The VADA Program
Visual and Automated Disease Analytics Graduate Training Program

Terms of Reference for Students – MSc and 1st Year PhD
November, 2022

What is the VADA Program?

The Visual and Automated Disease Analytics (VADA) Program in a graduate training program funded by the National Sciences and Engineering Research Council of Canada (NSERC) as part of its Collaborative Research and Training Experience (CREATE) Program.

The goal of the VADA Program is to train Master's and PhD students to develop and use automated techniques and tools to collect, analyze, and visualize chronic and infectious disease data. The objectives of the VADA Program are to:

1. Advance student *technical skills* in the development and integration of interactive data visualization, visual analytics, and automated approaches for data mining, mathematical and statistical modeling, and predictive analytics;
2. Improve student *knowledge of applied problems* relevant to the detection, prevention and management of infectious and chronic diseases;
3. Develop student *professional skills* in communication and relationships, entrepreneurism, responsible conduct of research, and project management.

In brief, the VADA Program will assist students to develop technical and problem-solving skills to address the challenges of working with complex health data, as well as professional skills that focus on collaboration, project management, career development, ethics and privacy, and entrepreneurism.

Who is Eligible to Apply to the VADA Program?

Students are eligible to apply to the VADA Program if they:

1. have applied to or been accepted into a full-time thesis-based Master's or PhD graduate program at the University of Manitoba or University of Victoria;
2. can demonstrate that their proposed thesis research project is related to the objectives of the VADA Program (i.e., see objectives #1 and #2 above);
3. are entering the first or second year of their graduate program; and
4. have a faculty supervisor who is a member of the VADA Program.

At the University of Manitoba, current VADA Program faculty members are affiliated with the Departments of: Biochemistry and Medical Genetics, Medical Microbiology, Community Health Sciences, Computer Science, Mathematics, and Psychology. At the University of Victoria, current VADA Program faculty members are affiliated with: School of Health Information Science, Department of Computer Science, Department of Math and Statistics, Department of Sociology, and Social Dimensions of Health Interdisciplinary Program. Appendix A contains a complete list of VADA Program-affiliated faculty.

Students who meet eligibility requirements 1, 2, and 3 but do not have a faculty supervisor who is a VADA Program team member must have their supervisor apply to join the VADA Program faculty. The application requirements are provided in the *Terms of Reference for Faculty Applications*.

What Funding Support is Available?

Master's and PhD students can receive support from the VADA Program for a maximum of 1 year (September 1 to August 31).

Students accepted into the VADA Program who have not received a major funding award will receive a minimum stipend of $19,000 at the Master's level and $23,000 at the PhD level. These stipends do not include benefits.

Students accepted into the VADA Program who have received a major funding award (e.g., CIHR, NSERC, university graduate fellowship), defined as an award worth $10,000 or more per year, will not receive a full VADA Program stipend. Instead, they will receive a top-up award to a minimum of $10,000 for Master's students and $13,000 for PhD students. The amount of the top-up award will depend on (a) the total amount of other awards, and (b) any requirements from the funder of the other award(s). The amount of the top-up will be determined by the VADA Program Leadership Team.

The VADA Program stipend will cease prior to the end of the funding year if at any time the student's status has changed (e.g., withdraw from the graduate program; move from full-time to part-time student status) during the course of that year.

What are the Requirements of the VADA Program?

New students in the VADA Program must complete all the requirements of their respective graduate programs, in addition to the following requirements:

- Attend a VADA Program orientation session
- Complete CHSC 7400 T10 *Foundations of Disease Analytics*. This three credit hour course is offered at the University of Manitoba by the Department of Community Health Sciences. This course is offered bi-weekly in the Fall and Winter academic terms, on Fridays. University of Victoria students will seek permission to register for this course through the Western Dean's Agreement;
- Maintain a B average across all courses completed as part of their graduate program
- Have a faculty supervisor who is a member of the VADA Program and it is strongly preferable to include at least one VADA Program faculty member on your advisory committee as well;
- Complete an internship or lab exchange that is a minimum duration of 8 weeks for Master's students and 16 weeks for PhD students;
  - o Internships involve a VADA Program student working on a project(s) with an industry partner/collaborator.
  - o Lab exchanges involve a VADA Program student working on an academic research project(s) for a VADA Program faculty member(s) who they have not previously worked for and who is not their thesis supervisor or committee member.
- Participate in the annual Summer School.

