NEW FACULTY ORIENTATION

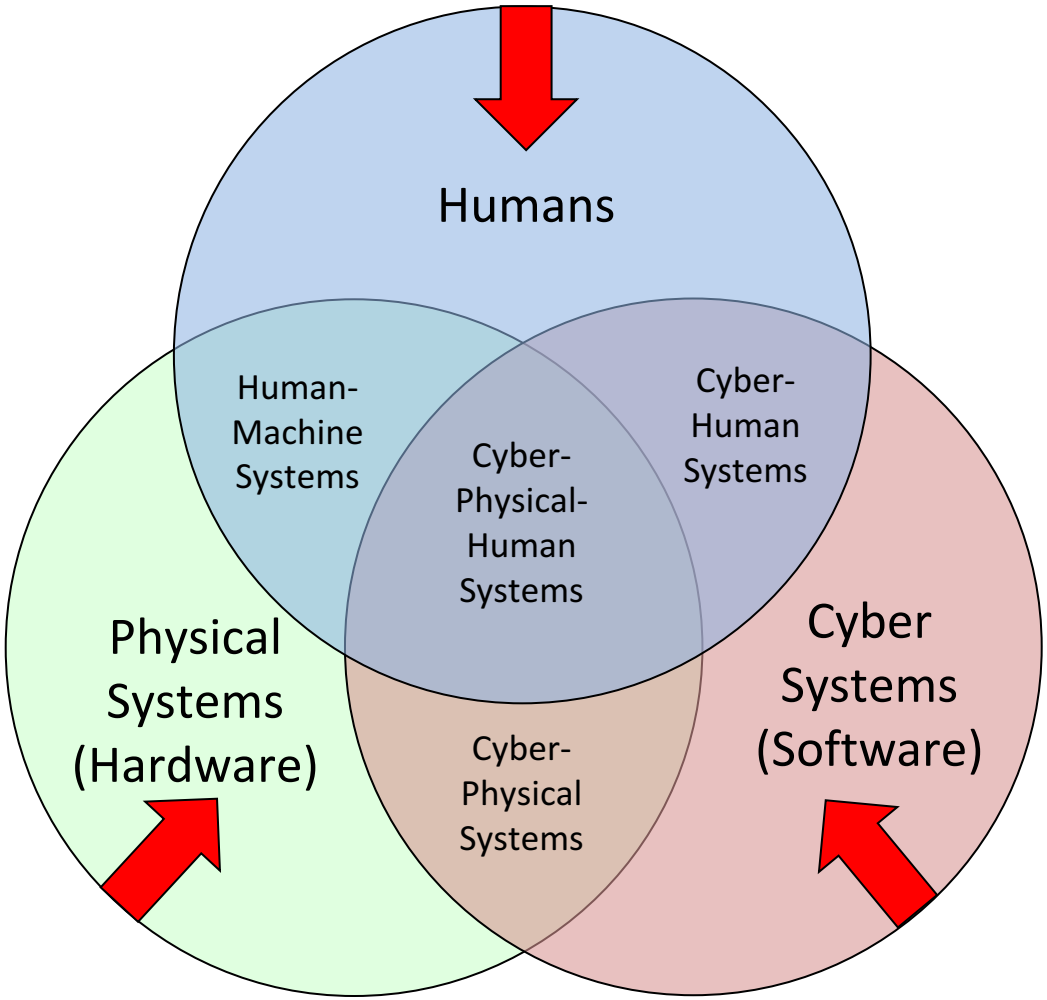
Introducing Your New Colleagues' Research and Creative Activity (2017)

University of Windsor

Autonomous {Cyber, Physical, Human} Systems

Theoretical Expertise

- Detection
- Estimation
- Tracking
- Sensors
- Optimization
- Noise Filtering
- Signal Processing
- Machine Learning
- Signal Analysis
- Data Fusion
- Big Data Analysis
- Algorithms



Applications

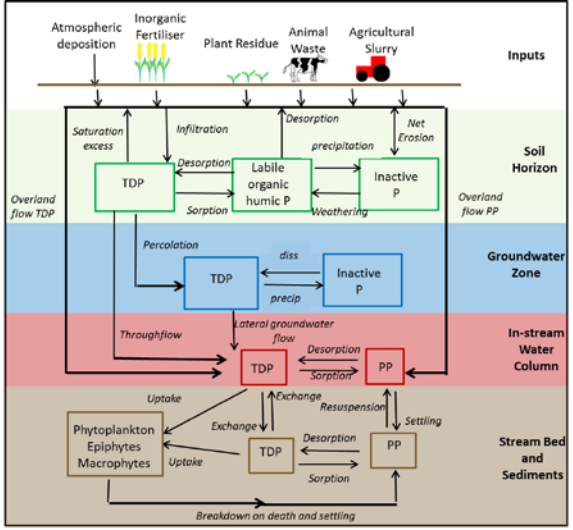
- Autonomous vehicles
- Robotic Navigation
- Target Tracking (Ground/Air/Space Targets)
- Smart Battery Management
- Human–Machine Automation
- Dynamic Social Networks
- Passive localization
- Wireless Communication
- Radar, Sonar, Video

