US 20240214223A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0214223 A1**

Poltorak (43) **Pub. Date: Jun. 27, 2024**

(54) **SYSTEM AND METHOD FOR SECURE RELAYED COMMUNICATIONS FROM AN IMPLANTABLE MEDICAL DEVICE**

(71) Applicant: **Poltorak Technologies LLC**, Pomona, NY (US)

(72) Inventor: **Alexander I Poltorak**, Pomona, NY (US)

(21) Appl. No.: **18/602,035**

(22) Filed: **Mar. 12, 2024**

Related U.S. Application Data

(63) Continuation of application No. 18/110,366, filed on Feb. 15, 2023, now Pat. No. 11,930,126, which is a continuation of application No. 15/948,667, filed on Apr. 9, 2018, now Pat. No. 10,305,695, which is a continuation of application No. 17/099,756, filed on Nov. 16, 2020, now Pat. No. 11,588,650, which is a continuation of application No. 16/422,175, filed on May 24, 2019, now Pat. No. 10,841,104, which is a continuation of application No. 15/948,667, filed on Apr. 9, 2018, now Pat. No. 10,305,695, which is a continuation of application No. 14/968,336, filed on Dec. 14, 2015, now Pat. No. 9,942,051, which is a continuation of application No. 14/214,077, filed on Mar. 14, 2014, now Pat. No. 9,215,075.

(60) Provisional application No. 61/799,720, filed on Mar. 15, 2013.

Publication Classification

(51) **Int. Cl.**

H04L 9/32	(2006.01)
A61B 5/00	(2006.01)
G16H 20/17	(2006.01)
G16H 20/30	(2006.01)
G16H 40/67	(2006.01)
H04L 9/00	(2006.01)
H04L 9/40	(2006.01)
H04W 12/02	(2006.01)
H04W 12/033	(2006.01)
H04W 12/43	(2006.01)

(52) **U.S. Cl.**

CPC ***H04L 9/3268*** (2013.01); ***G16H 40/67*** (2018.01); ***H04L 9/006*** (2013.01); ***H04L 63/0272*** (2013.01); ***H04L 63/04*** (2013.01); ***H04L 63/0428*** (2013.01); ***H04L 63/0823*** (2013.01); ***H04W 12/02*** (2013.01); ***H04W 12/033*** (2021.01); *A61B 5/0006* (2013.01); *G16H 20/17* (2018.01); *G16H 20/30* (2018.01); *H04L 2209/80* (2013.01); *H04L 2209/88* (2013.01); *H04W 12/43* (2021.01); *Y02D 30/70* (2020.08)

(57) **ABSTRACT**

The present invention provides systems and methods for supporting encrypted communications with a medical device, such as an implantable device, through a relay device to a remote server, and may employ cloud computing technologies. An implantable medical device is generally constrained to employ a low power transceiver, which supports short distance digital communications. A relay device, such as a smartphone or WiFi access point, acts as a conduit for the communications to the internet or other network, which need not be private or secure. The medical device supports encrypted secure communications, such as a virtual private network technology. The medical device negotiates a secure channel through a smartphone or router, for example, which provides application support for the communication, but may be isolated from the content.