In the same way that a technological transformation occurred where computers the size of entire rooms evolved into mobile devices that can into our pockets, a genomics revolution is currently ongoing as DNA sequencing technology shifts from million dollar instruments to inexpensive mobile sensors. The potential uses of these sensors range from diagnosing genetic conditions in doctors’ offices, to analyzing the DNA of pathogens discovered in the Amazon rainforest, to improving the overall yield of crops that are grown.

iGenomics is my new mobile DNA sequence analysis application that is optimized to run as efficiently as possible on iPads and other mobile devices. This is the first application ever to be able to screen genomes and identify variants on a mobile device through an implementation in Objective-C. The long-term prediction is that iGenomics will become the main platform for DNA sequence analysis in a remote setting.

The significantly lower amount of processing power contained within an iPad limits the data processing power available compared to super-computers that have been traditionally used to process genomes. That being stated, iGenomics uses the multiple cores of the iPad and advanced algorithms such as the Burrows-Wheeler Transform to rapidly analyze DNA sequences.  Viral genomes such as the influenza virus can be analyzed in a matter of seconds while microbial genomes including many disease-causing pathogens can be analyzed in a matter of minutes.

iGenomics is available as a free-to-download application on Apple’s App Store and its source code can be obtained from https://github.com/stuckinaboot/iGenomics.