Thesis Defense

Computer Science Master's Program

"FILTER: Framework for Integrated Legislative Transparency and Exploratory Research"

By **Kenny Lau**

Abstract:

Digital Democracy, established at Cal Poly's Institute for Advanced Technology and Public Policy, initially provided users access to a distinctive dataset, including state legislative committee hearings, transcripts, videos, and more. However, the discontinuation of funding ended operations for the project and emphasized the need for a streamlined application, independent of third-party dependencies, and capable of offering real-time and organized access to the invaluable Digital Democracy dataset. We introduce FILTER, a cloud-hosted API designed for read access to the Digital Democracy dataset through twelve distinct endpoints. The system contains two databases: the Digital Democracy Database (DDDB) and the Digital Democracy Knowledge Graph (DDKG). The latter, designed after DDDB, utilizes the advantages of a graph data structure for efficient data retrieval and novel knowledge discovery. This thesis is a comprehensive resource, providing detailed documentation and architectural design specifications for FILTER. The study outlines the API's design, functionality, and pipeline developed for maintaining DDKG. Furthermore, the thesis presents rigorous API performance evaluations, compares the efficiency of the two databases under significant loads on the API, and a series of case studies showcasing the unique insights derived from analysis performed on the novel DDKG dataset.

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Time: 10:10 AM – 12:00 PM
Location: 14-232b
Zoom: https://calpoly.zoom.us/j/83050948790?pwd=cHU5K2EzbUFXQkZVZ0NId0JJWFlZdz09
Committee: Dr. Dekhtyar, Dr. Khosmood, and Dr. Mukherjee