

A4M35OSP

Open Source Programování

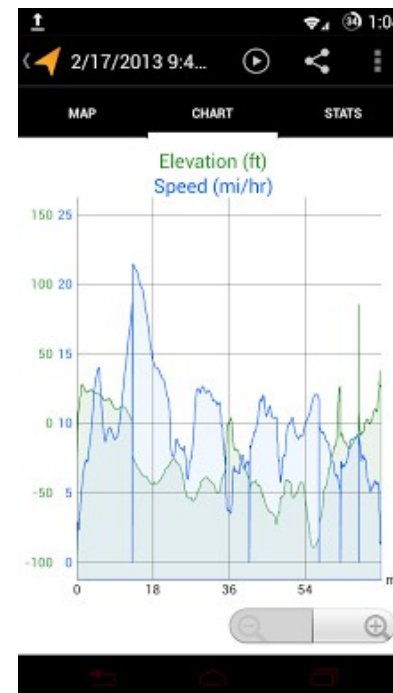
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MyTracks Android application

Issue 1248:

Average speed higher than max speed (not possible)

Speed	-
Distance	8.28 mi
Total time	20:51
Avg speed	23.82 mi/h
Max speed	21.81 mi/h



Patch description

Incorrect calculation of device acceleration due to the wrongly converted value of gravitational acceleration

$$2g = 2 * 9.8 = 19.6 \text{ m/s}^2 = 0.0000196 \text{ m/ms}^2$$

Changelog

com.google.android.apps.mytracks.Constants.java

line 106: Fixed comment. The equation was wrong.

line 107: Value was wrong physically. Location class returns time in milliseconds and acceleration in meters/milliseconds.

To calculate acceleration, we use $a = \text{diff}(v) / \text{diff}(t)$. Result is in meters/milliseconds². Acceleration equaling 2G is $19.6 \text{ m/s}^2 = 0.0000196 \text{ m/ms}^2$

com.google.android.apps.mytracks.stats.TripStatisticsUpdater.java

line 259: Added clarifying comment

line 260: Added clarifying comment

line 261: Calculation of acceleration in m/ms²

line 262: Adaptation of the condition

line 276: Adaptation of the return statement

Code summary:

com.google.android.apps.mytracks.Constants.java

102: /**

103: * Ignore any acceleration faster than this.

104: * Will ignore any speeds that imply acceleration greater than 2g's

105: * $2g = 19.6 \text{ m/s}^2 = 0.0000196 \text{ m/ms}^2$

106: */

107: public static final double MAX_ACCELERATION = 0.0000196;

com.google.android.apps.mytracks.stats.TripStatisticsUpdater.java

255: /**

256: * See if the speed seems physically likely. Ignore any speeds that imply

257: * acceleration greater than 2g.

258: */

259: long timeDifference = time - lastLocationTime; // value in ms

260: double speedDifference = Math.abs(lastLocationSpeed - speed); // value in m*s⁻¹

261: double acceleration = speedDifference / timeDifference; // $a = d(v) / d(t)$, value in m*ms⁻²

262: if (acceleration > Constants.MAX_ACCELERATION) {

263: return false;

264: }

Achievements

- Bug fix assigned by one of the project main developers after showing an interest in contributing
- Hopefully found and fixed the bug (patch hasn't been tested yet)
- Project source with the patch available in a public repository at: <https://code.google.com/r/tomasf90-mytracks1/>
- Still awaiting a response from one of the project main developers, who oversee all changes before accepting them.

Thank you