```
#include "Talkthrough.h"

//------------------------------------------------------------------------//
// Function:    Process_Data()                                            //
//                                                                        //
// Description: This function is called from inside the SPORT0 ISR every    //
//              time a complete audio frame has been received. The new      //
//              input samples can be found in the variables iChannel0LeftIn,//
//              iChannel0RightIn, iChannel1LeftIn and iChannel1RightIn      //
//              respectively. The processed data should be stored in        //
//              iChannel0LeftOut, iChannel0RightOut, iChannel1LeftOut,      //
//              iChannel1RightOut, iChannel2LeftOut and iChannel2RightOut   //
//              respectively.                                               //
//------------------------------------------------------------------------//


void Process_Data(void)
{
            // Output Del
            if(num1>OUTPUTLEN){
                playFlag = 0;
            }
            if(playFlag){
                yn = (sound[num1] << 2);
                iChannel0LeftOut = (yn << 16);

            }

            if(num1>INPUTLEN){
                recFlag = 0;
            }
            if(recFlag)
            {
                soundIn[num1] = (short)(iChannel0LeftIn >> 15);
            }
            num1++;
            num2 = num2 + 20 + sound_factor; //Soundfactor is the distance in 1/10 mete
r
            num2 = num2 % 2000; // because the sinus buffer is 2000 samples we want the
 remainder of 2000 because maybe num2 become more then just 1 more the 2000 and we want
 the sinus to flow

            if(num1>5000){
                doX = 1;
            }
            xn = sinus[num2];

            iChannel0RightOut = (xn << 16);

}
//------------------------------------------------------------------------//
// Function:    calc_dist()                                               //
//                                                                        //
// Description: This function is called from inside the SPORT0 ISR every    //
//              time a complete audio frame has been received. The new      //
//              input samples can be found in the variables iChannel0LeftIn,//
//              iChannel0RightIn, iChannel1LeftIn and iChannel1RightIn      //
//              respectively. The processed data should be stored in        //
//              iChannel0LeftOut, iChannel0RightOut, iChannel1LeftOut,      //
//              iChannel1RightOut, iChannel2LeftOut and iChannel2RightOut   //
//              respectively.                                               //
//------------------------------------------------------------------------//
int time = 0;
int fs = 48;
int velocity = 340;
int dist = 0;
int totaldist = 0;
int numDist = 0;
int sound_factor=0;
int avg = 10;
int place = 0;
int myCount = 0;
int maxNum = 0;
```

```
int olddist = 0;
//filter coeficients:
float alpha = 0.3;

int calc_dist(short* corr){
    maxNum = 0;

    for(myCount = 0; myCount < SAMPLES; myCount++)
    {
        if(corr[myCount] > maxNum)
        {
            maxNum = corr[myCount];
            place = myCount;
        }
        if(myCount == (SAMPLES - 1))
        {
            time = (place*100)/fs;
            dist = (1.096*(time * velocity)/200)-425;
        }
    }
    //average distance:
    olddist = totaldist;
    totaldist = dist*alpha + olddist*(1-alpha);

    //Old averaging
/*  if(numDist < avg){
        totaldist += dist;
        numDist++;
    }
    else
    {
        totaldist = totaldist/avg;
        sound_factor = totaldist/100;
        totaldist = 0;
        numDist = 0;
    }*/
    sound_factor = totaldist/100;
    return totaldist;
}
```