

Sensor reading of iPhone Accelerometer

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The problem

Types of sensors

- Accelerometer
- Gyroscope

Context

- Both are tri-axial based (x, y, z)

Use

Used to help distinguish, successfully, between falls and regular activities of daily live

Experimentation on Subject

Info on Subject

Gender: Male

Age: 20

Height: 6'2"

Weight: 184 lbs

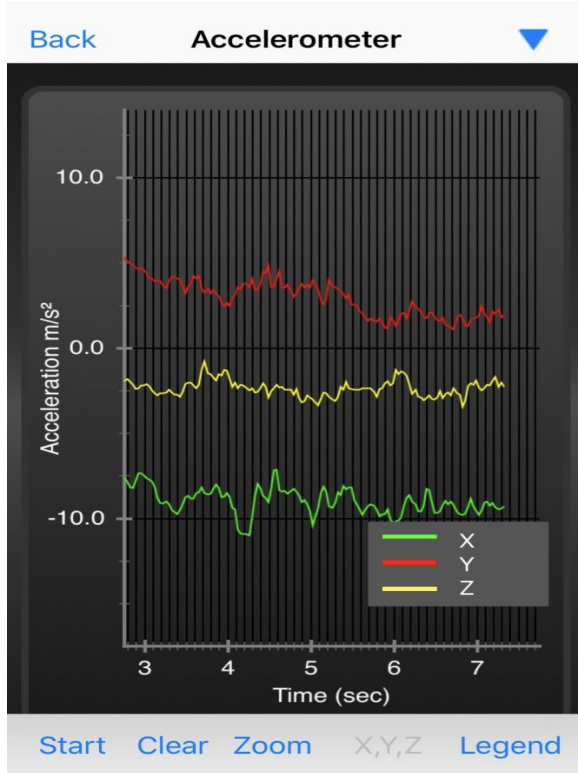
Walking

- Spikes in acceleration each time feet makes contact with ground. Spike is mostly evident on x & z axis

Falling

All Falls: Overlapping of readings across the 3 different axis. Readings varied for every fall.

Results: Walking



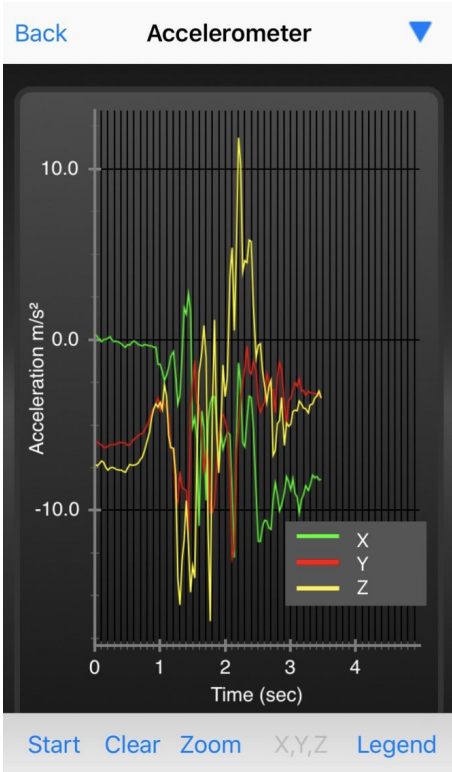
Back Accel. Data: 220 samples

#	Time	X value	Y value	Z value
1	0.022	-9.0094	3.5426	-0.9656
2	0.055	-8.5723	3.7182	-1.5509
3	0.088	-9.0534	3.7940	-1.6196
4	0.122	-9.0085	3.8584	-1.1786
5	0.155	-8.8120	3.9208	-1.2031
6	0.188	-8.7725	3.9090	-1.3680
7	0.222	-8.8387	3.9042	-1.5147
8	0.255	-8.8776	3.9447	-1.4312
9	0.288	-8.8580	3.8301	-1.4719
10	0.322	-8.9283	4.0021	-1.3694
11	0.355	-8.9439	3.9759	-1.5395
12	0.388	-9.1290	4.0927	-1.4692
13	0.422	-8.8589	3.7610	-1.6946
14	0.455	-8.8976	4.1053	-2.0395
15	0.488	-8.7525	3.8569	-1.8732
16	0.522	-8.9269	3.6630	-1.8797
17	0.557	-8.7764	3.8258	-1.8590
18	0.588	-8.5847	3.5438	-1.8170
19	0.622	-8.6577	3.7590	-2.0449

Back Accel. Data: 220 samples

#	Time	X value	Y value	Z value
77	2.555	-10.2911	5.4256	-2.3380
78	2.588	-10.5307	5.7217	-2.3590
79	2.622	-10.1862	5.1295	-2.5695
80	2.655	-8.9190	4.0076	-2.4278
81	2.688	-8.0930	4.1304	-2.0565
82	2.722	-7.7377	4.7573	-1.9070
83	2.755	-7.6236	5.2737	-1.8889
84	2.788	-7.8631	5.0582	-1.8313
85	2.822	-8.1711	4.9957	-1.9705
86	2.855	-8.2129	4.8499	-2.1529
87	2.888	-7.7849	4.7193	-2.3817
88	2.922	-7.3250	4.6314	-2.3706
89	2.955	-7.3479	4.6862	-2.1864
90	2.988	-7.4603	4.5833	-2.2017
91	3.022	-7.6140	4.3989	-2.1026
92	3.055	-7.7087	4.1168	-2.2210
93	3.088	-7.8458	4.0689	-2.4904
94	3.122	-8.1199	3.9277	-2.6580
95	3.155	-8.8017	3.9435	-2.7621