In addition, students accepted into the VADA Program must:

- Acknowledge VADA Program support in all publications and presentations;
- Submit a progress report prior to August 31st of the academic year in which funding is received;

- Demonstrate satisfactory research progress in the form of publications, presentations or progress in their degree program. Faculty supervisors must concur that satisfactory progress has been made and will be asked to provide feedback on this metric. *Unsatisfactory research progress could be the basis for withdrawal of funding.*
- Not work more than 15 hours per week in paid employment as a research assistant, teaching assistant or other University or non-University position during the period from September to April of the academic year(s) in which they are funded.

Contravening any of the above requirements is a basis for a reduction or withdrawal of funding and possible removal from the program pending the decision of the program leadership.

Appendix A:
Current VADA Program Team Members

Name	Department/School/ Faculty	University	Areas of Expertise
Pourang Irani	Computer Science	Manitoba	Human-computer interaction; information visualization
Lisa Lix	Community Health Sciences	Manitoba	Analysis of longitudinal/repeated measures data; quality of administrative health databases; multivariate analyses of quality life and behavioural health outcomes
Andre Kushniruk	Health Information Science	Victoria	Evaluation of the effects of technology; human-computer interaction; cognitive science
Elizabeth Borycki	Health Information Science, Social Dimensions of Health	Victoria	Patient and health information technology safety, quality and usability; health information technology management and strategy
Xuekui Zhang	Mathematics and Statistics	Victoria	Statistical genomics, bioinformatics, machine learning, mixture models, design of clinical trials
Laura Cowen	Mathematics and Statistics	Victoria	Statistical methods to study population dynamics, particularly through the use of capture-recapture methods and applications
George Tzanetakis	Computer Science	Victoria	Digital signal processing; machine learning; human and computer interaction
Alex Thomo	Computer Science	Victoria	Algorithms for big graphs; distributed data; MapReduce; social networks
Julien Arino	Mathematics	Manitoba	Mathematical population dynamics in epidemiology
Jason Leboe-McGowan	Psychology	Manitoba	Human cognition, specifically learning and memory
Gary Van Domselaar	Bioinformatics	Manitoba	Microbial bioinformatics including metagenomics, molecular diagnostics, computational genomics and pathogenomics
Pingzhao Hu	Biochemistry & Medical Genetics	Manitoba	Novel machine learning and statistical algorithms related to bioinformatics and statistical genetics

Depeng Jiang	Community Health Sciences	Manitoba	Longitudinal analysis and multilevel models, person-centered statistical approaches (latent class analysis and growth mixture models), structural equation models, statistical methods for designing clinical studies and drug discovery, dynamic prediction and precision medicine on oncology, and mental health program evaluation.
Natalie Knox	Medical Microbiology	Manitoba	Microbial genomics and bioinformatics for infectious disease surveillance and detection.
Meaghan Jones	Biochemistry and Medical Genetics	Manitoba	Environmental exposures in the prenatal and early childhood periods, focusing on when and how these become biologically embedded.
Meghan Azad	Pediatrics and Child Health	Manitoba	Role of infant nutrition and the microbiome in child growth, development and resilience.
Aleeza Gerstein	Microbiology and Statistics	Manitoba	Empirical and computational methods to understand the acquisition of drug resistance and virulence in human fungal pathogens.
Lyle McKinnon	Medical Microbiology and Infectious Diseases	Manitoba	Causes and consequences of inflammation in the female genital tract, HIV target cells including those that home to the gut, and HIV transmission and acute infection.
Celine Nadon	Medical Microbiology	Manitoba	Design and delivery of national and international laboratory-based surveillance and outbreak response for enteric diseases.
Max Turgeon	Computer Science	Manitoba	Dimension reduction methods for high-dimensional data
Abdul Roudsari	Health Information Science	Victoria	Telecare and e-health, Advanced and intelligent methods for the acquisition, processing and interpretation of data from the Electronic Patient Record.
Britt Drögemöller	Biochemistry & Medical Genetics	Manitoba	Pharmacogenomics and precision medicine.
Miguel Uyaguari	Microbiology	Manitoba	Microbiomes and antibiotic resistance genes in the aquatic environment.
Alex Kuo	Health Information Science	Victoria	Data interoperability; Health database & data warehousing; AI & Data Mining application in healthcare, and e-health.

University of Manitoba

NSERC CRSNG

University of Victoria

Hezhao Ji		Manitoba	Development of new methodologies for HIV diagnosis and HIV drug resistance testing; HIV viral evolution and molecular HIV epidemiology; applications of next generation sequencing (NGS) technologies in HIV/AIDS; HIV/AIDS-revelant metagenomics studies.
	Medical Microbiology and Infectious Diseases		