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Haski et al.

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(54) **LOCATION PREDICTION USING WIRELESS SIGNALS ON ONLINE SOCIAL NETWORKS**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,918,014 A	6/1999	Robinson
6,539,232 B2	3/2003	Hendrey
6,957,184 B2	10/2005	Schmid
7,069,308 B2	6/2006	Abrams

7,379,811 B2	5/2008	Rasmussen
7,539,697 B1	5/2009	Akella
7,565,157 B1	6/2009	Ortega
7,714,778 B2	5/2010	Dupray
7,752,326 B2	7/2010	Smit
7,783,630 B1	8/2010	Chevalier
7,797,635 B1	9/2010	Denise
7,836,044 B2	11/2010	Kamvar
7,840,589 B1	11/2010	Holt
7,890,131 B2*	2/2011	Backes H04L 47/125 455/522

7,903,029 B2 3/2011 Dupray
8,024,328 B2 9/2011 Dolin
(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 15/838,287, filed Dec. 11, 2017, Ott.
(Continued)

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(57) **ABSTRACT**

In one embodiment, a method includes receiving, from a first software application of a client system associated with a user of an online social network, background signal-information identifying one or more first wireless signals; storing the signal-information and a client identifier for the client system in a signal-information database; receiving, from a second software application of the client system via a places-API of the online social network, a places-API call indicating that the client system is located at a geographic location corresponding to a first place-entity; recording the places-API call in an API-call log, wherein the API-call log records the first place-entity and the client identifier; determining a correlation between the signal-information and the first place-entity; and updating a place-entity database to indicate that the first place-entity corresponds to the one or more first wireless signals identified by the signal-information.

20 Claims, 13 Drawing Sheets