Dr. Balakumar Balasingam (singam@uwindsor.ca)
Department of Electrical and Computer Engineering

Research Outline

- **Research Focus**
  - Health Systems Leadership and Performance
  - Population Health Research
- **Areas of Research Expertise**
  - Organizational behaviour (i.e., leadership, work environment, models of care, and health policy)
  - Health outcomes for patients, safety and quality improvement
  - Advance statistical modeling
- **Research Goals**
  - Immediate-term: Engage in health systems research (cross discipline)
- **Overall Impact of Research**
  - To inform policies that will transform health care delivery and better outcomes for patients and staff.

Sheila A. Boamah



Dr Jill Crossman

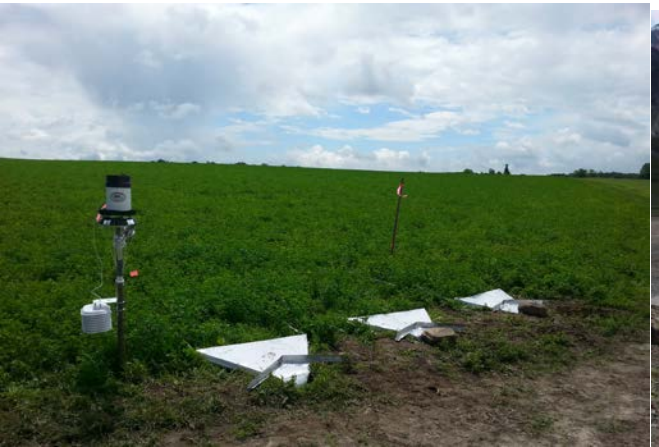
Hydrology

Nutrient Management

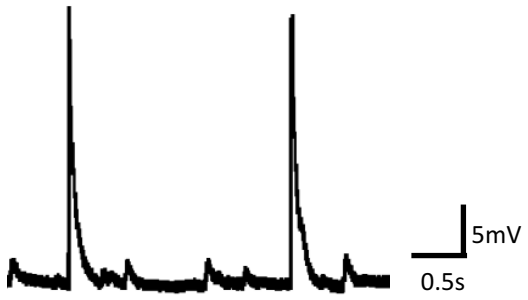
Ecology

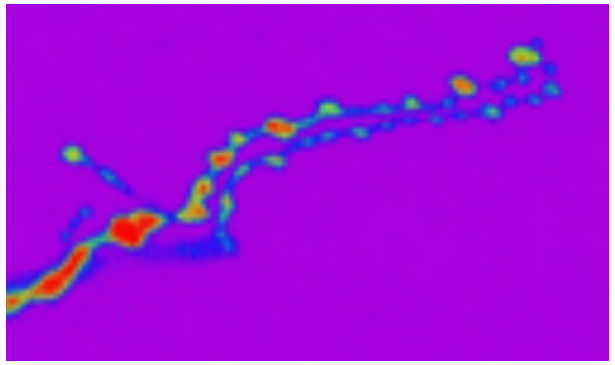
Microplastics

Climate Change



Jeffrey Dason
Department of Biological Sciences
University of Windsor





Synapses are the functional units of the brain and are targets of many diseases and drugs. Synapses are specialized structures where nerve cells communicate with each other through a process called synaptic transmission. Synapses are very plastic and their ability to transmit information from one neuron to another can change with experience. My research focuses on synapses and understanding the cellular and molecular mechanisms of synaptic transmission and plasticity. My lab uses an integrative approach that involves electrophysiology, calcium imaging, optogenetics, *Drosophila* genetics, and molecular biology to study the roles of various lipids and proteins involved in synaptic function.

