determining that the movement data exceeds a threshold and has resulted in an occurrence of a triggering event, and, in response thereto, initiating capture by the mobile device of second device possession measurement data comprising radio signal data, sound wave data, image data, or video data;

determining, based at least in part on an evaluation of the second device possession measurement data captured by the mobile device, a value representing a likelihood that the device remains in physical possession of the user; and

upon determining that the value is less than a first threshold, requiring the user to reauthenticate on the mobile device.

[0003b] Another aspect of the present invention provides a system comprising: one or more computer programmed to perform operations comprising:

authenticating a user on a mobile device;

capturing first device possession measurement data by the mobile device and, based on an evaluation of the first device possession measurement data, establishing that the mobile device is in physical possession of the user;

capturing movement data by a movement or positional sensor of the mobile device;

determining that the movement data exceeds a threshold and has resulted in an occurrence of a triggering event, and, in response thereto, initiating capture by the mobile device of second device possession measurement data comprising radio signal data, sound wave data, image data, or video data;

determining, based at least in part on an evaluation of the second device possession measurement data captured by the mobile device, a value representing a likelihood that the device remains in possession of the user; and

upon determining that the value is less than a first threshold, requiring the user to reauthenticate on the mobile device.

~~**[0001]**~~ [0004] Systems and methods are presented for electronically leashing a user to a mobile device in order to minimize the need for the user to reauthenticate with the mobile device using the primary identifier. A user is authenticated on the mobile device and initial sensor data (e.g., radio signal readings, accelerometer and magnetometer readings, image/video, audio) is

determining that the movement data exceeds a threshold and has resulted in an occurrence of a triggering event, and, in response thereto, initiating capture by the mobile device of second device possession measurement data comprising radio signal data, sound wave data, image data, or video data;

determining, based at least in part on an evaluation of the second device possession measurement data captured by the mobile device, a value representing a likelihood that the device remains in physical possession of the user; and

upon determining that the value is less than a first threshold, requiring the user to reauthenticate on the mobile device.

[0003b] Another aspect of the present invention provides a system comprising: one or more computer programmed to perform operations comprising:

authenticating a user on a mobile device;

capturing first device possession measurement data by the mobile device and, based on an evaluation of the first device possession measurement data, establishing that the mobile device is in physical possession of the user;

capturing movement data by a movement or positional sensor of the mobile device;

determining that the movement data exceeds a threshold and has resulted in an occurrence of a triggering event, and, in response thereto, initiating capture by the mobile device of second device possession measurement data comprising radio signal data, sound wave data, image data, or video data;

determining, based at least in part on an evaluation of the second device possession measurement data captured by the mobile device, a value representing a likelihood that the device remains in possession of the user; and

upon determining that the value is less than a first threshold, requiring the user to reauthenticate on the mobile device.

[0004] Systems and methods are presented for electronically leashing a user to a mobile device in order to minimize the need for the user to reauthenticate with the mobile device using the primary identifier. A user is authenticated on the mobile device and initial sensor data (e.g., radio signal readings, accelerometer and magnetometer readings, image/video, audio) is