Results: Left Lateral (Left-Side) Fall



Back Accel. Data: 105 samples

#	Time	X value	Y value	Z value
1	0.015	0.2990	-6.0091	-7.3243
2	0.036	0.1727	-5.9853	-7.4115
3	0.069	-0.0123	-6.1147	-7.2815
4	0.102	-0.1357	-6.1533	-7.0934
5	0.135	0.0063	-6.3299	-7.1809
6	0.169	-0.0012	-6.3154	-7.4850
7	0.202	0.0715	-6.2196	-7.6568
8	0.235	0.1640	-6.1550	-7.5290
9	0.269	-0.0566	-6.1624	-7.4711
10	0.302	-0.1256	-6.1626	-7.5315
11	0.335	-0.0629	-6.0954	-7.6099
12	0.369	-0.1465	-6.0143	-7.6490
13	0.402	-0.2448	-6.0408	-7.6258
14	0.435	-0.3496	-6.0432	-7.7250
15	0.469	-0.4643	-6.0697	-7.7546
16	0.502	-0.2860	-6.1963	-7.5401
17	0.535	-0.3258	-6.1726	-7.3057
18	0.568	-0.1508	-5.9977	-7.3617
19	0.602	-0.0983	-5.8160	-7.3659

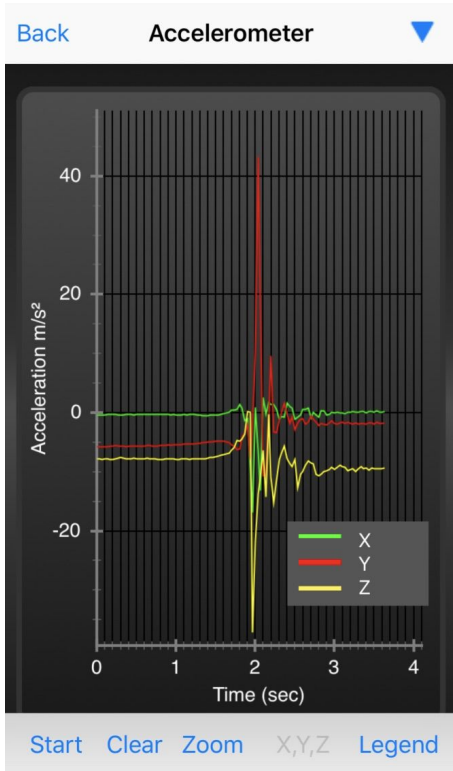
Back Accel. Data: 105 samples

#	Time	X value	Y value	Z value
39	1.269	-3.8134	-9.5317	-13.9520
40	1.305	-3.2805	-7.7415	-15.5268
41	1.335	-0.8943	-8.6627	-12.9517
42	1.369	1.8708	-8.7671	-11.7188
43	1.402	1.4822	-8.8268	-9.4257
44	1.435	2.6915	-11.4722	-11.8525
45	1.469	1.7517	-4.0076	-14.8155
46	1.502	-5.1140	-2.5890	-13.2690
47	1.535	-4.5937	-1.2298	-13.9605
48	1.569	-5.8332	-3.7086	-7.1215
49	1.602	-10.9224	-3.8346	-1.9709
50	1.635	-4.1916	-5.7933	-0.7364
51	1.669	-5.1527	-7.8901	0.8200
52	1.702	-9.4193	-6.5178	-1.0378
53	1.735	-4.7682	-7.0009	-11.2023
54	1.769	-3.7096	-10.1775	-16.4995
55	1.802	-3.3647	-10.1195	-3.7517
56	1.835	-3.3544	-9.5948	1.1696
57	1.869	-4.8805	-7.3162	-5.3506

Back Accel. Data: 105 samples

#	Time	X value	Y value	Z value
77	2.535	-11.8387	-4.2675	-0.2309
78	2.569	-10.9712	-3.9136	-1.8277
79	2.602	-10.5943	-3.6399	-2.7415
80	2.635	-10.6308	-1.9825	-3.6627
81	2.668	-11.0362	-2.4571	-2.7732
82	2.702	-11.1052	-2.9643	-2.3814
83	2.735	-9.4000	-2.9490	-6.7660
84	2.768	-8.3968	-4.2985	-6.5020
85	2.802	-9.0609	-2.1849	-4.9282
86	2.835	-10.0352	-1.3210	-4.7588
87	2.868	-9.7157	-1.7902	-3.3794
88	2.902	-8.9262	-3.8524	-6.1829
89	2.935	-8.0210	-4.9566	-4.8947
90	2.968	-8.3278	-3.5703	-5.0976
91	3.002	-8.7933	-3.4276	-4.9722
92	3.035	-8.1452	-2.8727	-4.2144
93	3.068	-9.0275	-2.4986	-4.1114
94	3.102	-9.2087	-2.7331	-4.1899
95	3.135	-10.1832	-2.2735	-3.5825

Results: Forward Fall



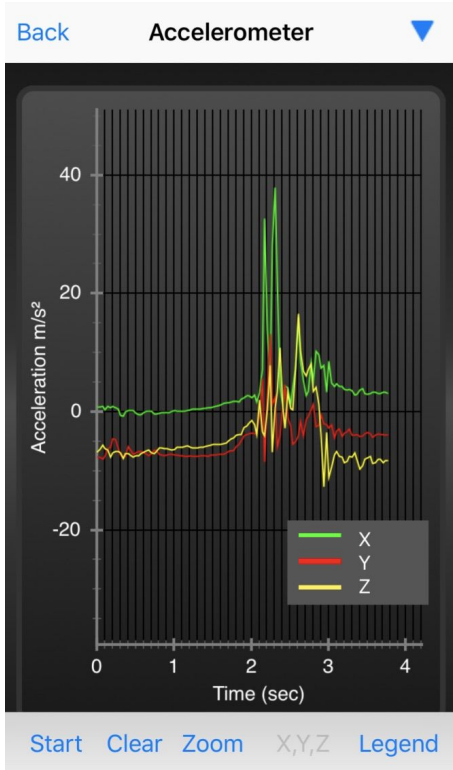
Back Accel. Data: 110 samples

#	Time	X value	Y value	Z value
1	0.008	-0.4666	-5.7421	-7.8167
2	0.036	-0.4543	-5.7587	-7.8717
3	0.069	-0.4561	-5.7539	-7.9628
4	0.102	-0.4115	-5.7683	-7.8211
5	0.136	-0.3324	-5.7610	-7.8492
6	0.169	-0.3488	-5.6989	-7.8947
7	0.202	-0.3154	-5.6390	-7.8896
8	0.236	-0.3015	-5.6127	-7.8224
9	0.269	-0.4097	-5.6463	-7.7611
10	0.302	-0.4464	-5.6561	-7.6417
11	0.336	-0.4745	-5.7325	-7.7090
12	0.369	-0.2846	-5.7610	-7.8081
13	0.402	-0.3585	-5.7012	-7.8733
14	0.436	-0.3422	-5.6989	-7.8181
15	0.469	-0.3762	-5.6607	-7.7440
16	0.502	-0.2897	-5.6869	-7.7769
17	0.536	-0.2798	-5.6677	-7.8295
18	0.569	-0.2894	-5.6198	-7.8462
19	0.602	-0.2468	-5.6222	-7.7693

