Samuel Schwartz
633705ss
633705ss@eur.nl

Assignment 4: Blog It

Samuel Schwartz

633705ss

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AI, Business, & Consumers
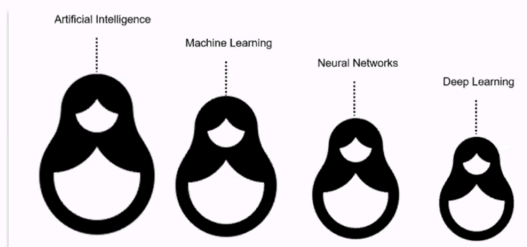
Rotterdam School of Management

For my final assignment in Artificial Intelligence, Business & Consumers (AIBC), I've been tasked to reflect on a business or societal consequence of AI that I find particularly interesting. I originally enrolled into the course because I strongly believe that businesses, and young professionals, who learn to maximize the synergies between humans and technology will be most successful in the future. Throughout the six weeks my incredible and insightful professor, Stefano Puntoni, has carefully explained the various applications of AI used by professionals to derive meaningful insights.

To simplify the complexities of these technological achievements, Professor Puntoni used "The AI Matryoshka" diagram (Puntoni 22). To understand this diagram, it is essential to understand that in the most general definition, AI is the idea that computers can think. Through a system known as supervised learning, an AI's algorithm is trained on labeled data sets provided by a human and the algorithm uses independent variables (predictors) and dependent variables (outcomes). If the algorithm is designed to produce continuous outcomes, it is classified as a linear regression. Although linear regressions may seem complicated, they are only able to operate under massively simplified environments. As a result, during the 1970s, funding for AI dried up creating a period known as the AI Winter; however, in the early 2000s computer speeds were rapidly increasing thanks to Moore's Law which reinvigorated the AI industry. In 2005, Sebastian Thrun and his Stanford team won the DARPA grand challenge using technology that successfully implemented machine learning. Machine learning is a process used by an algorithm to continuously improve itself as it receives more information. This allows for the AI to train itself over time and make adjustments in real-time. This greatly helped lead to the development of artificial neural networks (ANNs) which are multiple linear regression models conjoined and mimics the human brain. As seen in the second image attached to this post, when data is inputted to the ANN algorithm, an input layer perceptron (a single node within an ANN) activates and transmits a signal to the hidden layers. Any given number of hidden layers can exist, but after going through all hidden layers an output layer perceptron is activated and the AI produces an outcome (Puntoni 20). This process is extremely complex and there is an entire field, called "explainable AI", that studies the inner workings of the hidden layers in ANNs. Finally in the AI Matryoshka is Deep Learning, which utilizes a myriad of ANNs to create the most complex AI system we know today. It is called Deep Learning (DL) because it requires lots of hidden network layers and hence referred to as "deep". To be effective and accurate, DL systems require endless data which is why the best technique is to access the Internet of Things (IoT) and rely on Big Data companies (e.g. Microsoft, Google) to be successful. In 2012, the Deep Learning revolution began when the famous image classification competition, ImageNet, was won by a DL algorithm. As explained by Professor Puntoni, if we parallel the development of AI to cars the technology used to win ImageNet in 2012 rivals Mercedes Benz's Patent Motorwagen released in 1886 (Puntoni 24). When I asked where AI technology stands relative to the progression of cars, Professor Puntoni stated we are roughly approaching the turn of the 20th

century, or 1896. Although I learned plenty of fascinating information throughout taking AIBC, the comparison of the timelines for developing AI and cars most astonished me.

Certainly "The AI Matryoshka" diagram and my brief synopsis are not enough to fully understand these complex systems; however, I would like to implore anyone reading this post to recognize the outstanding technological advancements society has made over the last few decades. To me, what's more intriguing is the potential we can reach if we continue along the path proposed in class by my brilliant professor. If we could progress from AI that could only be operated under simplified conditions to the Deep Learning algorithms so rapidly, our future is impossible to predict. In my opinion, if we want to protect our future and continue progressing as a society, a better question to ask is, who will we allow to capitalize on this technology? In a group assignment I worked closely with Martin Warnig (from Germany), Nicole Edwards (Guatemala), and Mark Craanen (Netherlands) and we outlined the benefits of using these applications of AI in the agriculture industry and how it can be used by farmers to optimize crop production per square meter. During our research process we discovered that similar AI algorithms are being used by oil & gas companies to locate the best places for fracking. Surely, the free market should allow all companies the opportunity to capitalize on the best technology available, but I implore readers to consider which industry is best suited to use this technology to help our global society. Feel free to comment which market you think would benefit society the most by adopting any of the frameworks in "The AI Matryoshka" diagram.
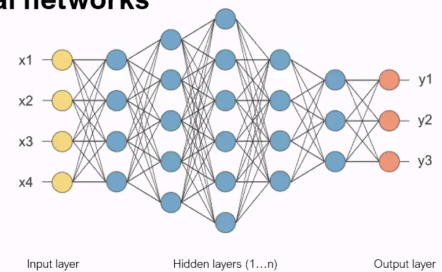
For my full assignment CLICK HERE

Works Cited

Puntoni, Stefano, "AIBC Session 2: There is no Y in AI." Rotterdam School of
    Management, Erasmus University, p. 20.

Puntoni, Stefano, "AIBC Session 2: There is no Y in AI." Rotterdam School of
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