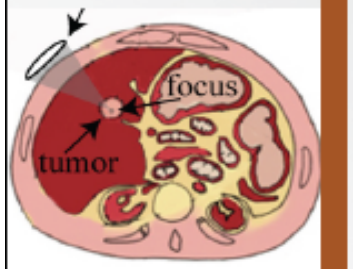
Terry Eddy, Ph.D.
Assistant Professor of Sport Management
Department of Kinesiology
terry.eddy@uwindsor.ca

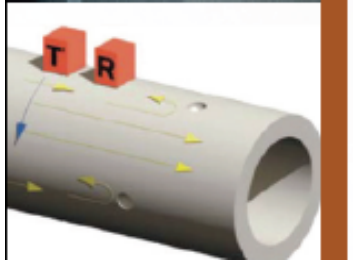
- Research Agenda
  - Examine fans' attitudinal, cognitive, and behavioral responses to sport sponsorship
  - Study the behavior of consumers in relation to sport properties

  Broad impact: Assist brands and sport organizations to better understand their fans/participants and market their products/services more efficiently

- Current Projects
  - Examining effectiveness of sponsorship activation and athlete endorsement through digital media
  - Sponsorship processing and responses in participant-sport settings

- Future goals
  - Establish collaborations with Canadian sport governing bodies for sponsorship assessments and marketing plans
  - Seek partnerships with brands to improve sponsorship implementation





Micro-Electro-Mechanical System (MEMS) Sensors

- **Miniature Scale, Efficient, Cost Effective, Robust, Sensitive**
  - **Health and Life Science**
    - Breast Cancer Detection, Bio-Sensors
  - **Agriculture and Environment**
    - Environmental Monitoring
  - **Natural Resources and Energy**
    - Pipeline Safety
  - **Automotive**
    - Safety, Autonomous Car
- **Collaboration**
  - **Academia**:
    - Chemistry, Physics, Earth and Environmental Science, Mechanical Engineering, Faculty of Medicine
  - **Industry & Government Agencies**:
    - Cancer Care Ontario
    - Ontario Medical Supply
    - Agriculture and Agri-Food Canada
    - Natural Resources Canada

Arezoo Emadi, arezoo.emadi@uwindsor.ca, CEI 3055
Department of Electrical and Computer Engineering

Aanii (greetings), I am an Anishnaabe researcher from Matachewan First Nation in northern Ontario. I conduct field research and use an interpretive approach to study accounting in social contexts.

My main research focus is on the interaction between accounting techniques and First Nations populations. Specifically, I am interested in understanding how financial reporting and budgeting mediate the relationship between Indigenous groups and the federal government.

My research goals are to understand the impacts of the current funding models on First Nations communities, to create awareness of the impacts of funding approaches, and to relate the topic to both Indigenous and non-Indigenous populations.

My research attempts to combine social and cultural perspectives into the study of accounting techniques in specific contexts. Collaborations could include researchers from Political Science, Cultural Studies, Sociology, Economics and other business disciplines.

Odette School of Business
University of Windsor

Russell A. Evans
Assistant Professor of Accounting
Odette School of Business

ADAPTIVE REUSE - METHODOLOGY FOR REINFORCING HISTORIC BEAMS WHILE UNDER LOAD

Jason Grossi, Architect/Composer
OAA, AIA, RAIC, NCARB, CAHP

1. Pre-1900 heritage building to be adaptively reused

2. Existing structure needs rehabilitation and reinforcement in place

3. RESEARCH CHALLENGES

- No prescriptive or design methodology based on observed testing and research for this common situation
- Current research is silent on the key issues related to reinforcing flexural members (some recent research for columns but not for beams).
- Current codes provide descriptive guide with no protocol.
- No industry standard method for analysis

<u>The end goal</u> of this research program will be to define a practical methodology for analyzing and designing reinforced flexural elements in Heritage Buildings.

Shajid Haque

Physics, Windsor

Research Interests

Theoretical Physics (String Theory & Cosmology)

- Theoretical Physics seeks to unify Quantum Mechanics & General Theory of Relativity in search of a **Fundamental Theory** of Nature.
String Theory is the best theory we have so far for the unification!

&

- **Cosmology** explores the beginning and the ultimate fate of our Universe.

Research Goals

- Connect String Theory with Cosmological observations; i.e. Inflation (early Universe) & cosmic acceleration (current Universe).
Cosmology is a theoretical laboratory for String Theory!

- Understand inflation and cosmic acceleration from Cosmology.

Research Impact

Shape our understanding of the Universe!

ENVIRONMENTAL ISSUES ARE REAL!

So are their solutions…

University of Windsor

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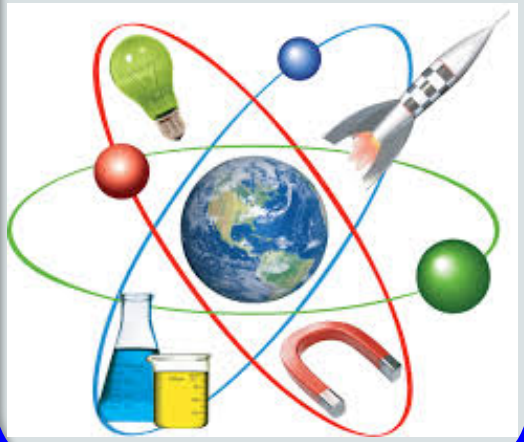
University of Windsor
Faculty of Science