Back Accel. Data: 110 samples

#	Time	X value	Y value	Z value
50	1.636	-0.0802	-4.9197	-7.0010
51	1.669	0.0745	-5.0941	-6.8490
52	1.702	0.4189	-5.3856	-6.3434
53	1.735	0.4162	-5.7087	-5.8790
54	1.769	0.5432	-6.3287	-4.6953
55	1.802	1.3219	-6.1195	-4.7916
56	1.836	0.7813	-4.1170	-4.4908
57	1.869	-1.3635	-3.5398	-3.6275
58	1.902	-1.0524	-2.1005	0.1692
59	1.935	-9.3265	-7.9529	0.0467
60	1.969	-16.9233	-1.4479	-37.1610
61	2.002	0.9169	10.0345	-21.7466
62	2.036	-6.4722	43.2844	-13.7760
63	2.069	-13.2528	19.1241	-10.9925
64	2.102	2.5610	-10.6827	-6.3404
65	2.135	-0.3279	-10.5950	-14.2701
66	2.169	1.7195	-0.6116	-0.2682
67	2.202	1.3113	9.5584	-10.9624
68	2.235	1.4013	-3.2667	-15.1894

Results: Right Lateral (Right-Side) Fall



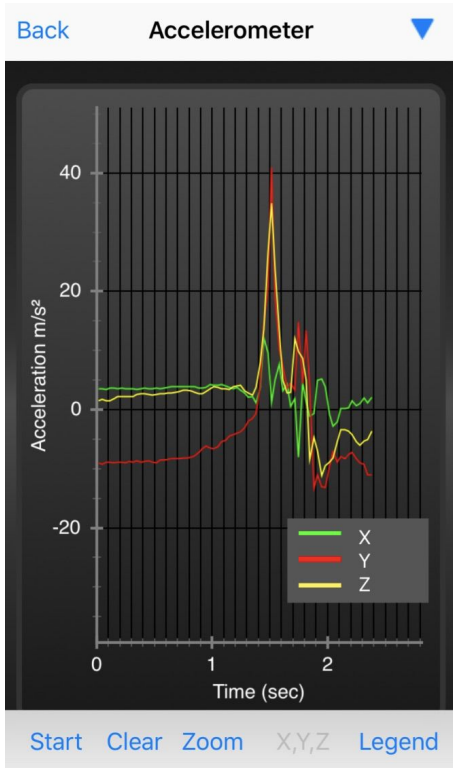
Back Accel. Data: 115 samples

#	Time	X value	Y value	Z value
1	0.008	0.7983	-7.6655	-6.8661
2	0.041	0.7353	-7.7400	-6.3613
3	0.075	0.8578	-8.0081	-5.6420
4	0.108	0.3418	-7.5565	-6.2688
5	0.142	0.8540	-6.2982	-6.4528
6	0.175	0.6275	-6.0465	-7.7358
7	0.208	0.8821	-4.6027	-7.0142
8	0.241	0.6358	-4.6630	-6.6955
9	0.275	0.3626	-6.3154	-6.7468
10	0.308	-0.6478	-7.3591	-6.9357
11	0.341	-0.8392	-7.8414	-7.9864
12	0.375	-0.0959	-7.6427	-7.0557
13	0.408	0.1321	-5.8564	-7.0956
14	0.441	0.1856	-6.5997	-7.4501
15	0.475	0.1522	-7.2641	-7.7310
16	0.508	-0.2493	-6.9397	-7.5187
17	0.541	-0.5110	-6.7704	-7.4587
18	0.575	-0.5662	-6.7158	-7.0639
19	0.608	-0.1508	-6.9879	-6.8282

Back Accel. Data: 115 samples

#	Time	X value	Y value	Z value
55	1.808	1.7330	-5.9520	-3.9712
56	1.841	1.6604	-5.5745	-3.9142
57	1.875	2.0281	-4.9692	-3.8460
58	1.908	2.2732	-4.1186	-2.6771
59	1.941	2.6617	-3.8912	-2.4223
60	1.975	2.6351	-3.7863	-2.0224
61	2.008	2.2960	-3.6676	-1.4602
62	2.041	2.7489	-3.8123	-2.2131
63	2.075	1.5769	-3.6357	-3.9305
64	2.108	3.1392	-0.4654	1.9590
65	2.141	7.0446	5.6953	-3.3628
66	2.175	32.6352	-8.5587	-4.0652
67	2.208	13.9336	2.6234	0.2334
68	2.241	4.9250	13.0999	7.7757
69	2.275	28.1332	1.1787	-6.8635
70	2.308	37.9442	2.4928	0.6951
71	2.342	22.7819	-6.0131	3.2731
72	2.375	4.0767	-4.0615	10.8110
73	2.408	0.7753	1.2199	0.6061

Results: Backwards Fall



MetroPCS 11:54 PM 64%

Back Accel. Data: 72 samples

#	Time	X value	Y value	Z value
1	0.015	3.5636	-9.0495	1.5430
2	0.048	3.4982	-9.2361	1.6787
3	0.081	3.4487	-8.9325	1.5086
4	0.115	3.6211	-8.9299	1.5148
5	0.148	3.5760	-9.0377	1.8280
6	0.181	3.4683	-8.8541	2.1625
7	0.215	3.5950	-8.8611	2.1947
8	0.248	3.4922	-8.9593	2.1722
9	0.281	3.5304	-8.7511	2.1559
10	0.315	3.4990	-8.9114	2.2297
11	0.348	3.4316	-8.7014	2.6173
12	0.381	3.5440	-8.9284	2.6660
13	0.415	3.6848	-8.8351	2.7319
14	0.448	3.4678	-8.6344	2.5625
15	0.481	3.5290	-8.9091	2.4048
16	0.515	3.5976	-8.9952	2.5538
17	0.548	3.5456	-8.5388	2.7308
18	0.581	3.6486	-8.5267	2.7269
19	0.615	3.7463	-8.4740	2.7781

