

How to measure distance on the map with Plot Digitizer?

1. Background

For loosing some calories, I am usually running each week for 2 or 3 times 5 km. I recently moved to the Munich area, and while walking in the neighborhood I discovered a nice and quiet place for that. The place is not really usual, it is a "Waldfriedhof"– or a forest cemetery! I know that it is strange to run in the cemetery, but this one is very well organized with very wide paths, and lots of trees. No disrespect, but it would be not well used if the dead did not share with the alive. The cemetery has an interesting design; if you are interested you can read about it in Wikipedia from the following link: http://en.wikipedia.org/wiki/Munich_Waldfriedhof (the German version is much more complete: http://de.wikipedia.org/wiki/Waldfriedhof_%28M%C3%BCnchen%29)

2. Problem

Since I am running regularly, I would like to measure my performance, whether it is improving or degrading. I keep time, but in order to compare how I am doing, I have to be sure that I run the same distance each time. Whenever available in their records I use Google Maps to get an approximate estimation for the running path, but it turned out that the Waldfriedhof has not been included yet. Therefore, I needed to measure the distance myself to be sure that I run the right distance, and then to compare the times for the following runs. I found a method, which I explain below shortly, where I used Plot Digitizer and the map of the Waldfriedhof for measuring the distance.

3. Requirements

- The latest version of Plot Digitizer: <http://plotdigitizer.sourceforge.net/>
- An image file (see the documentation of Plot Digitizer for the supported image formats) with a reference scale on it to perform the measurement

4. Solution

After loading the image to Plot Digitizer, you will have to enter the calibration points. The software will ask you to select the min and max coordinates for x- and y-axis. Then, click on the path you would like to measure point by point to mark it; you can use as many points, and as close as you want in order to create an accurate approximation. After selecting the last point go to the menu: "Analysis > Curve length". This option will show you the length in terms of pixels and units of the calibration data. I was lucky that I found the map of the Waldfriedhof freely available over the Internet; below I included three images to demonstrate measurement details. If you do not have the map online, you can simply scan the part that you would like to measure. Almost all maps include the scale, so it will be easy to calibrate the software for the units.

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31/12/2010 v0.1 Created, and initial images included (ei)

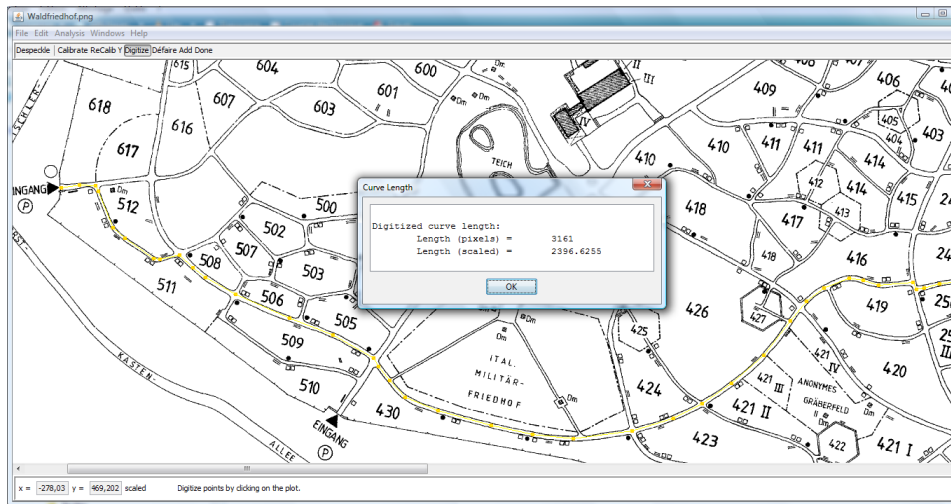


Figure 1: Measurement detail (since the calibration data is in meters, the shown distance is in meters as well)

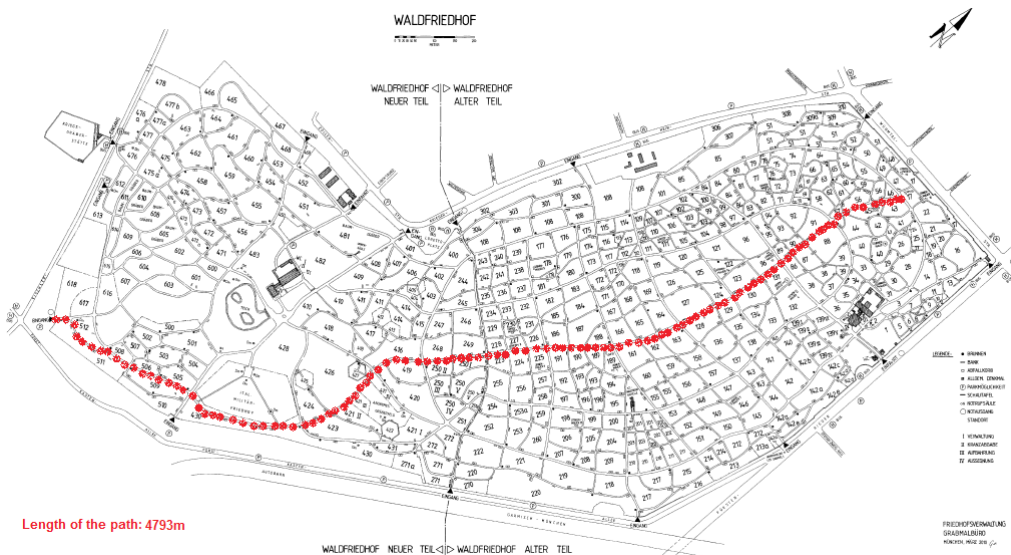


Figure 2: The short running path of 4793 meters

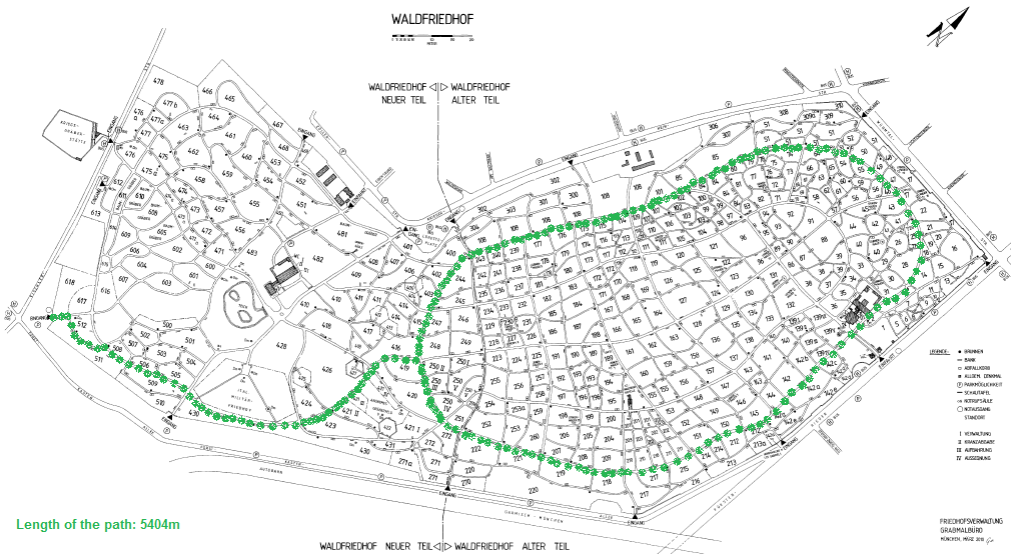


Figure 3: The longer path of 5404 meters