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Statement of Research Program 2023-2027

Disciplinary Areas

My 2 disciplinary areas in IS/IT are: (1) **digital innovation** strategies and leadership; (2) **data analytics** and ontology applications. I favor applied research in such sectors as healthcare, energy, and financial services industries, as well as public administration. The 2 areas represent 60%/40% of my research time, but after 7 doctoral supervisions are completed in 2024, I will refocus toward 30%/70%, i.e., expanding my research projects with ontology applications.

Research Priorities

1. Digital Innovation:

1.1. Evolving CIO profile & digital project success factors, impact of governance frameworks, incentives.
1.2. Impact of CIO innovation leadership on transformation focus, link digital project staffing priorities.
1.3. Impact of agile methods and practices on project leader careers, control for digital strategy context.
1.4. Integration of open-source BOKs within a coherent framework uniting IS/IT/TIM/PM in one profession.

2. Data Analytics:

2.1. Annotate parliamentary proceedings with policy ontologies, automated queries, recommendation.
2.2. Use ontologies to identify disinformation campaigns, corruption allegations against public sector projects.
2.3. Analyze project governance, use ontologies to analyze projects, match events to project patterns.
2.4. Use ontologies and semantic rules for cyber defense strategies, team capabilities, knowledge gaps.
2.5. Use semantic rules to match IT candidates to jobs, use distributed ontology & rules, real-time.

Publication Plans

In 2024-2025, I will publish journal articles based on 7 doctoral dissertations to be defended in 2024: 3 relied on Partial Least Squares (PLS), of which 2 on Digital Innovation Leadership, and 1 on Dynamic Capabilities; 3 relied on ontologies: 1 for text analytics of expert interviews with agile project managers, 1 for job matching rules, and 1 for reasoning; 1 thesis relied on 25 in-depth interviews with CIOs and used a grounded theory approach.

In 2026-2027, new journal articles will be based on emerging results from 4 open-source projects I am starting. They all focus on Risk and Governance applications using Knowledge Graphs, Ontologies, and Semantic Reasoning. I am studying system architectures to help annotate parliamentary debates, identify disinformation, anticipate project risks, mitigate corruption, recommend cyber defense tactics, manage talent in projects, etc.

Technology Expertise

My data analytics projects rely on semantic technologies and using big data platforms. I run a lab of 7 servers and use 5 large HPC clusters of the Digital Research Alliance of Canada (DRAC). My research software skills are:

- Causal models: SmartPLS for SEM, GeNIe Modeler for Bayesian networks;
- Machine Learning (ML): R, Python, Spark (Databricks, Sparkflows.io), and Superset for visualization;
- Natural Language Processing (NLP): Inception, DKpro CASSIS, UIMA, and ARDAKE;
- Semantic Reasoning: OWL/RDF/SWRL with Stanford Protégé, Stardog, SANSA stack;
- Started Studying New Platforms: Graph Embeddings using GPUs and FPGAs.

Research Accomplishments

Productivity	While average given my career advancement, I rank among the top 5 in my department of 36.
Publications	I have published 24 journal articles, 7 book chapters, and 24 papers in proceedings. Respectively 9, 3, and 10, or 42%, are in data science applications: finance, healthcare, energy, procurement, government.
Grants	I have developed partnerships with private organizations and was awarded more than CAN$400,000 in grants, including CAN$222,000 in the last 5 years. I submitted applications to Canadian funding agencies SSHRC and FQRSC, and I benefited from matching funds from MITACS. I target applied research projects with community partners with student fieldwork.
Supervisions	I supervised 20 theses, of which 14 have graduated, including 6 masters and 8 doctorate. I still have 6 theses to supervise, 4 of which will go for defense in 2023-24.
Software	I use in research (my servers or Canadian HPC services): R, Python, Spark (Databricks, Sparkflows.io), and Superset for visualization. NLP tech.: UIMA, DKpro, and Inception. In Semantic tech.: OWL/RDF/SWRL with Stanford Protégé, Stardog, SANSA stack. Algorithms: Bayes networks, classification, NLP-Ontology linking. Exploring: Graph Embeddings GPUs and FPGAs.
Leadership	While each of my leadership roles has been of short duration, my experience is very diverse.
University Service	I was lab director at NJIT in 2002-2006. Department chair at UQO in 2011 and 2017-2018. Program chair of MSc PM in 2007 and 2018, as well as DBA PM chair in 2018. Member of the university senate sub-commission in 2006-2007, and campus research committee in 2017-2019.
Journal Editorship	• EiC, Business Technology Management Journal (BTMJ) • EB, International Journal of Information Systems and Project Management (IJISPM) • EB, International Journal of Information Technologies and Systems Approach (IJITSA) • EB, Management and Production Engineering Review (MPER) • SI Co-Ed., Journal of Enterprise Information Management (JEIM)
Conference Chair	• General Chair, Business Technology Management Symposium (BTMS) • SIGLEAD Mini-Track Chair, Americas Conference on Information Systems (AMCIS) • Panel Chair, Project Management Methodology (PM2) Alliance Conference
Community Roles	• CEO, Digital Innovation Foundation (DIF), a non-profit research consortium • Co-Founder, Government Analytics Research Institute (GARI), an inter-university lab • Special Advisor & BOK Leader, Business Technology Management (BTM) Forum • Board Member, AIS SIG on Leadership in IT (SIGLEAD) • Canada-Ontario Chapter Chair, Project Management Methodology (PM2) Alliance