MetroPCS 11:54 PM 64%

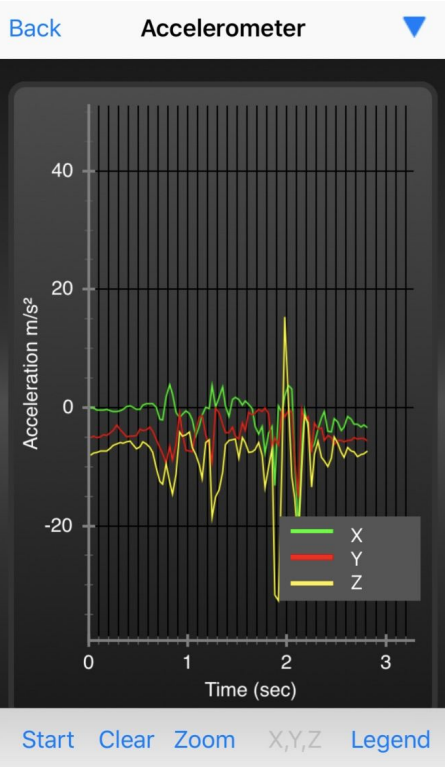
Back Accel. Data: 72 samples

#	Time	X value	Y value	Z value
25	0.816	3.8342	-8.1012	3.2030
26	0.848	3.8186	-7.7927	2.9635
27	0.881	3.6642	-7.2644	2.6847
28	0.915	3.6255	-6.5997	2.6322
29	0.948	3.8068	-6.1767	3.0388
30	0.981	4.2132	-6.4562	3.5569
31	1.015	4.1131	-6.5928	3.8792
32	1.048	4.0655	-6.2269	3.7713
33	1.081	4.2814	-5.4328	3.5534
34	1.115	4.0227	-5.2516	3.5513
35	1.148	3.7016	-4.4773	3.4436
36	1.181	3.5235	-4.2484	3.8925
37	1.215	3.8080	-3.9564	3.9382
38	1.248	3.2441	-3.7899	4.0676
39	1.281	2.8066	-3.0487	3.1064
40	1.315	2.0791	-1.9880	2.8206
41	1.348	2.2176	-1.4593	2.4342
42	1.381	1.1018	-0.6394	3.7279
43	1.415	3.8129	4.2120	7.9785

Back Accel. Data: 72 samples

#	Time	X value	Y value	Z value
49	1.615	3.1681	7.5100	4.9530
50	1.648	4.3796	3.6118	2.7482
51	1.681	0.5796	4.4980	2.8694
52	1.715	1.8842	3.2763	11.9319
53	1.748	-8.1087	14.8057	9.8350
54	1.781	4.5795	4.3536	8.6461
55	1.815	1.2094	13.4194	4.9807
56	1.848	-1.1300	3.8630	-8.3671
57	1.881	-0.7087	-13.2778	-4.6674
58	1.915	4.9553	-10.9896	-6.9307
59	1.948	5.1384	-13.0327	-11.1331
60	1.981	3.8174	-13.1506	-9.4347
61	2.015	-0.7546	-9.6313	-8.8945
62	2.048	-2.7931	-7.1604	-8.1514
63	2.081	-2.0351	-8.8563	-5.4805
64	2.115	0.1890	-7.9414	-3.3679
65	2.148	0.1513	-8.3097	-3.4068
66	2.181	0.3392	-7.6016	-3.6897
67	2.215	1.5183	-7.2815	-4.2255

Results: Forward Fall (with knees bent)



Back Accel. Data: 86 samples

#	Time	X value	Y value	Z value
1	0.015	0.0419	-5.0311	-8.0825
2	0.048	-0.0684	-4.8474	-7.7145
3	0.082	-0.4091	-5.0392	-7.5739
4	0.115	-0.4655	-4.9988	-7.3756
5	0.148	-0.3752	-4.6521	-7.3532
6	0.182	-0.2888	-4.6879	-7.3644
7	0.215	-0.6016	-4.2488	-6.8566
8	0.248	-0.7011	-3.9003	-6.3592
9	0.282	-0.7201	-2.9704	-6.1648
10	0.315	-0.5386	-3.7712	-5.9651
11	0.348	-0.3267	-4.2729	-6.0426
12	0.382	0.1389	-4.9370	-5.7372
13	0.415	0.3207	-4.8531	-5.7093
14	0.448	0.0917	-4.7982	-6.2308
15	0.482	-0.2864	-4.7359	-6.9883
16	0.515	-0.3379	-3.7011	-6.6099
17	0.548	0.3608	-3.8250	-5.8088
18	0.582	0.6744	-3.7406	-6.1557
19	0.615	0.7087	-3.3218	-6.7131

