PhD Seminar in Accounting Information Systems

This course is coordinated by Prof Miklos A Vasarhelyi and taught by Rutgers AIS faculty in their areas of expertise.

An introduction to the literature
Merging towards Unification?

Classes will be held Tuesdays 2:30-5:30 pm at room XXXXXXX

Gotomeeting connection will be made available to participants observing the course in a synchronous manner. Materials will be made available to these participants.

1. Please join my meeting, Jan 19, 2016 at 2:30 PM EST.
https://global.gotomeeting.com/join/238424709
2. Use your microphone and speakers (VoIP) – a headset is recommended. Or, call in using your telephone.
Dial +1 (872) 240-3212 <tel:+1%20(872)%20240-3212>
Access Code: 238-424-709
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Meeting ID: 238-424-709

1. 1/19/2016
Introduction and Overview Miklos A. Vasarhelyi

This section looks at the nature and component of extant accounting and AIS research evaluation under a bibliometric evaluation framework the overall accounting literature and the current content of the AIS literature and its semantic components.

- JIS/JETA Characteristic tables

2. 1/26/2016
Semantic Modeling of Accounting Phenomena Alex Kogan

This topic will cover the now classical approach of Resources-Events-Agents (REA) towards creating logical data models of event-driven business information systems. This approach is now widely accepted as a theoretical foundation of accounting information systems and covered in major AIS undergraduate textbooks. The supplementary article presents some cutting edge theoretical developments in REA.

http://www.msu.edu/user/mccarth4/McCarthy.pdf

http://aaajournals.org/doi/abs/10.2308/jis.2006.20.2.37

3. 2/02/2016
Design Science Research Alex Kogan

This topic will cover a leading article on the design science research methodology in information systems. A supplementary article described the application of design science methodology to AIS on the example of REA.


http://misq.org/design-science-in-information-systems-research.html

Julie Smith David, Gregory J. Gerard, and William E. McCarthy "Design Science: An REA Perspective on the Future of AIS"

http://www.msu.edu/user/mccarth4/designsc.doc
Vasarhelyi and Halper (1991) implemented the first known continuous auditing system at Bell Laboratories. This implementation brought to light important issues, such as the quality of data, the optimal frequency of running tests, and the processing of the identified exceptions. Since this first successful implementation, numerous statistical and machine learning techniques and methodologies were proposed in the accounting literature, aiming to provide real-time or close to real time level of auditing (Dull et al., 2006; Kogan et al., 1999; Vasarhelyi & Halper, 1991). The majority of these methodologies use historic data at the transaction level to infer benchmarks (data modeling) against which new transactions are compared at a later stage (data analytics)\(^1\) (Kogan, Vasarhelyi, & Wu, 2010). Alles et al. (2006) discussed the actual implementation of a continuous auditing system in a major multinational company following the continuous assurance architecture that was proposed by Vasarhelyi and Halper (1991). The main objective of the implementation was to identify exceptions, and the authors reported that the results yielded large numbers of exceptions. Alles et al (2006, 2008) and Debreceny et al. (2003) pointed out the problem of large numbers of identified exceptions associated with such continuous auditing systems. The alarms generated during the identification phase do not undergo any processing before they are sent to the auditors. Consequently, the overall efficiency and effectiveness of such continuous auditing systems is limited by the capabilities of the human users.

Continuous assurance services require performing complex tasks such as data aggregation and analysis. Unfortunately, as mentioned earlier, social sciences literature shows that humans do not perform well such complex tasks. They can be overwhelmed with large amounts of information, and have limited capabilities in collecting and processing information from multiple sources (Iselin, 1988; Kleinmuntz, 1990). As a result, it is crucial to provide a certain level of exceptions processing before presenting them to the human users if we want to take full advantage of continuous auditing systems. A system that can prioritize identified exceptions could greatly increase audit efficiency and effectiveness by drawing auditors’ attention to the more suspicious exceptions first. This would allow for timelier reporting, and even addressing, of possible risks.


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\(^1\) These methodologies are based on the assumption that new data has the same patterns and behave similarly to the historic data used to create the benchmark.
Governmental Reporting

Recently the State Budget Crisis Task Force released its final report regarding the fiscal condition of state and local governments. This task force, which formed about three years ago and was co-chaired by the former Federal Reserve Chairman Paul Volker and former New York State lieutenant governor Richard Ravitch, expressed alarm by the unsustainable financial conditions of most state governments (Cohn, 2014). In its final report (State Budget Crisis Task Force, 2014) as well as in its previous report from 2012 (State Budget Crisis Task Force, 2012), the task force enumerated the many fiscal and procedural issues that were structural, not cyclical. The states that were studied in detail included California, Illinois, New Jersey, New York, Texas, and Virginia. In these states some of the more serious issues identified were cash-based budgeting, the absence of pertinent mid-year financial planning, and a lack of clarity regarding future financial obligations. Chief among the suggested remedies to address the crisis conditions of most state governments was the recommendation that state financial reports should be disclosed in a clear, concise, timely, and more understandable manner. According to the task force reports, information that is contained in governmental financial reports is not understandable nor presented in a timely manner for stakeholders to undertake financial evaluations and decisions. Certain changes are needed to satisfy these users’ needs for adequate information, and by taking advantage of the latest technological developments, the desired results of transparent and timely state governmental reporting can be achieved.

