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LIS 520
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Reference Consultation

Introduction:

I conducted my reference consultation with my father, Loreto Lollo, MD (hereby referred to as "the User"). He is an Anesthesiologist at the University of Washington Medical Center, and one of his main hobbies outside of his medical practice, which was the basis of our reference consultation, is investing in the stock market. A specific, recently-developed interest of the User's is stock market predictions and analysis, thanks to his engagement with the Robinhood stock trading app alongside a few of his friends. I asked the User if he had any specific information needs related to this interest, and he had two distinct information queries that would enable him to better understand the landscape of the stock market and the way that technology influences it.

Interview Process:

The interview was conducted in a face-to-face setting at our family home in Bellevue, Washington. The User laid out his information requests clearly, and mentioned a few things that he believed would be starting points that I wrote down. His first query was an overview on what sort of data is currently used in predicting the future direction of the stock market. Within this area, the User asked me two specific questions. The first was "what data is used in the current trends in stock prediction by banks and independent outlets – is it company reports, consumer reports, or public discourse?", and similarly, for his second question, he asked "is there any way for artificial intelligence (AI) to predict the future direction of the stock market? Can an AI be trained using machine learning (ML) algorithms to better forecast stocks?" After asking these questions, I learned that the User had already done some background research on this subject, as he cited the work of

economist Mohamed El-Erian, an economist and public intellectual known for his research on AI in economics and finance. Since finance, investments, and AI are not a real area of strength for me, I immediately began a follow-up conversation so that I could clarify the User's information needs and learn more from him about the information at hand.

I used a combination of open-ended and neutral questions to understand what the information would do for the User, namely "can you tell me more about how people predict trends in the stock market?" and "what would you like this information to do for you?" The User explained stock prediction as "an attempt to forecast the future value of an individual stock, a sector in the stock market, or the market as a whole," and told me that he wants a better understanding of the usage of AI in the stock market to help him determine whether he should "trust" the algorithms of platforms like Robinhood, which use AI to predict trends. As I was slightly taken aback by his second response, I asked a closed question, "are you concerned about the role of AI in the stock market?", before following up immediately with a more open-ended question, "what is your objective for learning about this information?" I gained valuable information from both queries, as the User was eager to expand on what he meant. When I posed these questions, I learned that the User is not necessarily concerned about the usage of AI, but just unsure about the general trend towards embracing AI, big data, and related subjects in everyday life. The User was interested in finding scientific research regarding the immersion of AI into the investment sphere because as a medical professional within a university hospital, he has learned to "trust the science" and consult academia any time that he is unsure about something. At this point, I believe that I had enough information to begin the search process.

Searches and Results:

When beginning my search process, using the key words from the User's questions, I decided to look at the UW Library Research Guides for Computer Science, Business, and Economics, since his

queries were interdisciplinary and would benefit from disciplinary perspectives from both technology and business. The databases I started with were Web of Science (in Clarivate), Business Search Complete (in EBSCO), and the ACM Digital Library (hosted by the Association for Computing Machinery itself), attending to the User's information needs since he stated scientific research as a preferred information format during our initial interview.

Web of Science provided the most comprehensive results for the User's questions, and I found recent interdisciplinary work that combines frameworks from economics and computer science to assess the role of AI in the stock market. I decided to search by verbatim on Web of Science, since I knew that there were going to be many sources to look through, and searched for *"stock market" AND "algorithm" OR "artificial intelligence"* using its search filters to find relevant sources, at first. Some articles that stood out to me included "Stock Trend Prediction Using Deep Learning Algorithms," "Relational Stock Trend Forecasts Using News Data, Company Reports, and Sentiment Analysis," and "Feature-Selection Algorithms for Stock Prediction Modeling." I read through these full-text journal articles, which provided context into how different AI methods work and how they are specifically applied to the stock market, and thought that they were particularly strong in communicating the sort of data that is used to make AI-guided stock predictions. I provided my user with these articles in an email, after downloading them as PDFs.

Next, I tried Business Search Complete, which is known for having robust subject headings. My search process changed for this database as a result, and I searched for *"artificial intelligence," "stock predictions,"* and *"algorithm,"* first generally to get a feel of the database and then specifically under its "Stocks and Investments" subject heading, but only found a few results directly related to the User's queries, such as "Using Economic News to Predict Global Stock Trends," by Mohamed El-Erian, the economist the User discussed earlier, and "Post-Keynesian Analysis of Stock Trends in

the Age of Reddit and *Wall Street Bets*," but after reading these papers' abstracts, I found that they were generally more useful for answering the User's first question, as there was not much to do with AI or algorithms. I still sent the User PDFs of these articles because they did discuss what data was being used in stock market predictions and could satisfy that query.