Scientists

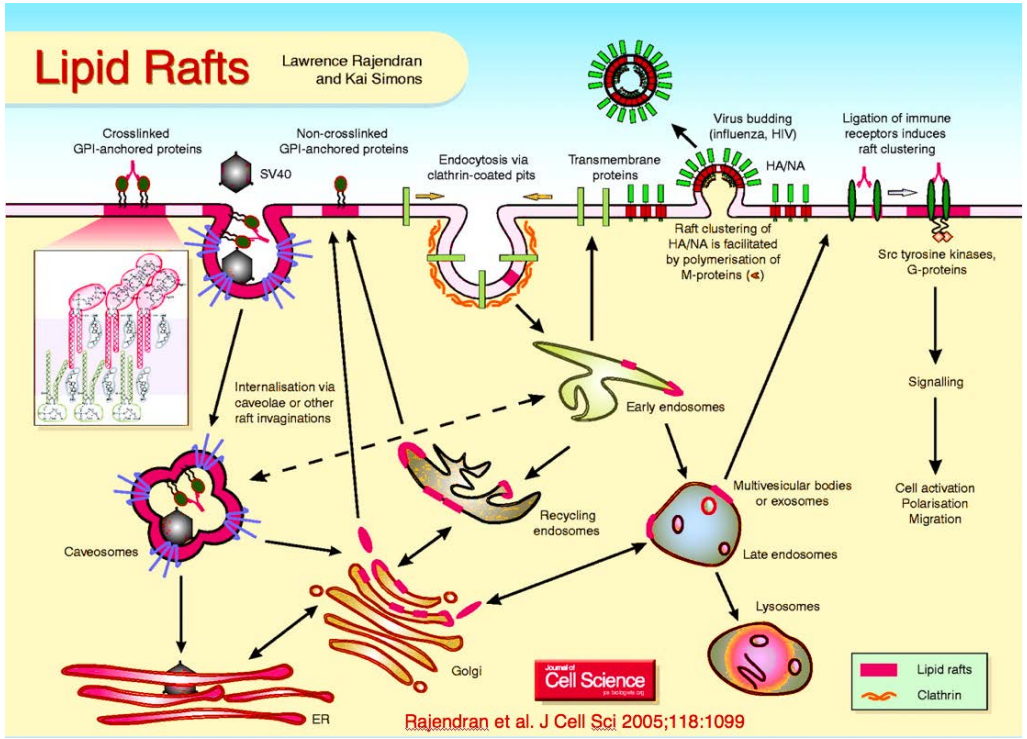
General Public

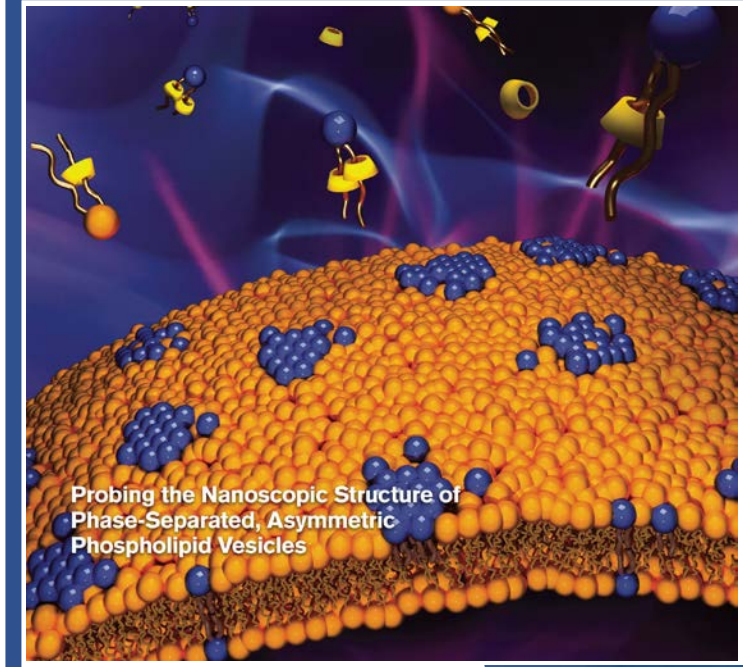
T Li and J. McCluskey, 2017. "Consumer Preferences for Second-generation Bioethanol." ***Energy Economics.***

