# Pico Demo
## 02/28/24

The program on the Raspberry Pico which has the power shell, littlefs, and processing dwt & klt.

git clone --recursive git@github.com:develone/rp2040-freertos-project.git -b dev

cd rp2040-freertos-project
The files used to create the uf2 & elf files

/rp2040-freertos-project/test-read-crc16 $ ls
CMakeLists.txt  crc16.h  main.c     test-files  xcommon.h
comprogs.h      fs.c     main.c.128 vi.c        xreceive.h
comprogs.h.128  fs.h     pshell.h   vi.h        xtransmit.h
compile.sh

This is the contents of the script compile.sh

```
#!/bin/bash
rm -rf build
mkdir build
cd build/
cmake -DPICO_BOARD=pico
-DFREERTOS_KERNEL_PATH:PATH=../freertos/FreeRTOS-Kernel/ ..
make
```

CMakeLists.txt file

```
add_executable(test-read-crc16
     main.c crc16.h xreceive.h xtransmit.h fs.c fs.h vi.c vi.h comprogs.h
)

target_link_libraries(test-read-crc16 pico_stdlib xmodem freertos lifting crc_crc16 cir-buf klt
littlefs)

pico_enable_stdio_usb(test-read-crc16 1)
pico_enable_stdio_uart(test-read-crc16 1)

pico_add_extra_outputs(test-read-crc16)
```
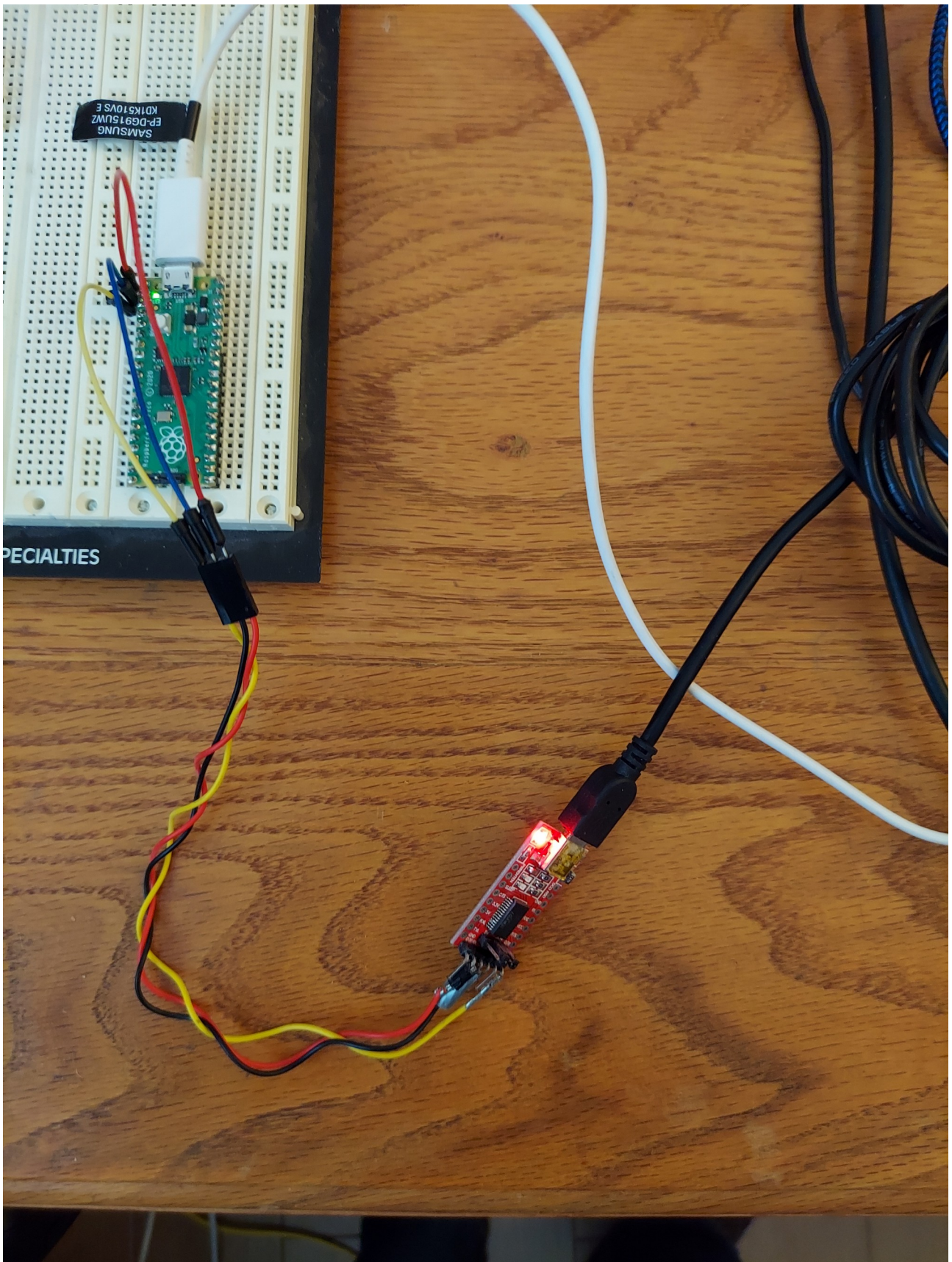This is the Pico and FTDI to USB hardware setup.

