I wrote all code for this project using Netbeans IDE 7.4. I used Java 1.7.0\_45. However, in order to run my code, only java runtime is needed and any version should work.

My source files are described as follows:

* MemristorsWM2: My original algorithm to calculate the number of pulses and imply gates needed to realize a function using two working memristors.
* SOPCount: Calculates pulses of a function which is a minimized Sum of Products (SOP).
* ESOPCount: Calculates pulses of a function which is a minimized Exclusive Sum of Products (ESOP).
* MemristorsSOP: Minimizes the expression using SOP and then does the same calculation of pulses as imply gates.
* DecisionFunction: Finds all implicants and decides which ones should be realized for the optimal solution
* MemristorsSOPDF: Applies the DecisionFunction logic to a function and calculates the pulses and imply gates needed

In order to run each of the source files, the following batch files can be called at the Windows Command Prompt

* MemristorsWM2: run-WM2
* SOPCount: run-SOP-prep followed by run-SOPCount
* ESOPCount: run-ESOP-prep followed by run-ESOPCount
* MemristorsSOP: run-SOP-ISD
* DecisionFunction: run-DF
* MemristorsSOPDF: run-SOP-DF

Only the following source files produce visual solutions using the Imply Sequence Diagram (ISD) notation that I invented.

* MemristorsWM2
* MemristorsSOP
* MemristorsSOPDF

To see the ISD diagrams visually in a window without the use of Netbeans, run the programs in interactive mode at the command line and input the name of a pla file (from the files contained in the directory labeled ‘benchmarks’, when prompted. For example –

java -cp build\classes MemristorsWM2.MemristorsWM2

java -cp build\classes MemristorsSOP.MemristorsSOP

java -cp build\classes MemristorsSOPDF.MemristorsSOPDF

and, enter benchmark\3vars.pla as filename when prompted.

**Some external tools are needed to run a few of the scripts, and for preparing the files for input to my program.**

rondo.exe, available at <http://web.cecs.pdx.edu/~alanmi/research/min/minSop.htm>

exorcism4.exe available at <http://web.cecs.pdx.edu/~alanmi/research/min/minEsop.htm>

Benchmarks files that are used can be downloaded from

<http://web.cecs.pdx.edu/~mperkows/PLA_BENCHMARKS/>