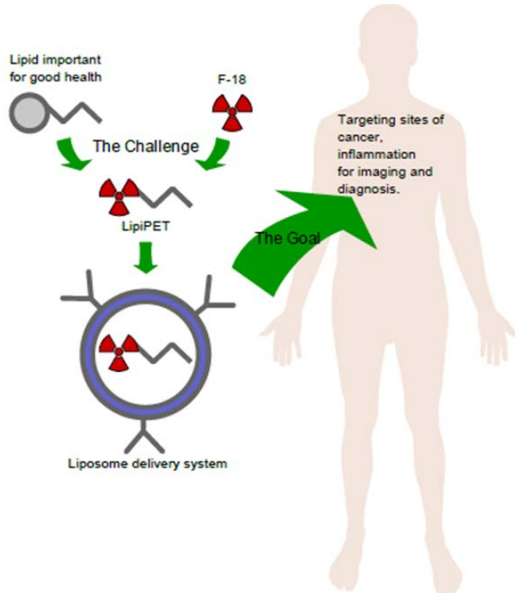
K. Messer, J. Duke, L. Lynch, and **T. Li**, 2017. "When Does Public Information Undermine the Efficiency of Reverse Auctions for the Purchase of Ecosystem Services?" ***Ecological Economics.***

T. Li , A. Espinola-Arredondo and J. McCluskey, 2016. "Promoting Residential Recycling: An Alternative Policy Based on a Recycling Reward System," ***Games.***

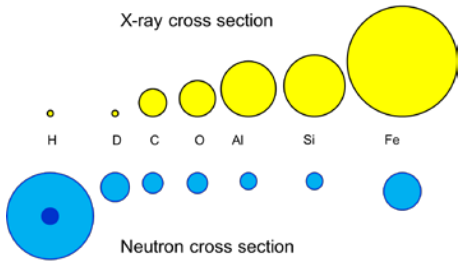
A (Better) Bridge?







Neutrons are a powerful probe to study biological assemblies such as membranes.



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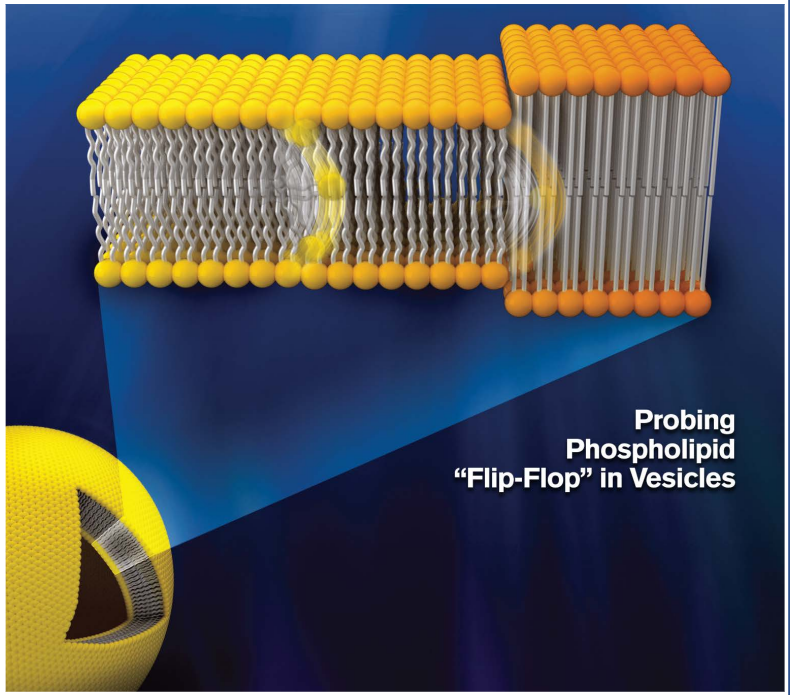


PATTI MILLAR

DEPARTMENT OF KINESIOLOGY
PMILLAR@UWINDSOR.CA

- MANAGEMENT OF NONPROFIT AND VOLUNTARY SPORT
- ORGANIZATIONAL CAPACITY BUILDING
- VOLUNTEERISM IN SPORT AND RECREATION ORGANIZATIONS
- POLICY IMPLEMENTATION
- PLACE OF SPORT AND RECREATION WITHIN OUR COMMUNITIES

BARRIERS AND FACILITATORS OF COLLABORATIVE MENTAL HEALTH CARE – WAYNE AMBROSE-MILLER PHD RSW

- Pilot Study completed of mental health providers within Ontario Family Health Teams
  - Identified multiple barriers and facilitators of providing mental health care within FHTs
- Goals of next phase:
  - To expand the sample of the study
  - To further explore barriers identified in pilot study ie. The sometimes overlapping roles of professions such as social work, psychology, and psychiatry
- Possible Impact:
  - The delivery of more effective mental health services in primary care
  - The delivery of more efficient mental health services in primary care
- Potential Collaborators: Psychologists, Physicians, ???

