



(51) International Patent Classification:

A61B 34/10 (2016.01) *G16H 80/00* (2018.01)
G06T 19/00 (2011.01) *H04N 7/15* (2006.01)
G16H 40/67 (2018.01) *H04L 65/1108* (2022.01)

(21) International Application Number:

PCT/IN2024/051242

(22) International Filing Date:

15 July 2024 (15.07.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

202311076797 10 November 2023 (10.11.2023) IN

(71) Applicant: SSI IP HOLDINGS INC. [US/US]; 1600 SE
15th Suite 512, FL Lauderdale, Florida-33316 (US).

(72) Inventors: **SRIVASTAVA, Sudhir Prem**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **SRIVASTAVA, Vishwajyoti Pascual**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **KUMAR, S Naveen Ajay**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **DWIVEDI, Aviral**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **SAINI, Anuj**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **RAUTELA, Ravinder Singh**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN). **KUMAR, S Rohan Akshai**; 3rd Floor, 404-405, iLabs Info Technology Cen-

(54) Title: A SYSTEM AND METHOD FOR MIXED REALITY TELE PROCTORING IN MINIMALLY INVASIVE SURGERY

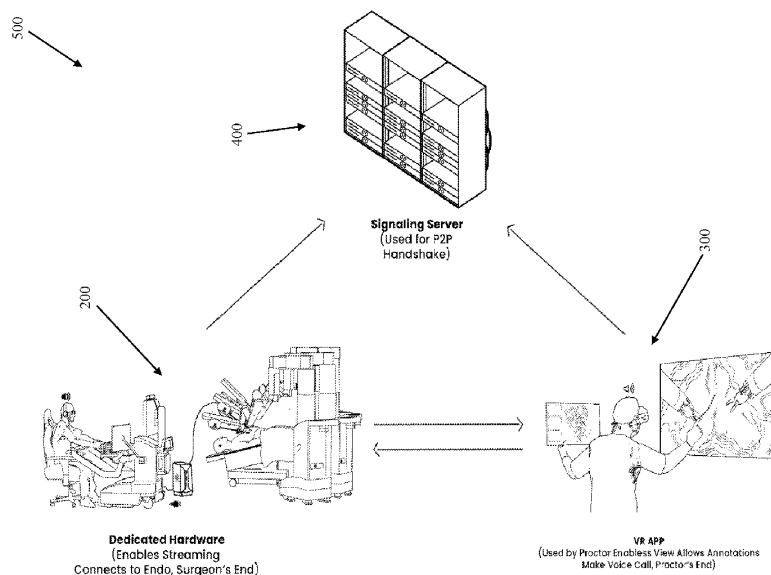


Figure 5

(57) **Abstract:** The inventions relate to a mixed reality tele proctoring system (500) for use in surgical procedures, comprising a surgeon module (200), a network architecture (400) based on WebRTC for low latency communication, and a proctor module (300), wherein the system (500) enables real-time audiovisual communication and annotation between a surgeon (202) and a proctor (302). The surgeon module (200) is adapted to process and transmit 2D and 3D stereoscopic imagery from a wide range of endoscopic cameras (214). The network architecture (400) employs a signaling server (402) for handshake, exchanging encoding formats, and bitrate information and creates a peer-to-peer encrypted communication link between the proctor (302) and the surgeon (202). The proctor module (300) allows adjustments for screen size and inter-pupillary distance and allows proctor (302) to provide suggestions via voice and annotations on a virtual annotation panel (310). Multiple proctors could connect to the same operation theatres which eases methods of live surgery

[Continued on next page]

tre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN).

(74) **Agent: AGWAN, Manjusha**; 3rd Floor, 404-405, iLabs Info Technology Centre, Phase III, Udyog Vihar, Gurugram, Haryana, India – 122016 (IN).

(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
 — *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

streaming for educational purposes.