Minicom is used to communicate with the Pico.

After programming the Pico with ***/home/devel/rp2040-freertos-project/build/test-read-crc16/test-read-crc16.uf2***

File  Edit  Tabs  Help

```
Port /dev/ttyUSB0, 10:24:01

Press CTRL-A Z for help on special keys


    cd - change directory
    cp - copy file
format - format the filesystem
   get - get file (xmodem)
    ls - list directory
 mkdir - create directory
 mount - mount filesystem
    mv - rename file or directory
   put - put file (xmodem)
     q - quit
    rm - remove file or directory
status - filesystem status
unmount - unmount filesystem
    vi - vi editor
 lsklt - lifting step 0 klt 1

/:
```

xx
The status command

/: status
11 status filesystem status

flash base 0x100000, blocks 256, block size 4096, used 2, total 1048576 bytes,.

/:

```
       ls - list directory
    mkdir - create directory
    mount - mount filesystem
       mv - rename file or directory
      put - put file (xmodem)
        q - quit
       rm - remove file or directory
   status - filesystem status
  unmount - unmount filesystem
       vi - vi editor
    lsklt - lifting step 0 klt 1

/: ls

4 ls list directory

/: status
11 status filesystem status

flash base 0x100000, blocks 256, block size 4096, used 2, total 1048576 bytes,.
```

xx
The files were sent to the Pico using the put xx command which uses xmodem to send the file.



```
       ls - list directory
    mkdir - create directory
    mount - mount filesystem
       mv - rename file or directory
      put - put file (xmodem)
        q - quit
       rm - remove file or directory
   status - filesystem status
  unmount - unmount filesystem
       vi - vi editor
    lsklt - lifting step 0 klt 1

/: ls

4 ls list directory

/: status
11 status filesystem status

flash base 0x100000, blocks 256, block size 4096, used 2, total 1048576 bytes,.

/: put l64.pgm
```
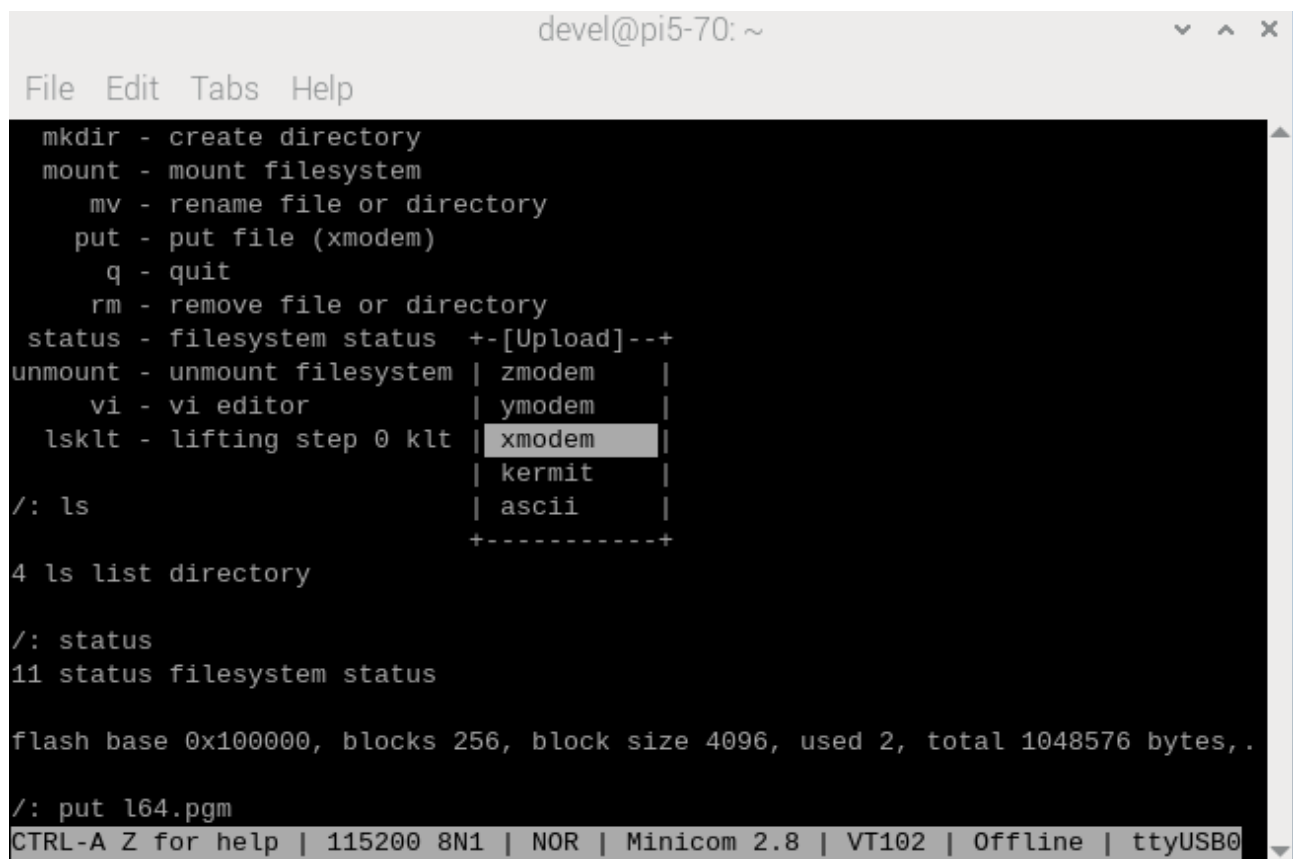
When the CR is depressed you need to depress  ESC Ctrl A S