The ACM Digital Library was very difficult to navigate through due to my lack of familiarity with its interface, and I would not have anything more than 1 page of results when searching for anything related to the User's query: searching under the "Business and Economics" subject heading, searching for *"stock market"* in the "Artificial Intelligence" subject heading, and searching generally for *"stock market" AND "artificial intelligence"* all only gave me a total of around 50 results. Despite this difficulty, I discovered two articles that I thought were sufficient: the first was titled "Using Artificial Neural Networks for Stock Market Prediction" that featured an in-depth discussion of the way that AI is trained to make predictions over the stock market and the sort of data used by bank stock predictors that the AI was trained with. This was a peer-reviewed article from a 2022 issue of *IEEE Spectrum*. The second, "Inducing Stock Trends Using Sentiment Analysis," was an *Industrial Management and Data Systems* article also found on Web of Science that informed the specific algorithmic techniques used to make stock-predicting AIs, which are borrowed from data science methods. These two ACM papers were some of the very few sources I found, alongside the Web of Science ones mentioned earlier, that contained relevant information for all of the User's queries, and I instantly emailed the PDFs to him because of its relevance to his information needs.

Reaction and Feedback:

When I finished gathering the sources and sending the User, he told me that he was going to review them and "needed a few days" to read them. After two days spent reviewing the information found over email, the User and I had a follow-up meeting to discuss whether the resources met his

information needs or if there was further research he would like me to complete. The User told me that he already knew about Web of Science, but had not visited it in a few years since most of his recent professional work has revolved around his medical practice rather than medical research. He said that the Web of Science results, as I had predicted based on my evaluation of the databases, were the most useful in giving him a comprehensive view of the way that AI technology has influenced predictive methods in the stock market. The User was not aware of the other two databases that I sent him results from, but he stated that the articles I sent were both "satisfactory" in giving him a better understanding of the debates behind his information queries. He also said that the Business Search Complete articles helped him "understand what kind of data is used to make stock predictions," and that the ACM articles on ANN development and sentiment analysis for stock predictions were interesting because they gave him new questions about "market manipulation" as it relates to the usage of AI and other automated systems. The User believes that my search strategy was sufficient, as I gave him "lots of scientific research [he] could learn from," and I indicated my search strategies to the User so that he could try doing them in the future, teaching him how to perform verbatim (through quotes) and Boolean search strategies on Google Search as well as on Web of Science, which I figured would be comprehensive enough for all of his interests in both the medical profession and his hobbies. My follow-up conversation with the User was very beneficial, because of his question's status as a mutual learning experience for us – we both learned a significant amount on AI's influence on investments and the stock market, I learned about the stock market in general, and the User learned how to perform Boolean searches. The User did not request any additional sources or research after he received the full list I provided, but I plan on following up with him after a few more weeks to see if he has any additional information needs.

Reflection and Conclusion:

Doing a reference consultation with an immediate family member was very rewarding, but it was also intimidating at first, as the User's doctorate degree, status as a "superior" to me in terms of age and academic standing and accomplishments, and significant research experience added an extra layer of pressure and stress if he thought that I did something "wrong." I wanted to find as many answers to the User's queries as possible and felt that if I did not provide answers to every detail of the queries, then I had failed. I believe that I could have presented the findings in a more organized manner than content-less emails with PDFs as attachments, but I think the short turnaround time of this consultation was a factor informing that decision. If I had weeks, or even months, to set this up, I would have spent more time finding relevant sources and created a collaborative Google doc for us to evaluate together. A skill I would like to improve, based on how this reference consultation went, is asking follow-up questions, especially more open-ended ones. Like many things, asking better questions is a process of constant learning, made easier with experience. It was easy for me to generate closed and neutral questions, but I didn't ask any aside from the one at the end of our initial consultation, as they did not really center the User's perspectives and ideas. Open-ended questions can help me get to the specifics of what users want through listening to and engaging in their own perspectives, and I know that if I continue practicing these skills and interactions, and continue to center users in the process, I will become better at asking broader questions that will help me find relevant and timely resources for them. I do feel confident, however, that the resources I provided the User with will be beneficial for giving him a better understanding of his queries, and I enjoyed the process of searching independently and imagining myself as a research librarian finding information as well as instructing the User in completing effective search strategies, which I believe will be a very useful experience seeing how I am interested in this sort digital literacy instruction.