2018 Research Interest/Project Ideas

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- Robust Distributed Wind Power Engineering - Improving the Performance of Wind Farms
- PoachNet, an IOT System for the Protection and Monitoring of AquaFarms
- Virtual Reality Applications Course
- Conservative Garbage Collection for General Memory Allocators. GC for C/C++ Programs

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Synthesis of Virtual Reality Worlds Using Convolutional Neural Networks and Partial 3D Data

One of the greatest limitations we currently have in Virtual Reality is that it is unrealistic. VR applications use synthetic models that appear cartoonish and unreal. 3D scanners used to generate real 3D models lead to incomplete models due to the fact that these scanners lack the ability to gather all of the possible views of the world. Panoramic videos that allow rotation of 360 degrees in VR are limiting since they are restricted to the path taken by the camera alone. In this research, we want to use Neural Networks to reconstruct a complete virtual world using video sequences, pictures, and 3D scanner information from drones or robots as input. This virtual world will be a recreation of the real one, generating portions of the world not existing in the input based on the 3D data previously learned. By generating a complete VR world, it will be possible to use this virtual world for education, shopping, video games, social networks, and many other applications. We also want to use this neural network to synthesize new worlds.