It is noteworthy noting that the state financial reports are currently released in PDF format. The GASB has reported that the largest local governments take about 6 months to release their reports after year-end on average (Mead, 2011). In contrast, the SEC requires public companies to release reports within 60 days of year-end (SEC, 2009) and the federal government demands that its agencies report in 45 days. Furthermore, the SEC also requires...
public companies to file their financial statements in an interactive digital format, XBRL (xbrl.sec.gov/2009).


The Digital Accountability and Transparency Act (DATA Act).

http://www.gpo.gov/fdsys/pkg/BILLS-113s994es/xml/BILLS-113s994es.xml


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6. 2/23/2016

Text Mining Research     Kevin Moffitt

This topic will be discussed for 1.5 classes and will focus on text mining research methodologies in accounting. I have selected three seminal papers, a discussion piece, and one working paper for the students to read and discuss. The first paper discusses the information content of forward-looking statements in the MD&A and is rich in methodology that is still relevant. The second paper by Loughran and McDonald presents the development of accounting and finance dictionaries. These dictionaries are widespread in their use in accounting research. The third paper by Larcker and Zakolyukina has been highly criticized, yet it was published in a top journal. Students will have the opportunity to read it and the discussion published by Bloomfield. The fifth paper by Moffitt and Mayew will be used as a springboard to discuss some of the technical knowledge needed to conduct text mining research.


7. 3/01/2016 Kevin Moffitt
Eye Tracking Research/NeuroIS

The budding field of neuroIS is gaining mainstream momentum in Information Systems research. The seminal article below discusses methodologies and a research agenda that could influence future AIS research. As a part of the discussion I will bring in an eye tracker and perform a demonstration.


8. 3/08/2016
Machine Learning Application in Accounting and Auditing Alex Kogan

This topic introduces machine learning applications in fraud detection. The main paper compares the statistical performance of some commonly used machine learning algorithms, while the supporting paper presents an innovative modification of support vector machines for the fraud domain.


http://aaaajournals.org/doi/abs/10.2308/ajpt-50009


http://pubsonline.informs.org/doi/abs/10.1287/mnsc.1100.1174
Information technology has changed many aspects of accounting practices and both accounting tasks and information technology supporting accounting tasks have become more complex. This section of the course will explore issues relating to the impact of increased IT complexity on individual decision makers, information system technologies that optimize decision making, and factors that contribute to the use or failure to use accounting information system technology. Specifically, we will discuss experimental research studies that examine topics related to the audit quality and reliance on decision support tools, factors influencing technology adoption, decision support tools and their impact on auditor judgment and decision making.

**Sample Reading List**


11. 3/29/2016
Behavioral Research in AIS Helen Brown-Liburd and Chanta Thomas (continued)

12. 04/05/2015
Evidence Theory. Glenn Shafer

My 1976 book developed a method of evaluating and combining evidence that I called the theory of "belief functions". In the early 1980s, it also became known as the Dempster-Shafer theory. Its theorists and practitioners formed the Belief Functions and Applications Society (http://www.bfasociety.org/) in 2010. The numerous articles on the theory include several on my website, http://www.glennshafer.com/cv.html#articles.

There is also a constructive methodology for decision making in the spirit of Dempster-Shafer theory.


The game-theoretic framework for probability, developed with Vladimir Vovk, gives a better understanding of the use of Dempster’s rule of combination in Dempster-Shafer theory.


13. 04/12/2016

**Continuous Assurance and Big Data** Miklos A. Vasarhelyi / Jun Dai

This sections surveys the continuous audit literature associated with the area of audit automation and audit analytics.


Assignment: Discuss the relationship of continuous assurance with audit analytics, big data and a corporate information / audit information ecosystem.
Big Data
This section focuses on the prospective of big data in accounting and AIS research as well as research about big data as described in the Horizons Big data issue.

- McAfee and Brynjolfsson. Big data: The Management revolution, Harvard Business review, October 2012

Assignment: Imagine and describe several forms of big data derived new forms of audit evidence. Discuss how it will integrate into the current audit evidentiary matter.

14.04/19/2016
XBRL Research Won No
Extensible Business Reporting Language (XBRL) is a business and financial reporting technology that was developed to enhance business information exchange by providing a standardized method to prepare, publish, and exchange business, and especially financial, information. XBRL is being used, being implemented, or being pilot tested around the world for financial reporting and government e-filings as well as other uses. This section of the course will introduce XBRL and highlight some of the research being done in the area of AIS. A number of future research opportunities will be also discussed in this section.

Tentative Reading List


15. 04/26/2016
Information Economics Michael Alles (tentative topic)

16. 05/03/2016
Final Exam