Sysabee

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As Principal of Sysabee, I help organizations benefit from technology-supported decision-making through machine learning and systems modeling techniques. I focus on revealing the underlying composition of systems and processes through analysis of structured and unstructured data, which leads to quantitatively accurate models and working simulations. I remain an active participant in academic research as an adjunct professor at the Institute of Cognitive Science at Carleton University.

KEY COMPETENCIES

Systems Modeling

Computer Simulations
Ontologies, Process Models
Conceptual Models

Modeling environments and languages:
MATLAB, NetLogo, Perl, C, C++, Java, LISP, Python, Excel, FreeMind, OmniGraffle

Data Analysis and Machine Learning

Clustering and Anomaly Detection
Classification
Graph and (Social) Network Analysis

Analysis environments and languages:
R, MATLAB, Weka

SELECTED PROJECT EXPERIENCE

Data Science Professional Development Workshops (Nov 2014 – Nov 2016)

Project Description

In collaboration with the Centre For Qualitative Decision Support and Analysis, the creation and presentation of data science workshops designed to introduce data science concepts and algorithms to a non-technical audience who are either working with data scientists (e.g. project managers and subject matter experts) or are undertaking knowledge skills transfer from other areas of expertise.

Related Publications/Presentations

Boily, P., Schellinck, J., "Mining for Information Gold: Data Science Concepts and Techniques"
Boily, P., Schellinck, J., "Hands-on Data Discovery: Exploring Data with IBM SPSS Modeler and Other Platforms"

Data Analysis Methods for SEA Data Analytics (Jan 2016 – Jun 2016)

Project Description

Provision of expert advice to support the creation of a large scale automated data analysis system for sensor-generated radio spectrum data, with a focus on selection of appropriate data analysis and machine learning techniques in the areas of clustering, time series analysis and anomaly detection.

Related Publications/Presentations

Schellinck, J., Boily, P., Warren, R., Liu, D. (2016) A Primer of Methods for SEA Data Analytics, Communications Research Centre, Ottawa, Canada

Nuclear Waste Repository System Probability Failure Model (Sep 2014 – Dec 2014, Jun 2015 – Jun 2016)

Project Description

This project encompassed the development of a methodology for the creation of a probability of failure model of a proposed nuclear waste barrier system (the Adaptive Phased Management Repository Design – Mark II), including:

- a review of currently available statistical and simulation techniques for failure probability evaluation, along with failure analysis methodologies developed for structured failure analysis
- an assessment of the availability of evidence and data on factors identified to be relevant to the design of a failure model for a deep geological repository for nuclear waste
- based on the preceding work, an assessment of the feasibility of creating a probability failure model for the system in question and a development of a methodological approach for the construction of this model
- A development of a step-by-step methodology and analytic approach for the creation of the required failure model for the Adaptive Phased Management Repository Design – Mark II

Related Publications/Presentations

Schellinck, J., Boily, P. (2015) Requirements for the design and analysis of a statistical failure model for the Adaptive Phased Management Repository Design – Mark II

Schellinck, J.,Boily,P., Hagiwara,S., MacDougall,K.(2016) Failure Analysis Simulation Model for the APMRD-II.

Assessment and Analysis of Consular Data (Dec 2015 – Mar 2016)

Project Description

Analysis of consular data in order to determine data reliability and quality. Provision of possible analysis options and consular system metrics based on this review.

Related Publications/Presentations

Schellinck, J., Boily, P., Liu, D. (2016) Assessment and Analysis of GAC (DFATD) Consular Data, Global Affairs Canada, Ottawa, Canada – REPORT.

