**Project conclusions**

* The objective of this project was to complete a demanding deep learning task comprised of practical and fun applications, to prove that deep learning has a wide set of use cases and can spur your imagination to create ever more diverse applications.
* It is important to understand conceptually how deep learning works, what it learns, and what is stored in its latent space. Deep learning has often been considered a “black box”; however, CNNs lend themselves nicely to visualizations, due to their image processing capability.
* Completing your task of generating art using artificial intelligence required a number of skills, tools, and knowledge, from building convolutional neural networks (CNNs) to understanding the inner workings of CNN models.
* Understanding what a neural network learns is fundamental to understanding its learning process.
* Understanding what CONV filters are, what they “learn,” and then afterward visualizing what activates them, lays the foundation for using neural networks to generate art.
* Knowing what parts of an image were useful for a CNN to make a “decision” on a class (Grad-CAM) helps us to better conceptualize the complexity of deep learning.
* Visualizing what the different filters in a CNN learn, as well as visualize what is the image that will have the stronger filter response for a specific class.
* Implementing the DeepDream research paper (Mordvintsev, Alexander; Olah, Christopher; Tyka, Mike (2015). "DeepDream - a code example for visualizing Neural Networks". Google Research.) and visualizing what the neural network “hallucinates”
* Being able to recreate complicated research papers is a vital skill in becoming a better data scientist and proves you have deep knowledge and a great skillset.