

THESIS PROJECT PORTFOLIO

**Context-Aware Recommendation Via Interactive Conversational Agents: A Case in
Business Analytics**
(Technical Report)

Understanding Cryptocurrency: A Story of People, Power, Privacy, and Technology
(STS Research Paper)

An Undergraduate Thesis

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Bachelor of Science, School of Engineering Systems and Environment

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Sociotechnical Synthesis

Consumer electronics have rapidly increased their technical capabilities and have become more much accessible to a wide population. Further advances in networking capabilities and computer architecture have led to massive advances in commination and sharing of information. Organizations have completely changed their operations to use these new technologies by setting up computing infrastructure and building software products based on this infrastructure. This allows organizations to capture a wide variety of data, and utilize a variety of techniques to gain insights into how users interact with software or identify general patterns in how users operate. As such, there is much research conducted in developing software products with a tailored user experience and the importance of securing this data.

The technical paper expands on existing user experience research done to improve a business administrator's experience with Human Resource Management Systems (HRMS). These systems manage employee data, handle payroll, and allow administrators to handle other logistics. As a result of all this functionality, HRMS contain a large amount of data related to a business's operations. While the capability to conduct advanced analytics can exist on these platforms, it can be difficult for a user without much technical competence to take advantage of these capabilities. Using a voice assistant can help reduce the amount of training needed to effectively capitalize on the data. This user experience is further optimized by providing context-aware recommendations to the user, allowing for a useful and personalized experience while navigating HRMS.

Overall, with large amounts of data collection, concerns over data privacy arise. The STS paper explores the development of a new computing infrastructure built in response to this concern: cryptocurrency. What started as a vision from a community of computer scientists and

cryptographers became an extremely large computing infrastructure. This vision has been expanded upon and changed over time based on those who built upon the technology and will continue to do so based on the developers who gravitate towards the technology. Currently, there is a massive amount of excitement and hatred around this new technology. As such, most resources available are heavily biased into either supporting or degrading cryptocurrency and its underlying architecture, blockchain. his paper was written due to this dearth of resources in communicating how this emerging technology works, and why it was created

As a whole, this portfolio explores how growing computer architecture and infrastructure can be utilized to provide a better user experience and help organizations more effectively use the data available to them to improve their operations. At the same time, it addresses the interactions people and technology have towards a desire for privacy within the technology people use and the resulting efforts made to change how people use technology.