Select the Upload methon Xmodem.



Select the file to be transferred.

```
                           devel@pi5-70: ~                    ∨ ∧ ✕
 File  Edit  Tabs  Help
  mkdir - create directory
 +---------------------[Select a file for upload]----------------------+
 |Directory: /home/devel                                                |
 | jpeg-qemu-1.png                                                      |
 | jpeg-qemu.png                                                        |
 | l128.pgm                                                             |
 |  l64.pgm                                                             |
u|| minicom.log                                                         |
 | mosquitto-pi4-50.conf                                                |
 | mosquitto-pid                                                        |
 | mosquitto-pw                                                         |
/| nextpnr-093023-e8602f.img                                            |
 | openocd082722-228ede-64bit.img                                       |
4| pi3bt.img                                                            |
 | pico-test-read.odt                                                   |
/| pico_w-mqtt.tgz                                                      |
1|              ( Escape to exit, Space to tag )                        |
 +---------------------------------------------------------------------+
flash base 0x100000, blocks 256, block size 4096, used 2, total 1048576 bytes,.
                [Goto]  [Prev]  [Show]   [Tag]  [Untag] [Okay]
/: put l64.pgm
CTRL-A Z for help | 115200 8N1 | NOR | Minicom 2.8 | VT102 | Offline | ttyUSB0
```

Now the ls command displays the recently transferred file.



```
                           devel@pi5-70: ~                    ∨ ∧ ✕
 File  Edit  Tabs  Help
     cd - change directory
     cp - copy file
format - format the filesystem
    get - get file (xmodem)
     ls - list directory
  mkdir - create directory
  mount - mount filesystem
     mv - rename file or directory
    put - put file (xmodem)
      q - quit
     rm - remove file or directory
 status - filesystem status
unmount - unmount filesystem
     vi - vi editor
  lsklt - lifting step 0 klt 1


/: ls

    4224 l64.pgm
 ls list directory

:
```

When files have been transferred from the Raspberry Pi to Pico the command ls shows the following.

```
                    devel@pi5-70: ~                              ∨  ∧  ✕

 File  Edit  Tabs  Help

  mount -  mount filesystem
     mv -  rename file or directory
    put -  put file (xmodem)
      q -  quit
     rm -  remove file or directory
 status -  filesystem status
unmount -  unmount filesystem
     vi -  vi editor
  lsklt -  lifting step 0 klt 1

/: ls

    4224 img1.pgm
    4224 img2.pgm
       0 img
    4224 l64.pgm
       0 r.pgm
      55 testfile
    3840 xyz
4 ls list directory

/:
```