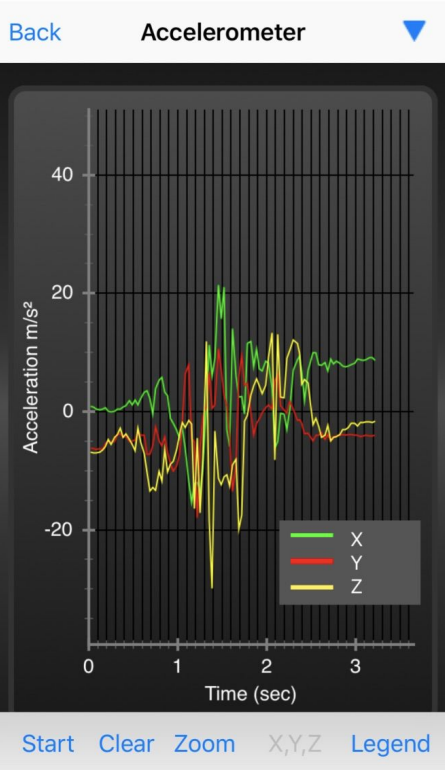
Back Accel. Data: 86 samples

#	Time	X value	Y value	Z value
21	0.682	0.1065	-5.4741	-10.1944
22	0.715	-2.0040	-6.7259	-12.4189
23	0.748	-2.0565	-7.8013	-12.9827
24	0.784	1.8400	-9.4263	-9.4589
25	0.815	3.8454	-6.4830	-12.6487
26	0.848	2.3449	-8.9198	-14.5885
27	0.882	-0.7380	-6.2109	-11.2630
28	0.915	-1.7652	-0.9508	-4.1753
29	0.948	-1.1656	-4.4065	-4.8309
30	0.982	-0.5989	-7.1981	-4.5692
31	1.015	-1.0230	-7.3401	-4.1538
32	1.048	-2.1480	-7.5143	-6.7594
33	1.082	-4.7982	-3.8380	-7.8982
34	1.115	-3.0280	-1.6586	-9.7783
35	1.148	-1.2486	-1.4369	-12.0091
36	1.182	-0.0012	-4.6311	-5.9441
37	1.215	-0.1769	-6.5300	-5.4895
38	1.248	3.7409	-9.2592	-18.5089
39	1.282	0.0347	-0.0914	-15.1415

Back Accel. Data: 86 samples

#	Time	X value	Y value	Z value
48	1.582	1.1376	-3.8859	-5.9076
49	1.615	0.5462	-0.8326	-7.5679
50	1.648	-0.1672	-1.3023	-7.5025
51	1.682	-3.2166	-0.9389	-7.0805
52	1.715	-4.4754	-0.2554	-5.8887
53	1.749	-3.1747	-0.6465	-8.0499
54	1.782	-7.6658	-0.0967	-13.5096
55	1.815	-4.4041	-1.0245	-10.0363
56	1.849	-3.1314	-6.7004	-7.0260
57	1.882	-13.1476	-5.0350	-31.6445
58	1.915	0.2785	-6.3944	-32.5889
59	1.948	-0.7494	-0.3099	-9.0946
60	1.982	1.9513	-1.6149	15.3083
61	2.015	3.7125	-0.5862	1.4897
62	2.048	3.1717	-0.6059	-11.7265
63	2.082	-8.7465	-8.7848	-15.2223
64	2.115	-20.4882	-15.2365	-22.9277
65	2.148	-7.0714	-0.1317	-10.2908
66	2.182	-0.4745	-2.2565	-1.3656

Results: Left Lateral (Left-Side) Fall (with knees bent)



Back Accel. Data: 97 samples

#	Time	X value	Y value	Z value
1	0.020	0.8904	-6.1903	-6.9098
2	0.053	0.7763	-6.2691	-7.0305
3	0.086	0.4171	-6.3582	-7.0073
4	0.119	0.3105	-6.3130	-6.8430
5	0.153	0.3758	-6.3730	-6.5479
6	0.186	0.6337	-5.4551	-5.8819
7	0.220	0.0865	-4.9595	-4.6792
8	0.253	-0.0992	-5.1838	-5.5239
9	0.286	0.0105	-5.0410	-4.4046
10	0.319	0.4708	-3.9362	-3.9353
11	0.353	0.4516	-3.7864	-2.8697
12	0.386	0.7544	-4.4112	-4.3642
13	0.419	0.9965	-4.1436	-3.7179
14	0.453	1.7969	-5.1100	-4.7221
15	0.487	1.1575	-4.9286	-5.4962
16	0.519	2.0223	-4.8763	-6.6287
17	0.553	1.1092	-3.3791	-2.7681
18	0.586	2.1725	-4.0380	-5.2068
19	0.620	3.2269	-4.0064	-7.1519

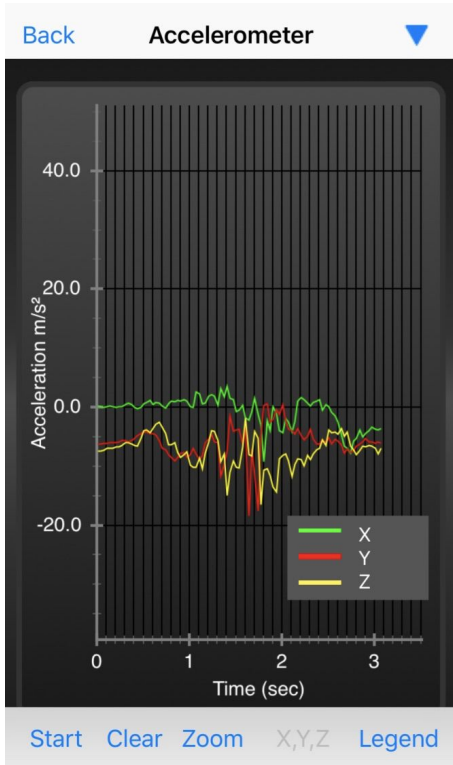
Back Accel. Data: 97 samples

#	Time	X value	Y value	Z value
24	0.786	5.2685	-4.9192	-10.0852
25	0.819	5.7622	-5.7731	-11.8034
26	0.853	3.2868	-4.2148	-6.3636
27	0.886	2.7186	-6.9095	-10.2042
28	0.919	-1.1533	-8.7809	-8.8616
29	0.953	-1.9831	-10.1067	-8.4623
30	0.986	-3.1518	-9.1680	-6.4218
31	1.019	-4.6181	-7.2405	-3.7463
32	1.053	-2.8574	-1.3725	-1.8931
33	1.086	-6.2641	6.4382	-2.6909
34	1.120	-11.7123	7.9882	-1.5199
35	1.153	-15.2868	-4.6464	-2.0758
36	1.186	-12.1676	-5.0329	-16.3914
37	1.220	-12.0226	-17.9777	-4.5277
38	1.253	-13.8044	-6.1298	-17.1269
39	1.286	-9.7009	-0.9166	-7.9718
40	1.320	1.6524	0.8685	11.8948
41	1.353	11.3224	6.6953	-18.5919
42	1.387	5.9652	0.4922	-29.9521