Schellinck, J., Boily, P., Liu, D. (2016) "Data Architecture Analysis, Renovation and Renewal: A Case Study with GAC Consular Data", presentation to the Consular IT-IM Colloquium

CHEO Oncology Inpatient/Outpatient Services Experienced Based Co-Design Project (Mar 2015 – Dec 2015)

Project Description

Provision of academic research coaching support for the principal investigators in the EBCD project, which was part of the Canadian Foundation for Healthcare Improvement (CFHI) Partnering with Patients and Families for Quality Improvement Project. Project coaching support includes:

- Providing research insight into relevant individual and system level metrics that can be used to evaluate current system states and expected project outcomes
- Enabling the production of academic publications associated with the project via review and feedback of in-progress articles
- Providing a cross-disciplinary perspective and relevant research findings in related fields (e.g. cognitive science, systems theory)
- Integration of the research findings of this project with relevant current academic research projects being undertaken in the context of Cognitive Science adjunct professorship (e.g. Human Friendly Systems project)

Related Publications/Presentations

Rohde, K.,Brosseau, M.,Gagnon, D., Schellinck, J. and Kouri, C. (2016). Envisioning mechanisms for success: Evaluation of EBCD at CHEO. Patient Experience Journal: Vol. 3: Iss. 2, Article 16.

Modelling, Analysis and Creation of Predictive Simulations to Support the Development of Species at Risk (SAR) Protection Plan (Aug 2014 – Dec 2015)

Project Description

The creation of conceptual models and simple simulations of organizational behaviours that influence document flow through relevant aspects of the SAR Program, along with an analysis of the conceptual models and simulations in order to identify potential system issues and make recommendations in relation to these identified issues.

Simulations developed in the project will be used on an ongoing basis by Environment Canada staff to support decision-making, resource allocation and realistic timeline forecasting by enabling the exploration of current and future scenarios via simple model parameter adjustments

Related Publications/Presentations

Schellinck, J. (2011) "Applications of Systems Theory to Cognitive Systems: Modelling Information Flow in Government Departments" presentation to Carleton University Institute of Cognitive Science, December 2011.

Discrimination and nondiscrimination in parasites: A simulation created for analysis of evolutionarily stable states and population dynamics (Apr 2013 – May 2014)

Project Description

The Netlogo simulation environment and graphical interface were used for the creation of an individual based simulation which was used to study parasite evolution and population dynamics behaviours over time, via manipulation of simulation parameters, in order to determine the likelihood of a number of relevant biological scenarios, including the evolution of non-discriminant parasites and the conditions under which parasites may seek out novel hosts over time

Related Publications/Presentations

Schellinck, J., Forbes, M (2014) "The evolution of nondiscrimination in parasites: an individual based model", presentation at Genomes to/aux Binomes (Canadian Society for Ecology and Evolution), Montreal, Canada.

Forbes, M., Vellino, A., Schellinck, J. (In press). Host species exploitation and discrimination by animal parasites. Philosophical Transactions of the Royal Society B

Creation of Organizational Models for the Development of Intelligent Automated Metadata Tagging Systems for Support of Information Management Infrastructures (ISIS Systems) (Sep 2008 – May 2012)

Projects Description

(Canadian Army ACIMS Information Mapping Project, Library and Archives ISIS Pilot Project, Western Diversification Records Management System project, Library and Archives EDRMS Requirements Project)

- Analysed the business processes, workflows, functional structure, relevant business objects, Electronic Document and Records Management System (EDRMS) requirements and metadata requirements of organizations via in-depth analysis and content extraction of existing data and documentation relevant to organizational modelling and functional and business process interviews
- Developed high-level functional mappings, functional decomposition and detailed activity-process models of organizations based on organizational analysis
- Generated information mappings, faceted classification taxonomy schemes, document classification schemes, EDRMS specifications and information architectures for relevant branches of organizations, in order to develop and support information management requirements and plans of these organizations
- Created organization specific automated metadata tagging systems
- Supervised the Cogniva analyst project team

Related Publications/Presentations

Alberts, I., Schellinck, J., Eby, C., & Marleau, Y. (2010). Bridging Functions & Processes for Records Management. Canadian Journal of Information and Library Science, 34(4), 365-390.