Xx

At this point the dwt or KLT can be done on the l64.pmg

lsklt l64.pgm r.pgm 0 or lsklt l64.pgm r.pgm 1
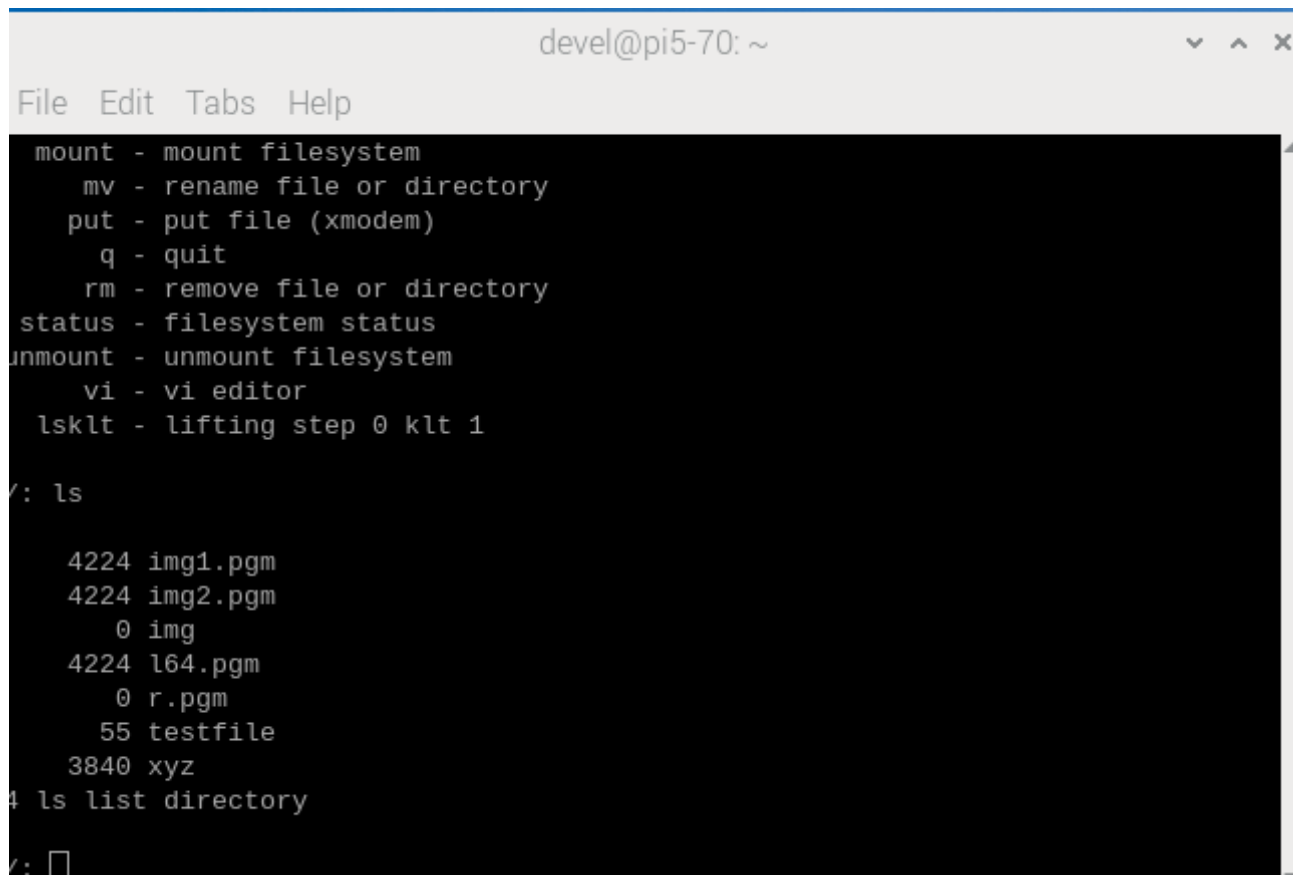
```
        cd - change directory
        cp - copy file
    format - format the filesystem
       get - get file (xmodem)
        ls - list directory
     mkdir - create directory
     mount - mount filesystem
        mv - rename file or directory
       put - put file (xmodem)
         q - quit
        rm - remove file or directory
    status - filesystem status
   unmount - unmount filesystem
        vi - vi editor
     lsklt - lifting step 0 klt 1

/: ls

      4224 l64.pgm
4 ls list directory

/: lsklt l64.pgm r.pgm 0
```