Back Accel. Data: 97 samples

#	Time	X value	Y value	Z value
43	1.420	9.0226	1.1343	-3.2890
44	1.453	21.4410	10.6540	-11.2780
45	1.486	15.7329	6.9648	-12.3038
46	1.520	21.0168	2.9456	-10.9991
47	1.553	-3.0636	0.9309	-10.6486
48	1.586	-5.9188	-4.5056	-12.5586
49	1.620	13.9837	-13.5379	-9.0055
50	1.653	6.0789	-8.8355	-8.1027
51	1.686	2.4206	5.8491	-19.9067
52	1.719	2.5875	9.4455	-17.4844
53	1.753	-0.4298	4.3085	-1.6437
54	1.786	11.4752	4.8032	-0.6794
55	1.820	11.8483	-0.0805	2.8001
56	1.853	7.5942	-4.0157	4.3010
57	1.886	10.5341	-2.0257	5.5966
58	1.919	7.2316	-1.3100	4.3619
59	1.953	6.8969	-0.1475	2.9804
60	1.986	8.5485	0.7023	4.4392
61	2.023	8.2268	1.1190	9.2285

Results: Right Lateral (Right-Side) Fall (with knees bent)



Back Accel. Data: 94 samples

#	Time	X value	Y value	Z value
23	0.741	-0.2114	-7.2192	-4.4869
24	0.774	0.5203	-8.0248	-6.3921
25	0.808	1.0234	-8.5715	-6.3378
26	0.841	0.9453	-9.1673	-6.0085
27	0.874	1.0848	-8.5132	-7.6520
28	0.908	1.0587	-7.7642	-8.5593
29	0.941	1.2441	-7.6544	-8.0117
30	0.974	0.9668	-8.5612	-7.5573
31	1.008	0.0284	-8.0970	-9.9022
32	1.041	-0.0373	-6.9708	-10.2613
33	1.074	2.5237	-7.9330	-10.2519
34	1.108	2.1863	-8.8527	-8.6773
35	1.141	0.4778	-8.1270	-10.4778
36	1.174	0.6113	-6.0369	-7.8173
37	1.208	1.8337	-5.4174	-5.9075
38	1.241	2.1128	-4.5984	-4.0390
39	1.274	1.8222	-5.9303	-4.0710
40	1.308	0.2934	-6.0843	-5.7295
41	1.341	3.1346	-11.7603	-9.2601

Back Accel. Data: 94 samples

#	Time	X value	Y value	Z value
46	1.508	-0.8073	-3.9166	-10.2205
47	1.541	-0.5844	-3.8231	-10.2903
48	1.574	0.2866	-6.1385	-6.8550
49	1.608	-1.8035	-3.5537	-1.9023
50	1.641	-2.1561	-18.3959	-8.0429
51	1.674	-0.8165	-7.0905	-8.2923
52	1.708	1.5250	-11.4532	-4.1777
53	1.741	-1.2694	-17.5527	-5.3622
54	1.774	-3.0381	-4.7782	-16.4760
55	1.808	-9.1959	0.2599	-10.6942
56	1.841	-2.3051	0.5232	-10.4819
57	1.874	-3.9777	-2.5480	-11.6380
58	1.908	0.0268	-2.0553	-13.6030
59	1.941	-1.1885	-0.3783	-14.4218
60	1.974	-4.0196	-1.2161	-8.7519
61	2.008	-4.3821	0.4133	-8.1696
62	2.041	-1.9903	-2.3398	-7.9689
63	2.074	-2.5963	-3.7765	-9.1580
64	2.108	-4.2939	-3.9708	-11.7398

Back Accel. Data: 94 samples

#	Time	X value	Y value	Z value
65	2.141	-2.4073	-4.6246	-9.7150
66	2.174	0.9649	-3.6666	-8.8282
67	2.208	1.6298	-4.8393	-8.8663
68	2.242	1.2519	-5.5754	-9.9213
69	2.274	0.6484	-4.9608	-8.1850
70	2.308	0.1583	-3.7393	-8.8973
71	2.341	0.7763	-5.4796	-7.8946
72	2.374	1.0150	-6.3045	-7.2680
73	2.408	1.3025	-6.2254	-6.9374
74	2.441	-0.4839	-5.5812	-5.5778
75	2.474	0.3992	-5.9880	-6.5355
76	2.508	0.0431	-5.1753	-3.8775
77	2.541	-0.8931	-6.3238	-4.4179
78	2.575	-1.5512	-5.4904	-4.2674
79	2.608	-2.5902	-5.7666	-4.6404
80	2.641	-4.7272	-6.3800	-3.6796
81	2.675	-6.5898	-7.7660	-4.9872
82	2.708	-6.9548	-7.1239	-4.2380
83	2.741	-7.8413	-7.6566	-6.6287