WORK EXPERIENCE

- Principal, Sysabee: Data Analysis and Systems Models (Oct 2012 – Present)
- Human Factors and Systems Research Consultant, Focal Research (May 2012 – Oct 2012)
- Scientific Director, Information Flow within Organizations Research Stream, Cogniva Information Science Research Institute, (Sep 2011 – Apr 2013)
- Director of Modelling and Methodology, Cogniva (Sep 2008 – May 2012)
- Environmental Consultant, Office of Energy Efficiency, Natural Resources Canada (Jun 2006 – Aug 2006)
- Coach and Assistant Head Coach, Academic Coaching, Enriched Support Program, Carleton Centre for Initiatives in Education (Sep 2005 – Mar 2008)
- Computer Programmer, TalkCast (Jun 2000 – Sep 2000)

RELEVANT ACADEMIC AND PROFESSIONAL ATTAINMENTS

Adjunct Professor (gratis) (Institute of Cognitive Science, Carleton University) (Aug 2009 – Present)
Adjunct Professor (gratis) (School of Information Studies, University of Ottawa) (Sep 2012 – Jun 2016)

SELECTED PRESENTATIONS AND POSTERS

Schellinck, J., Boily, P., Dong, L. (2016) "Data Architecture Analysis, Renovation and Renewal: A Case Study with GAC Consular Data", presentation to the Consular IT-IM Colloquium.

Schellinck, J. (2015) "Deriving Organizational Workflows Using a Cognitively Realistic Multi-Agent Simulation", presentation to the Faculty of Computer Science, Dalhousie University (invited talk).

Schellinck, J., Forbes, M. (2014) "The evolution of nondiscrimination in parasites: an individual based model", presentation at Genomes to/aux Binomes (Canadian Society for Ecology and Evolution), Montreal, Canada.

Schellinck, J., Webster , R. (2013) "Cognitive models: Understanding their critical role as explanatory and predictive hypothesis generators in cognition research". Poster presented at ICCM 2013 The 12th International Conference on Cognitive Modelling, Carleton University, Ottawa, Canada.

Schellinck, J. (2011) "Applications of Systems Theory to Cognitive Systems: Modelling Information Flow in Government Departments" presentation to Carleton University Institute of Cognitive Science.

Schellinck, J. Eby, C. (2011) "Towards a Unified Information Services Architecture" keynote speech presented at ARMA NCR Fall IM Days, Gatineau QC, November 2011 (invited talk).

Schellinck, J., Webster, R. (2010). "The Scientific Power of Good Models: Unifying Hypothesis Discovery and Hypothesis Testing". Presented at Models and Simulations 4, University of Toronto, Toronto Canada.

Alberts, I., Schellinck, J., Eby, C., & Marleau, Y. (2010). "Bringing Together Functional Classification and Business Process Analysis: Growing Trends in Records Management". Presented at the 38th Annual Canadian Association for Information Science Conference. Concordia University, Montreal, Canada.

Schellinck, J. (2007). "Three-dimensional aggregation model of the interplay between species-specific characteristics." Presented to the International Ethological Conference 2007, Halifax, Nova Scotia.

PUBLICATIONS

Forbes, M., Vellino, A., Schellinck, J. (In press). Host species exploitation and discrimination by animal parasites. Philosophical Transactions of the Royal Society B

Rohde, K.,Brosseau, M.,Gagnon, D., Schellinck, J. and Kouri, C. (2016). Envisioning mechanisms for success: Evaluation of EBCD at CHEO. Patient Experience Journal: Vol. 3: Iss. 2, Article 16.

Schellinck, J., White T. (2011) A Review of Attraction and Repulsion Models of Aggregation: Methods, Findings and a Discussion of Model Validation. Ecological Modelling, 222(11), 1897-1911.

Alberts, I., Schellinck, J., Eby, C., & Marleau, Y. (2010). Bridging Functions & Processes for Records Management. Canadian Journal of Information and Library Science, 34(4), 365-390.

Schellinck, J., White, T. (2005) Use of Netlogo as a rapid prototyping tool for the creation of more rigorous spatially explicit individual-based biological models. In Hill, D., Barra, V., Traore, M. (eds.) Open International Conference on Modelling and Simulation-OICMS 2005. Blaise Pascal University, France.

RELEVANT VOLUNTEER EXPERIENCE

Co-Organizer, Graph Ottawa Meetup Group (Sep 2015 – Present)
Member, Data for Good Ottawa (Jun 2016 – Present)

EDUCATION

Ph. D., Cognitive Science, Carleton University 2009
B. Sc., Computer Science, Dalhousie University 1997
B.A. Honours, Philosophy, Dalhousie University 1996

REFERENCES AVAILABLE UPON REQUEST