4 l64.pgm r.pgm 0

0

P5

# Created by GIMP version 2.10.8 PNM plug-in64 64

255

161 159 157 155 160 170 168 134 97 106 109 109 109 117 124 129 132 133 132 133

opening a file to write the results

need to copy the data received from host to img1

img1 = 0x200042f4 img2 = 0x200052f4

0 img1 161 ptrs.buf 161

1 img1 159 ptrs.buf 159

2 img1 157 ptrs.buf 157

3 img1 155 ptrs.buf 155

4 img1 160 ptrs.buf 160

4091 img1 123 ptrs.buf 123

4092 img1 94 ptrs.buf 94

4093 img1 58 ptrs.buf 58

4094 img1 61 ptrs.buf 61

4095 img1 91 ptrs.buf 91

need to copy the data from img1 to img2

0 img2 161 img1 161

1 img2 159 img1 159

2 img2 157 img1 157

3 img2 155 img1 155

4 img2 160 img1 160

4091 img2 123 img1 123

4092 img2 94 img1 94

4093 img2 58 img1 58
4094 img2 61 img1 61
4095 img2 91 img1 91
lifting step
64 0x200063b4 0x200083b4 01
2 0 -3 2 -1 0 0 0 1 -2 1 2 2 -1 0 0 1 0 -1 0 10 0 -2 0 0 18 -7 26 -1 1 2 -25 3
0 3 3 -4 0 3 0 -1 1 1 0 2 -1 1 0 2 0 1 2 0 1 1 -2 0 0 0 -1 -34 0 1 15 -30 0 0
0 0 0 0 0 2 1 -1 1 -1 1 1 0 0 -2 4 1 0 -1 2 1 -2 1 0 0 1 -15 28 11 12 -33 2 0
-4 7 -1 0 0 1 0 1 1 2 0 2 4 2 4 11 -9 13 0 1 0 2 0 -1 1 -1 7 10 -18 -32 5 0 4
2 -9 2 -1 -1 1 1 1 1 -7 -8 -1 -3 0 4 -2 -7 34 -29 1 -1 -1 -4 6 -1 2 1 -41 -36
19 6 0 -1 2 -1 0 -1 1 8 4 0 0 -1 0 8 -6 6 11 -46 -2 0 5 -5 -2 0 -6 17 11 -8 -3
-14 0 1 0 0 0 2 0 -10 1 -1 2 1 1 -10 14 -1 4 1 31 -37 0 2 1 10 -5 27 -3 -4 -3
4 -2 1 1 0 -1 2 5 20 0 -4 4 19 -6 -9 -9 0 0 -1 -2 47 17 0 30 -6 4 -70 -1 2 -29
-1 1 1 1 2 -1 1 -1 -6 -3 -3 14 21 -8 6 3 -1 0 9 0 -22 -23 -3 59 4 -6 23 0 16 3
0 2 0 2 0 0 1 -7 -2 4 6 12 -14 0 5 7 -3 2 3 -4 7 -2 -2 1 1 -3 -29 0 -16 -11 -1
0 -3 1 2 1 1 1 3 3 -1 17 -17 -4 -4 -1 -3 -6 -1 -1 -13 0 2 -2 -6 -8 -20 -2 2 12
-2 -1 -1 0 0 1 -1 1 3 -1 -16 -5 -3 -13 2 23 -15 12 17 3 -1 0 -5 14 -55 -17 -1
0 0 -2 0 2 1 0 -8 -6 -6 -4 0 8 -12 -9 -22 -24 18 3 0 -3 38 -18 -15 2 21 3 14 0
2 1 1 3 1 1 2 8 -6 5 4 17 -1 -15 -5 10 -10 -2 -3 -6 -1 5 9 -15 18 -1 -14 -3 -2
-1 -1 1 2 1 1 -2 2 -5 -8 24 1 7 -6 11 22 -6 4 -14 -1 0 4 -8 -5 0 6 14 4 -4 1 2
1 1 -1 1 1 1 0 1 8 11 -6 -8 -16 11 0 2 43 -7 9 -1 -9 27 -6 1 4 -6 -9 -1 2 2 -2
0 2 -1 -1 1 2 -3 -1 26 -23 1 34 34 -44 -8 41 -1 -40 16 -8 18 -21 8 3 0 -8 5 1
-1 0 0 0 2 13 -7 37 4 8 5 -4 14 20 45 13 -18 -28 -6 14 12 -29 2 -1 -2 6 0 -2 0
2 0 0 2 0 6 -2 -5 12 9 16 -16 -3 49 12 0 2 1 1 0 6 2 0 8 0 -5 -1 1 0 -13 13 -3
-1 0 1 0 -7 9 14 3 7 -8 -30 18 -10 -69 1 0 -1 0 -2 -1 -1 5 3 -1 -13 1 2 -1 7 1
2 2 -1 0 9 -9 2 -12 33 7 31 21 27 16 0 0 1 2 7 -10 4 0 -3 4 3 0 2 0 -4 -3 1 2
3 -1 -1 0 -3 -3 14 -3 -11 -12 4 9 18 -6 2 2 -7 1 -8 0 -11 -4 0 -1 3 1 0 1 1 -1
-3 -1 0 0 31 15 -14 8 30 23 -56 -44 6 5 3 1 4 -6 5 -7 0 -3 2 -11 -1 1 -1 2 1 -
0 11 -2 0 1 8 12 -5 -6 -32 -37 2 -1 5 -2 8 -1 2 8 8 -1 2 1 -3 -2 0 0 1 -6 2 -3
-8 -1 1 6 24 1 10 31 -16 11 -21 11 -1 -5 -5 -6 2 2 8 11 -24 14 1 -2 -13 2 3 1
20 -9 3 5 -5 -25 -15 -33 13 9 -23 -18 -1 2 -2 -1 -3 0 -1 -1 -7 28 36 1 3 1 0 1
-12 5 0 1 -10 7 -20 -16 19 4 24 17 1 6 9 -8 -3 -1 1 -1 2 -13 -13 0 0 -1 1 -18
-1 2 2 3 -10 -4 33 6 -1 19 2 -16 -7 -5 4 -3 0 1 -1 -2 0 2 10 -3 0 1 -3 16 3 -1
2 2 1 1 -2 -6 -8 -3 -2 9 25 5 7 -2 11 6 -2 0 1 0 -2 -1 -2 -8 1 1 -2 7 3 1 -12
-15 4 1 -2 -12 -15 0 4 -7 34 20 9 -5 0 -38 -4 -1 1 -1 -1 0 -1 1 -3 -4 -7 -3 1
0 -8 -2 3 15 -2 -4 7 8 -11 6 2 11 -33 19 1 0 1 1 2 3 -1 0 18 14 3 -11 19 20 22
1 1 -3 3 -2 -3 1 -16 -21 11 8 -5 5 -2 0 1 1 -2 0 1 -1 0 -1 -3 -6 4 8 23 17 -5
1 1 1 14 -22 3 -4 1 1 1 0 0 0 1 0 4 0 0 1 2 -13 8 0 -1 0 -19 39 -22 1 1 4 -1 1
-3 -2 5 15 -23 4 -3 3 1 0 1 0 4 -2 0 3 3 1 0 1 -10 8 1 1 1 1 13 -2 7 0 6 -10 -
-2 7 0 15 -24 3 -4 3 2 0 -1 2 3 0 5 -2 0 5 0 2 -6 6 2 0 1 0 -28 43 -44 10 -8 0
0 -12 14 15 -26 3 -2 3 2 0 -1 -7 -2 -2 2 3 9 -10 -6 1 -8 11 -1 4 0 0 3 -8 44 -
40 -42 18 13 -30 4 -2 3 1 5 -10 2 2 -2 1 4 -1 6 21 -8 -7 13 7 -9 -2 -2 -1 29 -
26 -15 14 14 -26 3 -1 2 0 -5 4 -2 3 1 -2 -4 5 1 0 -9 -16 14 14 -59 20 -2 12 -3
-3 -16 14 14 -26 3 -2 5 36 3 -2 4 4 -11 7 2 -2 2 1 6 -28 20 14 -19 1 4 5 2 -2
-3 -14 16 15 -28 5 -1 -17 14 3 3 3 -12 8 2 6 1 2 2 3 45 -9 14 -63 12 -2 -29 5
1 -11 10 17 -28 5 -2 -40 -20 -2 4 -4 5 0 -3 -3 1 4 -4 3 -3 11 4 14 -1 -4 -49 0
1 -11 14 17 -29 3 -1 -47 -12 -12 -1 4 4 -4 4 0 -3 -1 4 0 -2 0 -1 -1 10 8 -69 -
2 -10 13 16 -32 4 1 -25 -5 -14 2 4 -8 6 -3 15 4 8 3 3 6 1 0 10 -36 95 1 -37 6
4 -9 11 16 -32 3 1 -59 19 9 8 -2 10 6 -3 24 -1 -40 14 6 -1 12 14 -15 38 -34 0
4 -13 14 15 -34 4 -1 -7 49 -27 -4 5 -11 -23 -27 -11 -4 28 -4 -7 6 -41 -11 38 -
2 -13 16 16 -33 4 -4 10 33 -32 9 -8 -16 -4 37 -5 -11 12 5 4 -1 24 -23 -43 7 -6
3 -11 15 16 -32 4 -3 4 -6 -1 -10 -18 -1 -7 -23 13 -5 -10 1 5 -2 48 -76 -25 6 -