Solution

Sensor Kinetics

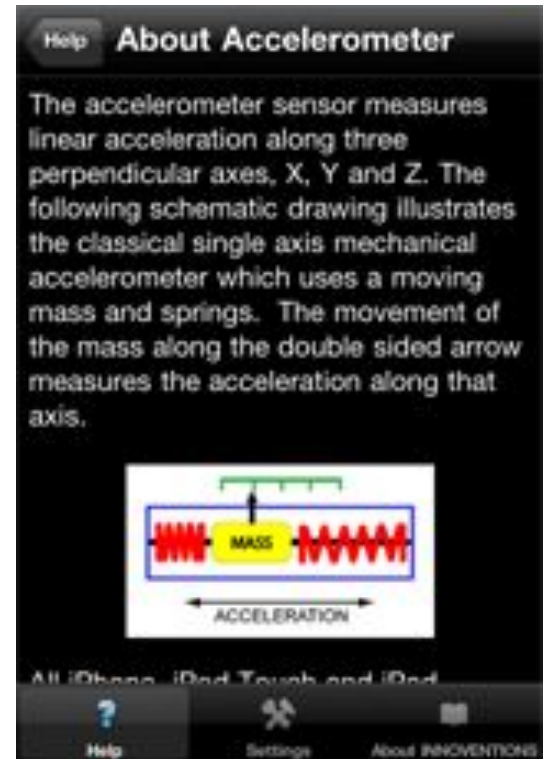
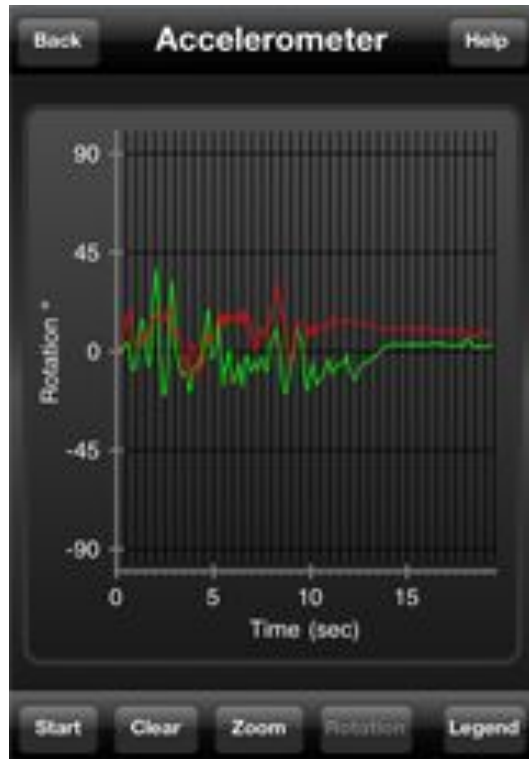
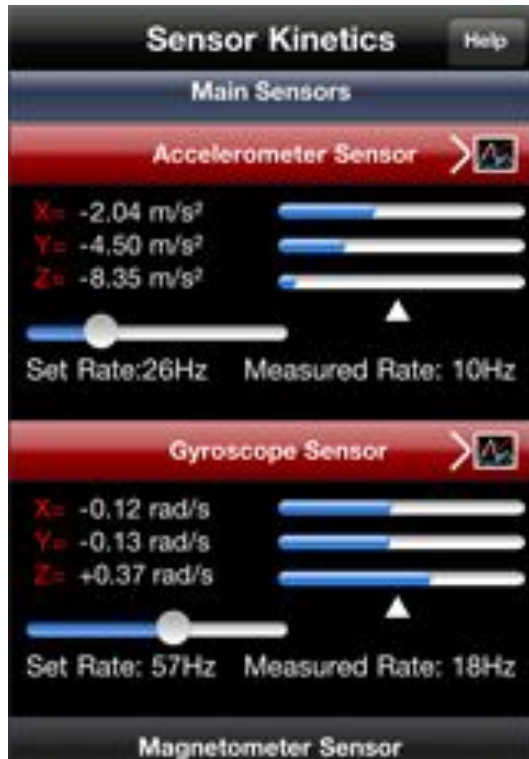
An app-based system that monitors all standard monitors in an iOS based system

Implementation

Features of iOS app for fall detection

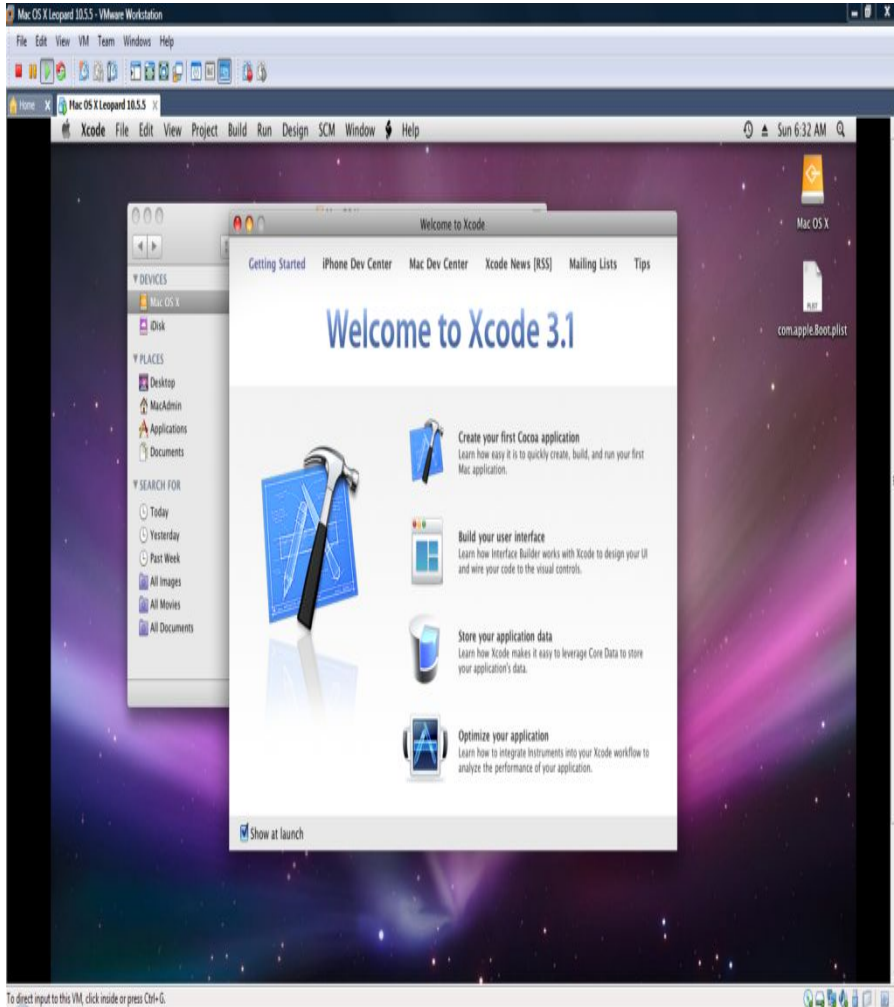
- Works on iPhone and detects the falls based on the position of the falling person
- Notification alerts after the fall happens
- Sensitivity calibration feature where user can calibrate the sensitivity meter. More sensitivity would mean detection of even minute falls.
- Users can set a timer, minimum of 60 seconds, which should be stopped before the set time if you do not want alerts to be sent.
- All user details (name, contact number...etc) can be saved in the application.
- You can add maximum 5 contacts in the emergency alert contact list on the application.

