

CSc 59866 Senior Project I

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Neural Networks and Deep Learning

For our senior design project, we will be analyzing neural networks and deep learning. This is one technique of machine learning that creates very complex systems. Some of these systems are image detection. As one can see, these systems are not only interesting but are very useful to understand how current machine learning techniques are being used in real world applications. Our motivation for a sneaker detection came from watching sport games and asking questions about what players are wearing on their feet.

We would like to look at different sneaker companies such as Nike and Adidas and classify each shoe to their respective companies. This would be done by training the algorithm to photos of sneakers from their side view. These images would come from Sole Collector which is a sneaker database for all major sneaker companies. Ideally we would like to have users take a picture from the real world with any background to test the algorithm.

Some research done in this topic would be how GOAT a sneaker retail uses image detection to detect authentic shoes. As of now I don't see any code or application for this specific algorithm, but I can be certain that this algorithm does detect what type of shoe the sneaker is from and the name of the specific pair. In github, I see some users using different methods to create an application like this. So next semester our group would analyze each method and create a version of the best method and explain why we chose a certain method over others.

Reference

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Dignan, Larry. "GOAT Uses Machine Learning, Computer Vision to Verify Your Top Dollar Sneakers Are Authentic." *ZDNet*, ZDNet, 19 Jan. 2019, <https://www.zdnet.com/article/goat-uses-machine-learning-computer-vision-to-verify-your-top-dollar-sneakers-are-authentic/>.

Shorten, Connor. "Python: How to Build a Convolutional Network Classifier: Nike vs Adidas Shoes." *Medium*, Towards Data Science, 2 Oct. 2018, <https://towardsdatascience.com/how-to-build-a-convolutional-network-classifier-81eef880715e>.