-1 -10 16 16 -32 6 -4 -6 6 21 -8 -11 9 -6 18 4 -10 0 5 0 18 -11 -49 24 2 -35 2
3 -13 19 17 -32 8 -27 42 -11 -6 47 4 3 -18 23 -2 4 75 -4 23 -50 35 -21 46 -8 1
9 -15 20 18 -32 2 21 -8 38 -16 18 -21 -29 37 -31 9 -5 0 -7 19 -8 -3 -23 78 -14
3 -16 22 17 -36 12 0 -20 -5 -5 -35 11 -1 8 21 -1 6 5 1 -8 -15 20 -13 95 -36 14
6 -20 25 15 -41 19 17 -9 7 -20 31 -41 55 -51 7 1 0 10 0 -29 -20 21 14 60 -39 8
2 -25 17 17 -32 34 10 -17 31 41 2 -15 -45 -22 5 1 -3 6 -11 3 -7 -39 19 29 2 3
-5 -22 17 16 -31 30 3 17 -10 -30 29 1 -7 -22 0 0 10 -1 -5 8 36 -8 16 -24 1 1 1
-4 -8 13 14 -44 -10 -20 38 -18 -8 25 -11 -1 -4 -12 2 3 -3 0 12 -37 -2 12 -54 -
0 3 8 16 -32 -22 5 49 14 9 -33 11 0 3 0 -11 4 0 7 34 -10 -8 10 -54 -13 0 4 4 3
28 -14 22 9 -13 -40 -7 7 5 7 35 2 -4 -4 -6 13 -2 3 -8 13 11 -30 19 -35 -10 1 0
-16 5 28 11 41 -7 -1 -13 -7 4 -13 -6 -1 4 27 17 3 0 2 2 -1 30 -51 -4 5 2 1 1 3
-101 50 31 11 3 9 2 -16 -4 -9 28 55 10 0 40 2 1 -1 -1 0 0 -2 69 22 3 1 0 14 14
-95 59 27 10 -7 -6 11 2 -5 -10 -9 -6 9 -24 36 12 4 -2 -1 -1 2 2 32 -29 0 3 -24
-75 63 11 12 6 4 2 0 -2 9 -14 -24 -2 8 -11 16 3 -2 0 -1 -1 2 1 -28 -1 2 6 -15
-37 62 -9 14 -3 -1 -4 10 0 12 22 3 -11 20 -14 0 0 1 -1 0 -2 2 2 31 12 -1 19 28
-33 47 -22 18 -30 3 -1 -17 -12 -10 7 -4 7 -1 5 2 0 3 0 -1 0 1 2 51 -16 -3 -2 -
-20 65 -44 21 -43 2 -11 -20 3 -11 17 -12 5 1 1 2 1 1 0 -2 -1 -2 2 14 -53 3 -6
0
14 lsklt lifting step 0 klt 1



