

Pebble Development

Meeting 4: Using the accelerometer

Agenda

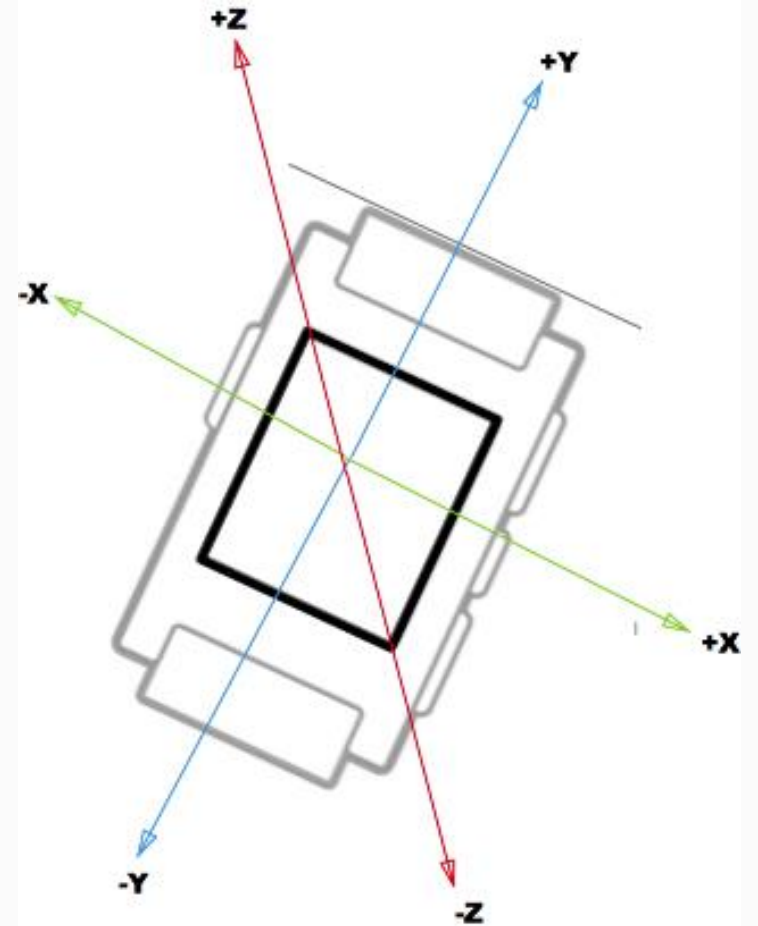
- Getting Data
- Data Properties
- Demo
- Computing Variance
- Demo
- Discuss Existing Research

Getting Data

- Use the AccelerometerService
- “The AccelerometerService enables the Pebble accelerometer to detect taps, perform measures at a given frequency, and transmit samples in batches to save CPU time and processing.”
- Can save 0-25 samples in the buffer
- Sample rate of 10Hz, 25Hz, 50Hz, or 100Hz (Hz = samples/s)
- System automatically calls your code when the buffer is full when properly configured
- Important note: the Pebble does not have a FPU

Data Properties

- 3 data axis, X, Y, and Z which correspond to the diagram at right.
- Each axis has a range from -4000 to 4000 milli-Gs and is available as a 16 bit signed integer
- There will always be a reading straight downward of 1 G representing earth's gravity
- Tap detection is also available



Demo

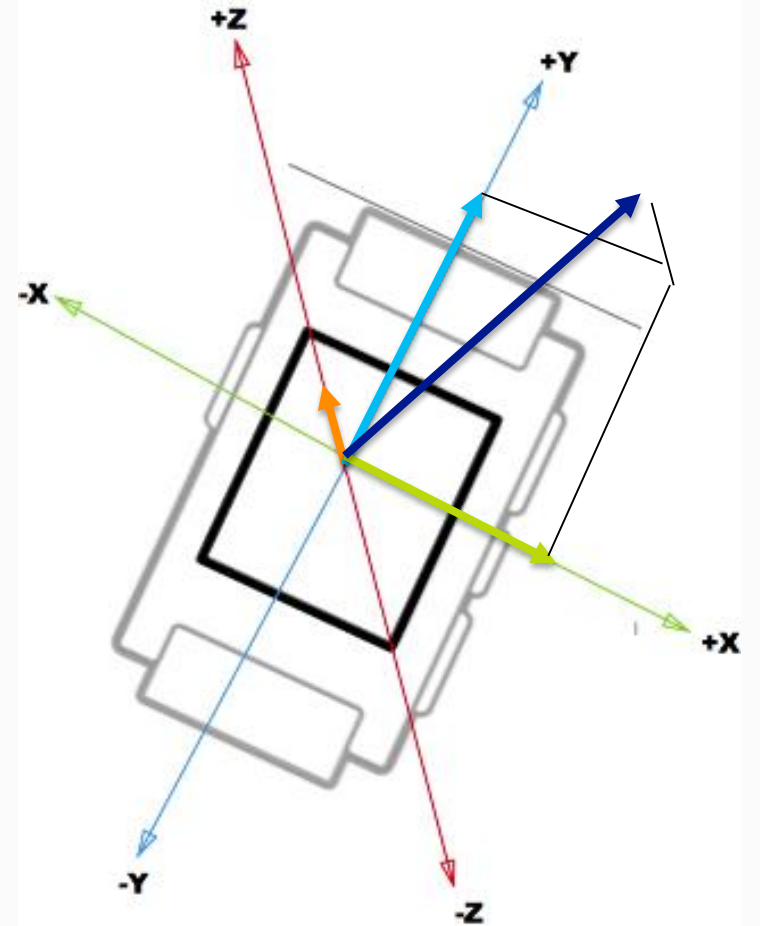
- Sample the accelerometer and take the local averages

Try it Yourself

- Open CloudPebble and create a new project, use defaults
- Create main.c
- Go to <http://jbakita.me/research> and copy the first scaffold for Meeting 4: Accelerometer, into CloudPebble
- Follow TODOs and use documentation if needed

Computing Variance

- Take the vector outlined by the X, Y, and Z values. The vector is highlighted in dark blue on the right.
- Find the magnitude <equation>
- Subtract 1040mG to compensate for earth's gravity
- Depending on circumstances, that may vary slightly



Demo

- Our earlier application, but with variance computation

Try it Yourself

- Two Options:
 - Create another project on CloudPebble, use defaults and create main.c
 - Continue off your existing project
- Go to <http://jbakita.me/research> and view the second scaffold for Meeting 4: Accelerometer. Copy the file into CloudPebble if you are starting over.
- Follow TODOs and use documentation if needed