IEEE Transactions on Industrial Electronics - Reviewer Invitation Manuscript No. 22-TIE-4705

External

Transactions on Industrial Electronics <onbehalfof@manuscriptcentral.com> Wed, 4 Jan, 16:13
to me

04-Jan-2023

Dear Dr. Ramadan

The Editorial Board of the IEEE Transactions on Industrial Electronics would be most grateful for your expert assistance in reviewing manuscript No. 22-TIE-4705 entitled "A 6-axis FBG Force/Moment Sensor with Nonlinear Decoupling and Fault-Tolerant for Laparoscopic Instruments" which has been submitted, as a Regular paper, for possible publication.

Please note that from 01 July 2020 and on, TIE will operate on a single-blind review policy. In the transitional period, until 31 December 2020, both papers with and without the author names should be reviewed normally.

The Abstract of the Manuscript No. 22-TIE-4705 follows the text of this message.

Note that we expect the review be completed within 28 days.

The site URL is https://mc.manuscriptcentral.com/tie-ieee.

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I will very much appreciate your prompt response.

Best Regards,
Toshiaki Tsuji

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Abstract--- A 6-axis Fiber Bragg Grating (FBG) force/moment (F/M) sensor was created and integrated at laparoscopic forceps to retrieve interactive force feedback for surgery. This sensor consists of a 3D-printed ellipsoidal hollow elastomer and 6 Stewart-like suspended FBGs in the elastomer, leading to an compact size and high sensitivity. An algorithm based on the Seagull Optimization Algorithm and Extreme Learning Machine (SOA-ELM) has been proposed to depress the nonlinear crosstalk effect of 6-axis F/M output and realize fault-tolerant of FBG fractures. Compared with the Back Propagation Neural Network (BPNN) and Extreme Learning Machine (ELM) method, the experiment results show that the nonlinear decoupling performance based on SOA-ELM harvests more excellent accuracy with a small error of less than 6%, as well as the excellent fault-tolerant decoupling effect with an error below of 10% while one FBG fractures. The maximum dynamic error of the designed sensor is within 10%. The feasibility and effectiveness of the designed sensor for real-time force feedback in laparoscopic surgery have been demonstrated through simulation tasks of threading, suturing, cutting the ex-vivo tissues, and operation in the oral cavity. Such merits show the great potential of the designed sensor to provide force feedback in surgery.