xxx

4 l64.pgm r.pgm 1
0
P5
# Created by GIMP version 2.10.8 PNM plug-in64 64
255

161 159 157 155 160 170 168 134 97 106 109 109 109 117 124 129 132 133 132 133
opening a file to write the results
need to copy the data received from host to img1
img1 = 0x200042f4 img2 = 0x200052f4
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3 img1 155 ptrs.buf 155
4 img1 160 ptrs.buf 160
4091 img1 123 ptrs.buf 123
4092 img1 94 ptrs.buf 94
4093 img1 58 ptrs.buf 58
4094 img1 61 ptrs.buf 61
4095 img1 91 ptrs.buf 91
need to copy the data from img1 to img2
0 img2 161 img1 161
1 img2 159 img1 159
2 img2 157 img1 157
3 img2 155 img1 155
4 img2 160 img1 160
4091 img2 123 img1 123
4092 img2 94 img1 94
4093 img2 58 img1 58
4094 img2 61 img1 61
4095 img2 91 img1 91
klt
(KLT) Selecting the 100 best features from a 64 by 64 image...
        3 features found.
Feature #0:  (32.000000,24.000000) with value of 4472
Feature #1:  (39.000000,34.000000) with value of 3461
Feature #2:  (29.000000,36.000000) with value of 3100
Feature #3:  (-1.000000,-1.000000) with value of -1
Feature #4:  (-1.000000,-1.000000) with value of -1
Feature #5:  (-1.000000,-1.000000) with value of -1
Feature #6:  (-1.000000,-1.000000) with value of -1
Feature #7:  (-1.000000,-1.000000) with value of -1
Feature #8:  (-1.000000,-1.000000) with value of -1
Feature #9:  (-1.000000,-1.000000) with value of -1
Feature #10:  (-1.000000,-1.000000) with value of -1
Feature #11:  (-1.000000,-1.000000) with value of -1
Feature #12:  (-1.000000,-1.000000) with value of -1
Feature #13:  (-1.000000,-1.000000) with value of -1
Feature #14:  (-1.000000,-1.000000) with value of -1
Feature #15:  (-1.000000,-1.000000) with value of -1
Feature #16:  (-1.000000,-1.000000) with value of -1
Feature #17:  (-1.000000,-1.000000) with value of -1
Feature #18:  (-1.000000,-1.000000) with value of -1
Feature #19:  (-1.000000,-1.000000) with value of -1
Feature #20:  (-1.000000,-1.000000) with value of -1
Feature #21:  (-1.000000,-1.000000) with value of -1
Feature #22:  (-1.000000,-1.000000) with value of -1
Feature #23:  (-1.000000,-1.000000) with value of -1

