptance rate of 11%.
 - Was part of a five-member team among 283 teams, that developed an Android application connecting the nearest available clinicians to medical emergencies.
- July 2018 **Project "Ring Parable"**
- As part of a three-person team, we analyzed interaction patterns between different religions and beliefs in specific countries using the GDELT dataset. Our project earned us the first place position in the 2018 ScaDS Summer School Hackathon held in Leipzig, **Germany**.

Leadership/Student Supervisions

- Jan –Feb 2024 **Interviewer**, UBC Faculty of Medicine, MD Undergraduate Program
- Volunteered to interview the 2024 UBC MD Undergraduate Program applicants.
- June 2023–Present **Machine Learning Lead**, Myocardial Scarring AI Project
- As an ML Lead in the current project, I supervising two graduate students, one with a Medicine and the other with a Computer Science background, on the whole model development life-cycle.
- 2014 – 2015 **Rising Star**, Google Chrome Help Forum
- Volunteered in the 'Google Top Contributors' program to assist Chrome users by addressing their queries.
- 2012–2013 **Google Student Ambassador**, (GSA), DIT
- Served as liaison between Google and DIT.
 - Founded and led a team of eight students to organize events and seminars focused on Google technologies.
 - Led DIT to achieve the 7th position among 65 African universities in the Map-Up Week competition.
 - Selected by Google Sub-Saharan Africa University Programs team to be in a team of 4 among 170 African ambassadors to manage social media channels for the GSAs class of 2013.

Awards and Honours

- 2023 **CVPR Travel Grant**
- Awarded a grants to attend in Computer Vision and Pattern Recognition Conference in Vancouver, Canada.

2018 **Streamline Hackathon Winner**

- My team was awarded from ScaDS.AI (Germany Center for Scalable Data Analytics and Artificial Intelligence) in recognition of our victory in the hackathon during the 4th International Summer School for Big Data and Machine Learning.

2017 **Swiss Government Excellence Scholarship (ESKAS)**

- Awarded to only 4 students from Tanzania to pursue Ph.D. studies at Swiss Universities.

2015 **ABE Initiative Scholarship**

- I was 1 of the 156 students selected from across the entire African continent to receive this prestigious scholarship from the Japanese Government, enabling me to pursue master's studies in Japan.

2013 **Indian Technical and Economic Cooperation (ITEC) Scholarship**

- Selected among 28 individuals from 19 Commonwealth countries to undergo intensive training in web application development at CDAC-Noida, India.

2013 **Second Best Student**

- Awarded by the DIT council for achieving the second-highest academic performance in the Bachelor of Computer Engineering class of 2013.

Reviewing/Committee

- Medical Image Computing and Computer Assisted Intervention (MICCAI)
- International Symposium on Biomedical Imaging (ISBI)
- IEEE-EMBS International Conference on Biomedical and Health Informatics (IEEE-EMBS BHI)
- African Computer Vision Summer School (ACVSS)
- The AHLI Conference on Health, Inference and Learning (CHIL)
- IEEE Access
- Deep Learning Indaba

Programming Competencies

Fluent in	Python
Competent in	Java, C, PHP, JavaScript, SQL, HTML, CSS
Libraries	PyTorch, TensorFlow, Keras, NumPy, scikit-learn, XGBoost, Django, pandas, Faiss, OpenCV, NLTK,
Used	WEKA, Spring, Hadoop, Spark, BeautifulSoup, CakePHP, Node.js, jQuery, Bootstrap
Cloud	GCP, AWS

Specialized Training

Aug. 2022 **Roche PMDA Summer School**, *F. Hoffmann-La Roche AG*, Basel

- Selected to participate in the Predictive Modeling and Data Analytics (PMDA) summer school, organized by Roche AG, which focused on single-cell gene expression in drug discovery.

Aug-Oct. 2013 **Specialized Program on Web Application Development**, *C-DAC*, Noida, **India**

- I went to **India** for 3-months of intensive training in web application development using open-source tools (Java, PHP, MySQL) at the Centre for Development of Advanced Computing (C-DAC) in Noida.

Professional Societies

ACM, IEEE, EMBS, MICCAI, Ro'ya-CV4Africa

Languages

Swahili (Native), English (Fluent), Japanese (Basic), German (Beginner)