Description of the folder in the repository:

knn_acc_parx: folder of the Quartus II project with the Knn Accelator that run over the FPGA4U, x is the number of element in parallel. In this case the time for the classification takes into account also the time for the memory transfers.
knn_acc_parx_fair: folder of the Quartus II project with the Knn Accelator that run over the FPGA4U, x is the number of element in parallel. In this case the time for the classification takes into account only the time for the classification.
matlab: folder that contain the testbench data and all the script for the communication with the board and to run the test.

The fundamental folders of the Quartus project are the:

Synthesis: contains all the vhdl file and the file generate by Qsys to synthetize the system
Software: contains the c file for the firmware of the NIOS 2 processor

The matlab folder contains several files:

bin2hex.m: script for the binary to hex conversion used in the other file
canc_rand: mat file with the cancer dataset used for the testing (data taken from the UCI repository)
class_command.c: c file with the functions to send the classification command to the board by means of the USB port
conv_dist.m: script to convert in decimal the hex number that represents the fixed point representation of the distance
derm_rand: mat file with the dermatology dataset used for the testing (data taken from the UCI repository)
flush_sdram.c : c file with the functions to send and store in the SDRAM the training set
iris_rand: mat file with the iris dataset used for the testing (data taken from the UCI repository)
isodd.m: script to check if a number is odd or not
libusb.lib: lib for the usb communication
lusb0_usb.h: h file with the function for the USB communication
tb_time_usb.m: main script to run the test and compare the result of matlab with the FPGA accelerator

All the Quartus project have been created and tested with Quartus II 32-bit Version 12.1Build 177.

The Matlab scritps have been run on MATLAB R2010A Version 7.10.0.499 64-bit

The c files need to be compiled in mex function to run the tb_time_usb.m, to set the compiler in MATLAB and create the mex file please refer to http://www.mathworks.it/it/help/matlab/ref/mex.html

The libusb.lib and lusb0_usb.h works fine in Windows 7 but depend on the operative system, if you have a different system please refer to http://www.libusb.org/

The used board is the FPGA4U from EPFL all the details can be found here:

http://fpga4u.epfl.ch/wiki/Main_Page