What can you do with Sensor Kinematics?

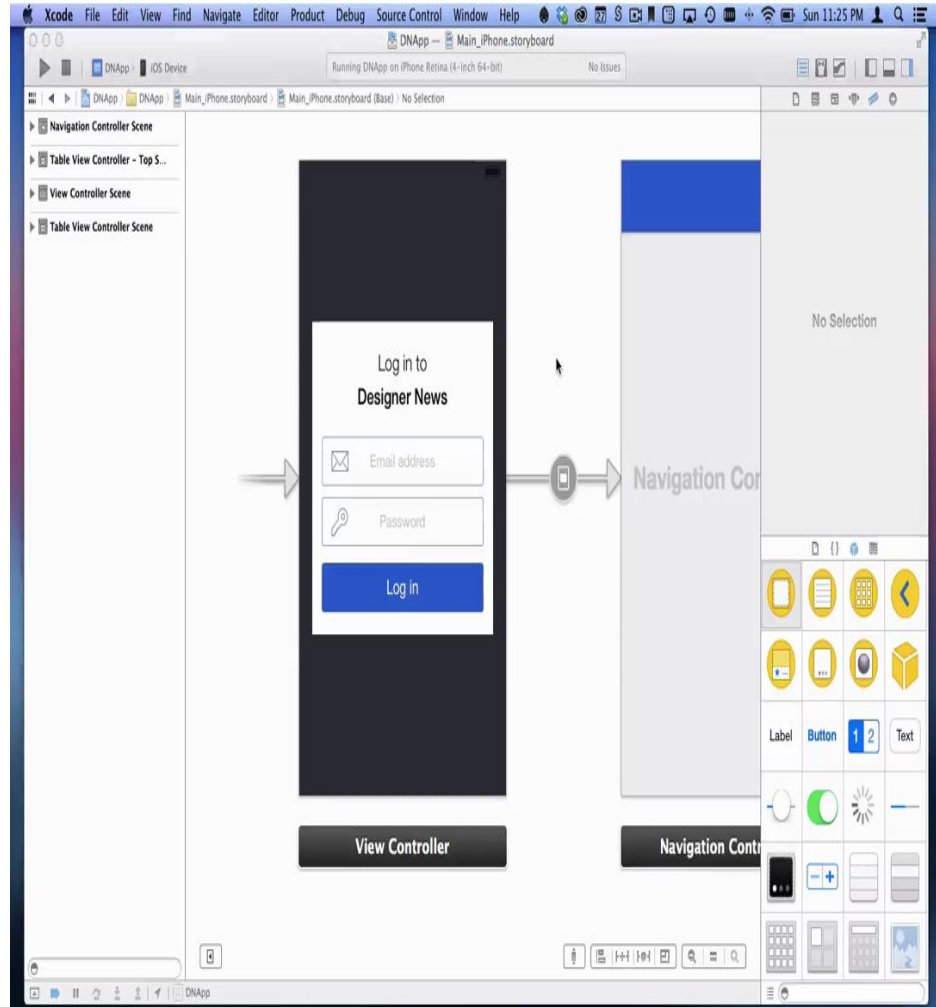


How app will be created

- This system is to be implemented on the smartphone running on iOS (iPhone/iPod/iPad).
- The application is based on the built-in Accelerometer of the device.
- Using the accelerometer built in, different acceleration values will be checked, for different positions, rest and fall.
- Programming language tool used will be XCode6.
- Probably going to use objective c or swift to code
- Various iOS class frameworks used is Core Location, AV Foundation, and Core Motion.



To direct input to this VM, click inside or press Ctrl-G.

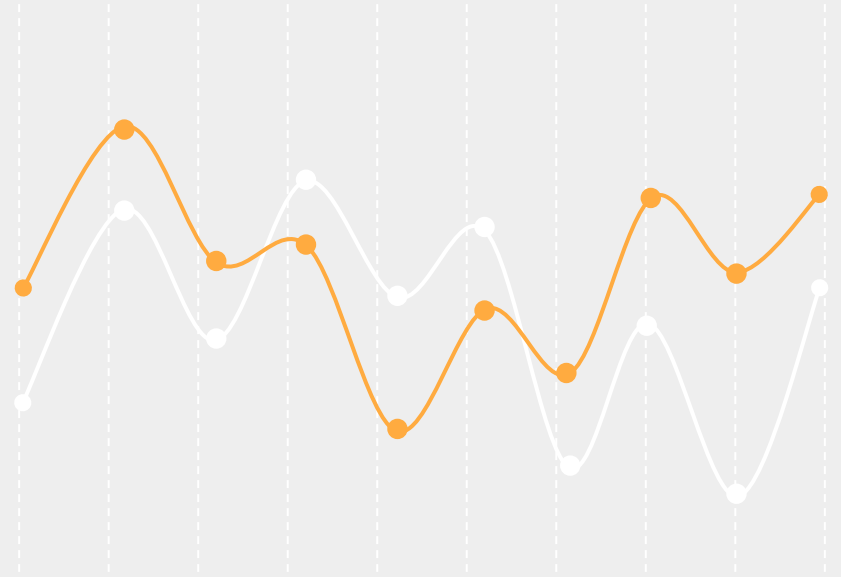


How app will work

The application is specifically designed to detect falls and alert a specific group of contacts saved on user's iPhone at the time of fall. After users will install the application, they can manage the settings after pressing the enable button. They can add their respective details and set the contacts they want in the emergency alert receivers list. As soon as the fall, the fall will be detected, the device will receive the notification with the alert sound. There will be a timer that the user can set up at their own convenience. If, for any reason, the user is not able to stop the timer before time limit reaches zero, a text-message will be sent to all the five contacts listed. The message will contain your contact number, fall information and your GPS coordinates (maybe) with your fall location.

Future Work

What's next?



- Meet with Tolga to talk about fall detection app
- Finish reading up on objective c and swift
- Try to design a basic prototype to practice
- Work on figuring out how to make app that will read in signals from built-in accelerometer