- **Research expertise**:
  - Child welfare, specifically the mental health of children and adolescents in non-family care settings and immigrant families
- **My current research**:
  - Adaptive functioning and family agency in immigrant families using a three-wave longitudinal study design

Research goals:

  - To contribute theoretical and empirical evidence on the contextual factors that affect the well-being of children in care and ethnic minority children

- **Research impact**:
  - Improving child welfare practices and policies that affect the well-being of immigrant children with child welfare concerns
  - Enhancing the research capacity, skills and knowledge of practitioners
- **Possible collaborators**:
  - Interest in immigrant families, minority children's development, adoption and foster care
  - Community partners that provide services to newcomers in Windsor-Essex, Children's Aid Society

JAYASHREE MOHANTY, SCHOOL OF SOCIAL WORK

Ken Montgomery

- ***Recent publications:***
- Digital storytelling for historical understanding: Treaty education for reconciliation
- Shut up and teach: Confronting the power and privilege of racialized hero discourses of soldier and nation
- School history textbooks, nationalist fantasies, and the incarcerating banality of white supremacy
- Pedagogy and privilege: Reflections on the challenges and possibilities of teaching critically about racism

How do we teach the nation?

When we speak of 'our' nation *(e.g., through friendly discourse, citizenship education, political issues or nationalist fanfare …)*

… what mythologies or fantasies about 'us' and 'them' do we reproduce?

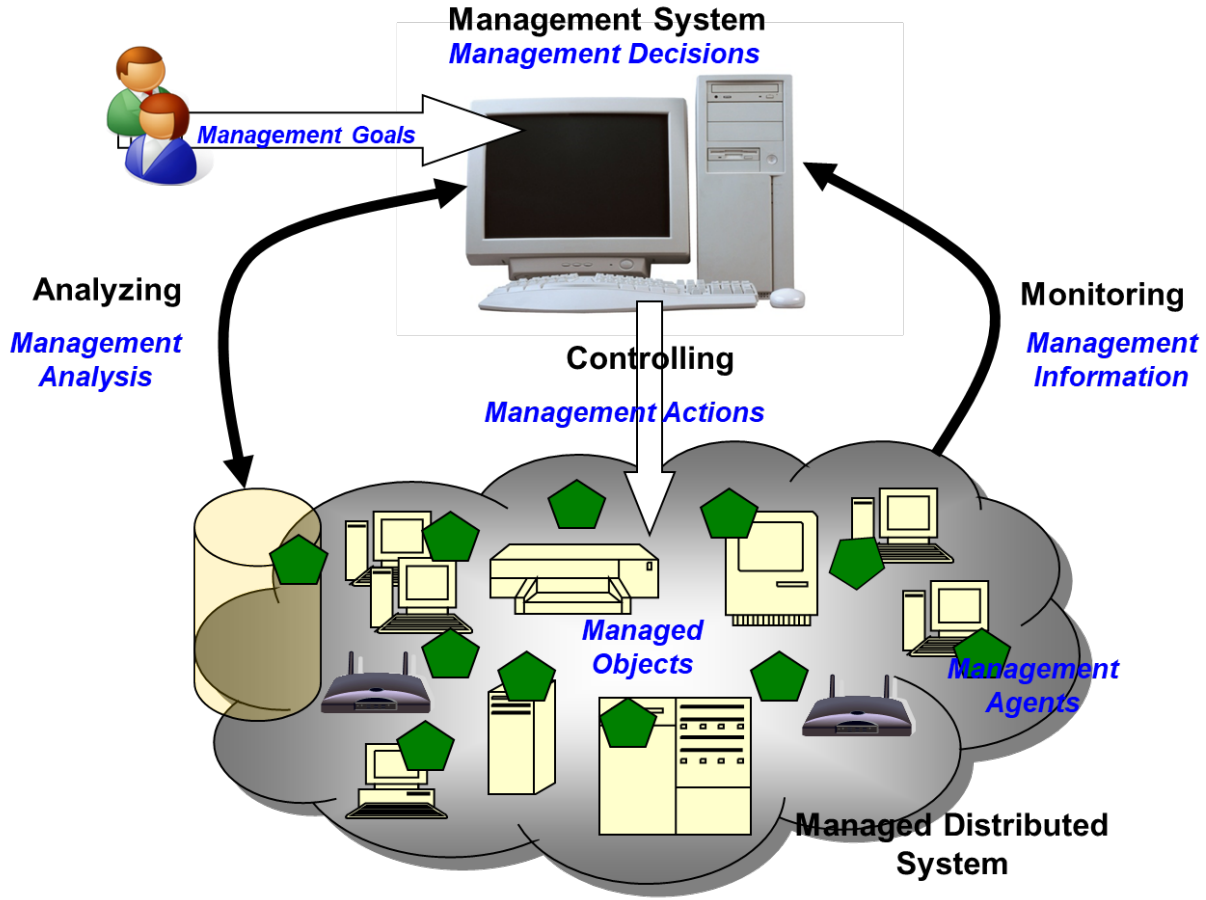
… what exclusions (subtle or overt) do we enact?