Feature #24: (-1.000000,-1.000000) with value of -1
Feature #25: (-1.000000,-1.000000) with value of -1
Feature #26: (-1.000000,-1.000000) with value of -1
Feature #27: (-1.000000,-1.000000) with value of -1
Feature #28: (-1.000000,-1.000000) with value of -1
Feature #29: (-1.000000,-1.000000) with value of -1
Feature #30: (-1.000000,-1.000000) with value of -1
Feature #31: (-1.000000,-1.000000) with value of -1
Feature #32: (-1.000000,-1.000000) with value of -1
Feature #33: (-1.000000,-1.000000) with value of -1
Feature #34: (-1.000000,-1.000000) with value of -1
Feature #35: (-1.000000,-1.000000) with value of -1
Feature #36: (-1.000000,-1.000000) with value of -1
Feature #37: (-1.000000,-1.000000) with value of -1
Feature #38: (-1.000000,-1.000000) with value of -1
Feature #39: (-1.000000,-1.000000) with value of -1
Feature #40: (-1.000000,-1.000000) with value of -1
Feature #41: (-1.000000,-1.000000) with value of -1
Feature #42: (-1.000000,-1.000000) with value of -1
Feature #43: (-1.000000,-1.000000) with value of -1
Feature #44: (-1.000000,-1.000000) with value of -1
Feature #45: (-1.000000,-1.000000) with value of -1
Feature #46: (-1.000000,-1.000000) with value of -1
Feature #47: (-1.000000,-1.000000) with value of -1
Feature #48: (-1.000000,-1.000000) with value of -1
Feature #49: (-1.000000,-1.000000) with value of -1
Feature #50: (-1.000000,-1.000000) with value of -1
Feature #51: (-1.000000,-1.000000) with value of -1
Feature #52: (-1.000000,-1.000000) with value of -1
Feature #53: (-1.000000,-1.000000) with value of -1
Feature #54: (-1.000000,-1.000000) with value of -1
Feature #55: (-1.000000,-1.000000) with value of -1
Feature #56: (-1.000000,-1.000000) with value of -1
Feature #57: (-1.000000,-1.000000) with value of -1
Feature #58: (-1.000000,-1.000000) with value of -1
Feature #59: (-1.000000,-1.000000) with value of -1
Feature #60: (-1.000000,-1.000000) with value of -1
Feature #61: (-1.000000,-1.000000) with value of -1
Feature #62: (-1.000000,-1.000000) with value of -1
Feature #63: (-1.000000,-1.000000) with value of -1
Feature #64: (-1.000000,-1.000000) with value of -1
Feature #65: (-1.000000,-1.000000) with value of -1
Feature #66: (-1.000000,-1.000000) with value of -1
Feature #67: (-1.000000,-1.000000) with value of -1
Feature #68: (-1.000000,-1.000000) with value of -1
Feature #69: (-1.000000,-1.000000) with value of -1
Feature #70: (-1.000000,-1.000000) with value of -1
Feature #71: (-1.000000,-1.000000) with value of -1
Feature #72: (-1.000000,-1.000000) with value of -1
Feature #73: (-1.000000,-1.000000) with value of -1
Feature #74: (-1.000000,-1.000000) with value of -1
Feature #75: (-1.000000,-1.000000) with value of -1

Feature #76:  (-1.000000,-1.000000) with value of -1
Feature #77:  (-1.000000,-1.000000) with value of -1
Feature #78:  (-1.000000,-1.000000) with value of -1
Feature #79:  (-1.000000,-1.000000) with value of -1
Feature #80:  (-1.000000,-1.000000) with value of -1
Feature #81:  (-1.000000,-1.000000) with value of -1
Feature #82:  (-1.000000,-1.000000) with value of -1
Feature #83:  (-1.000000,-1.000000) with value of -1
Feature #84:  (-1.000000,-1.000000) with value of -1
Feature #85:  (-1.000000,-1.000000) with value of -1
Feature #86:  (-1.000000,-1.000000) with value of -1
Feature #87:  (-1.000000,-1.000000) with value of -1
Feature #88:  (-1.000000,-1.000000) with value of -1
Feature #89:  (-1.000000,-1.000000) with value of -1
Feature #90:  (-1.000000,-1.000000) with value of -1
Feature #91:  (-1.000000,-1.000000) with value of -1
Feature #92:  (-1.000000,-1.000000) with value of -1
Feature #93:  (-1.000000,-1.000000) with value of -1
Feature #94:  (-1.000000,-1.000000) with value of -1
Feature #95:  (-1.000000,-1.000000) with value of -1
Feature #96:  (-1.000000,-1.000000) with value of -1
Feature #97:  (-1.000000,-1.000000) with value of -1
Feature #98:  (-1.000000,-1.000000) with value of -1
Feature #99:  (-1.000000,-1.000000) with value of -1
this is the string 0 Ð0
14 lsklt lifting step 0 klt 1
xxx