



Ph.D. DISSERTATION DEFENSE

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Degree: Doctor of Philosophy
School/Department: School of Systems and Enterprises
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Title: A Novel Framework for Hybrid & Multi-Cloud Hosted AI Service Platforms in E-Governance Systems

Chairperson: Dr. Mo Mansouri, Department of Systems & Software, School of Systems & Enterprises

Committee Members: Dr. Roshanak Nilchiani, Department of Systems & Software, School of Systems & Enterprises
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ABSTRACT

The recent exponential growth in the use of artificial intelligence is profoundly affecting humanity. The AI models that have fueled this rally now contain terabytes of data and trillions of parameters. They also require processing orders of magnitude higher than even the most demanding predictive statistical models considered state-of-the-art just a few years ago. These generative tools built on foundation models can create documents, make videos, and write code, all from prompts that deliver these outputs generally in seconds. As AI becomes more accurate, functional, and accessible, how can this technology be harnessed to enhance government and provide better services for citizens? Also, how does using cloud services to deliver this infrastructure change how e-governance can consume and deploy this new technology? Using dynamic modeling, we represent endogenous and exogenous elements in this complex system and show the interconnections, interdependencies, and causal relationships. In some scenarios, results lead to reinforcing growth of these systems, increasing their utility in delivering new services. However, other outcomes may lead this system to decline and collapse, both in funding and public sentiment. The goal of effectively modeling this system is to provide a novel framework for government administrators and policymakers to avoid pitfalls associated with adopting new AI systems and develop more comprehensive implementation strategies. Limitations of the study, as well as opportunities for future research, are addressed.