…what are the effects on the most vulnerable located within or beyond 'our' borders?

How might we teach/story the nation differently?

Towards Automating Management Systems: Self-* capabilities

- Self-Configuring
- Self-Protecting
- Self-Healing
- Self-Optimizing



Jody L. Ralph, PhD, RN
Associate Professor, Faculty of Nursing

Gene- Environment Interactions

- Epigenetics and prostate cancer
- Low vitamin D and gestational diabetes
- Placental and lactational transfer of vitamin D
- Genome-scale DNA methylation and big data
- Obesity and prostate health
- Biomarkers for preeclampsia

Jody.Ralph@uwindsor.ca
519-253-3000 ext 2271

Sherif Saad – Computer Science

- Research Interests:
  - Cybersecurity - Software Engineering - Applied Machine Learning
- Current Research:
  - Internet of Things Security and Privacy – Secure Design Patterns – Insider Threat Detection
- Past Research Experience:
  - Intrusion Detection - Security Incident Analysis - Network Forensics - Biometrics - Botnet and Malware Analysis, Digital Cash, Electronic Voting Spam Review and Authorship Verification
- Industrial and Collaboration Experience
  - Defence Research and Development Canada (DRDC) - MasterCard - American Express - Royal Canadian Mounted Police - Defence Innovation Unit Experimental
- Learn More:
  - https://www.linkedin.com/in/ebinsaad/
  - https://scholar.google.ca/citations?user=GcpOMcQAAAAJ&hl=en
- Contact:
  - shsaad@uwindsor.ca

University of Windsor

Saeed Samet

- Research Expertise
  - ➢ Cryptography
  - ➢ Security & Privacy-Preserving Protocols
    - ✓ Data Mining, Machine Learning & Statistics
  - ➢ Health Informatics
    - ✓ Secure Computation on Health Records

- Research Goals
  - ➢ Secure Common Frameworks for
    - ✓ Statistical Analysis Methods
    - ✓ Health Applications
  - ➢ Big Data Privacy-Preserving

- Research Impacts
  - ➢ More Secure and Efficient
    - ✓ Big Data Processing
    - ✓ Health Applications
    - ✓ More Responsive and Effective Systems

- Potential Collaborators
  - ➢ Big Data Experts & Companies
  - ➢ Security Experts & Companies
  - ➢ Health Professionals & Researchers

Object manipulation:

A lens to study movement across the lifespan and in different populations

Expertise:
Motor behaviour
Upper limb motor control
Object manipulation

Objective: To investigate cognitive and sensorimotor processes underlying motor planning and execution

Implications:
Understanding changes in motor control across the human lifespan

Sara Scharoun-Benson, Ph.D., Department of Kinesiology

LISA TRABUCCO

- PhD research in progress:
- PARALEGAL REGULATION AND THE PROMISE OF INCREASED ACCESS TO JUSTICE
- Q: Has paralegal regulation in Ontario (implemented in 2007) increased access to justice, as the government promised it would?
- Areas of interest: legal profession(s), professional regulation, legal services provision/providers, cost of legal services, access to justice
- UWINDSOR connection:
  - Ianni Report of the Task Force on Paralegals, 1990
  - Windsor Law 1988-1991

Paula M. van Wyk, Ph.D.
Faculty of Human Kinetics
Department of Kinesiology
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pvanwyk@uwindsor.ca

E.N.A.B.L.E.

- In general, my research focuses on ENABLING populations through the investigation and assessment of aspects related to:
  - **E – environments** (built environment, universal design, Falls prevention, post-hip fracture rehabilitation, "age-in-place")
  - **N – nursing staff** (reducing injuries in healthcare, primarily focused on patient transfers)
  - **A – access to care** (organizational culture, attitudes, cognitive impairment filter, community resources and rehab tool)
  - **B – barriers to mobility** (overcoming atrophy, balance, & gait for mobility and function, system barriers - transitions)
  - **L – living actively** (active living, physical and functional health literacy)
  - **E – equipment** (hand-grip technology for cardiovascular issues, modifying motorized cars for children with special needs)

Christine Vanderkooy, D.Mus.

- Classical Pianist
- Perform in Canada, U.S., Europe
- CD release
- New program for upcoming recitals
- Presentations, adjudicating, masterclasses
- Juries including JUNO Awards
- Community outreach, University promotion!

