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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Garbage Collection for Multi-Gigabyte Heaps

Current server applications in Java, Node.js and other languages that power the current internet often use garbage collected heaps with sizes in the order of 100GB. For these applications memory garbage collection slows down the execution due to write-barriers as well as pauses during the stopping-the-world phase.

It is our goal to develop and implement algorithms of Garbage Collection that reduce the pause times to about 10ms, while at the same time reducing the execution overhead of the application.

To accomplish this we use a snapshot-at-beginning approach using copy-on-write virtual memory techniques that allow the marking phase run at the same time the program is executing. We are applying our research to Java, Node.js, as well as C/C++.