Jijian Voronka
Assistant Professor, School of Social Work
jvoronka@uwindsor.ca

- Research focus: exploring what patient engagement, inclusion and diversity models produce for the service user in mental health and homeless service systems. Using Disability Studies, my current interest is on how 'the peer worker' is incorporated within health and social service systems, and how this emerging work role is governed.
- Research Practice: Prioritizing service user knowledge with folks who are critically engaged with resilience, recovery, harm reduction & anti-poverty strategies to ensure that policy & practice is informed by those who directly experience distress.
- The future: Looking to collaborate with interdisciplinary scholars & local community service users, advocates, and organizations interested in doing community-based research to help produce disability justice.

Magnetic Resonance Imaging

Usually Large & Expensive

http://www.heberalvarado.com/category/mri/

Could be Portable & Affordable

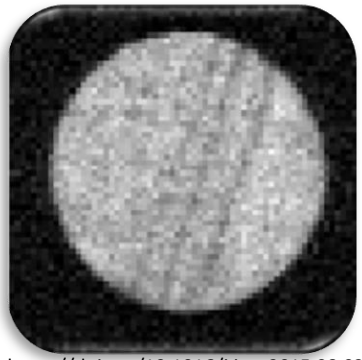
Soft Tissue

https://radiopaedia.org/cases/normal-brain-mri-6

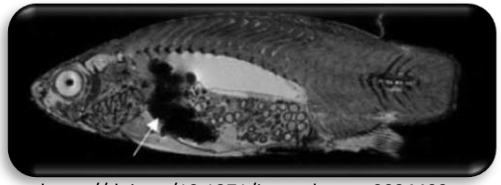
Neural connections

https://en.wikipedia.org/wiki/Diffusion_MRI

Rock Pore sizes



https://doi.org/10.1016/j.jmr.2015.08.023



https://doi.org/10.1371/journal.pone.0034499

My specialty is MRI methodology development.
Bring me a subject, I'll create an imaging protocol for you.

Dan Xiao, Physics

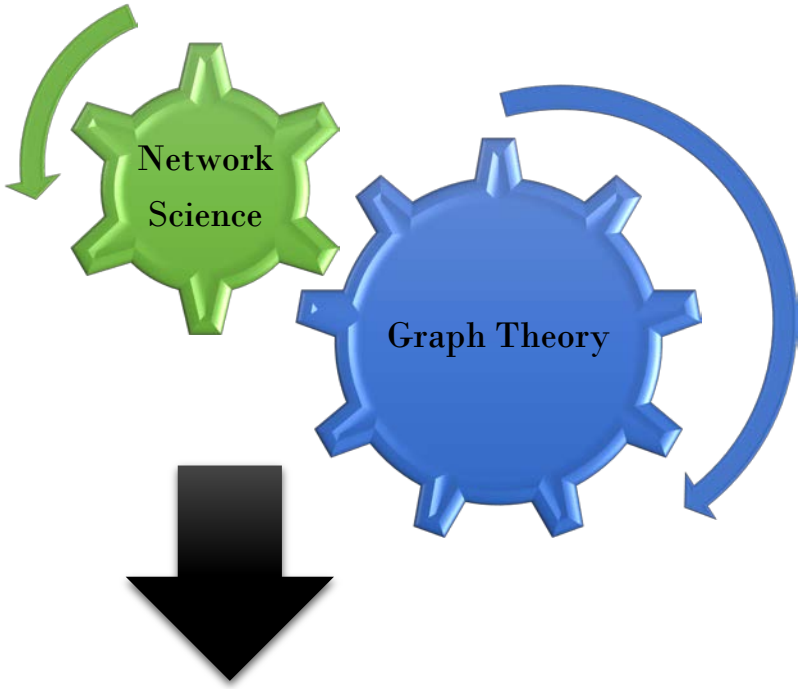
Pooya Moradian Zadeh
moradiap@uwindsor.ca

School of Computer Science
University of Windsor

Research Interests: Social Network Analysis, Complex Systems, Health Informatics, Applied Artificial Intelligence, Evolutionary Algorithms, Cultural Algorithms

Social Network Analysis : Process of studying social structures to

- Find relationships between social entities
- Explore the underlying structure of the network



Applications

- Recommendation system
- Knowledge sharing
- Advertising
- Marketing
- Predictions
- Event Detection
- Group Detection
- Information Propagation

- Describing the functionality and behaviors of complex dynamic social systems.
- Optimizing their performance.

About Myself:

- ***Name:*** *Minjie Zhang, Ph.D, MBA*
- ***Position:*** *Assistant Professor of Finance at Odette School of Business*

About My Research:

- ***Expertise:*** *Entrepreneurial Finance, Alternative Investments, International Finance;*
- ***Goals:*** *Fun and curiosity-driven, Expand knowledge and explore unanswered questions;*
- ***Impacts:*** *Expand knowledge base, increase interests in the field.*

I look for collaborators who share the similar research interests and topics and are good team workers.

Odette School of Business
University of Windsor