Comments and Corrections

Corrections to "Design, Modeling, and Control of a Coaxially Aligned Steerable (COAST) Guidewire Robot"

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In [1], there are some typos and non-conventional expressions used in the figure axes labels in Figs. 4(d), (e), and 5(d) and the y-axis label in Fig. 5(d) does not show F_t correctly. Hence, Figs. 4(d), (e), and 5(d) in [1] should be replaced with Figs. 4(d), (e), and 5(d) in this correction. The following corrections have been made:

- The unit of the x-axis in both Figs. 4(e) and 5(d) is corrected to "m^{-1}" from "mm^{-1}".
- The y-axis label of Fig. 4(d) is corrected to "Stress, σ (N/m^2)" from "Stress (σ, N/m^2)".
- The x-axis label of Fig. 4(d) is corrected to "Strain, ε" from "Strain (ε, m $\cdot$ m^{-1})".
- The y-axis label of Fig. 5(d) is corrected to "F_t (N)" from "Tendon Force (F_t, N)".
- The x-axis label in both Figs. 4(e) and 5(d) is corrected to "κ (m^{-1})" from "Curvature (κ, mm^{-1})".

Additionally, two sentences in [1] need to be corrected, namely:

- In Section III-B, the sentence, "However, the key difference is that in this segment, the middle tube is not notched (see Fig. 5(c))." is corrected to: "However, the key difference is that in this segment, the middle tube is not notched (see Fig. 5(b))." - Reference to Fig. 5(c) in the above sentence in [1] is incorrect and it should refer to Fig. 5(b).
- In Section III-B, the sentence, "First, we must note that for a variety of curvatures and bending joint lengths ($X_2 = \{37.45\ \mathrm{mm}, 32.45\ \mathrm{mm}, 27.45\ \mathrm{mm}, 22.45\ \mathrm{mm}, 17.45\ \mathrm{mm}\}$), the κ-F_t relationship stays constant and can be approximated for this geometry by a linear fit (RMSE = 0.064 N)." is corrected to: "First, we must note that for a variety of curvatures and bending joint lengths ($X_2 = \{37.45\ \mathrm{mm}, 32.45\ \mathrm{mm}, 27.45\ \mathrm{mm}, 22.45\ \mathrm{mm}, 17.45\ \mathrm{mm}\}$), the κ-F_t relationship stays approximately constant and can be approximated for this geometry by a linear fit (RMSE = 0.064 N)." - The word "approximately" has been added to the above sentence in [1].

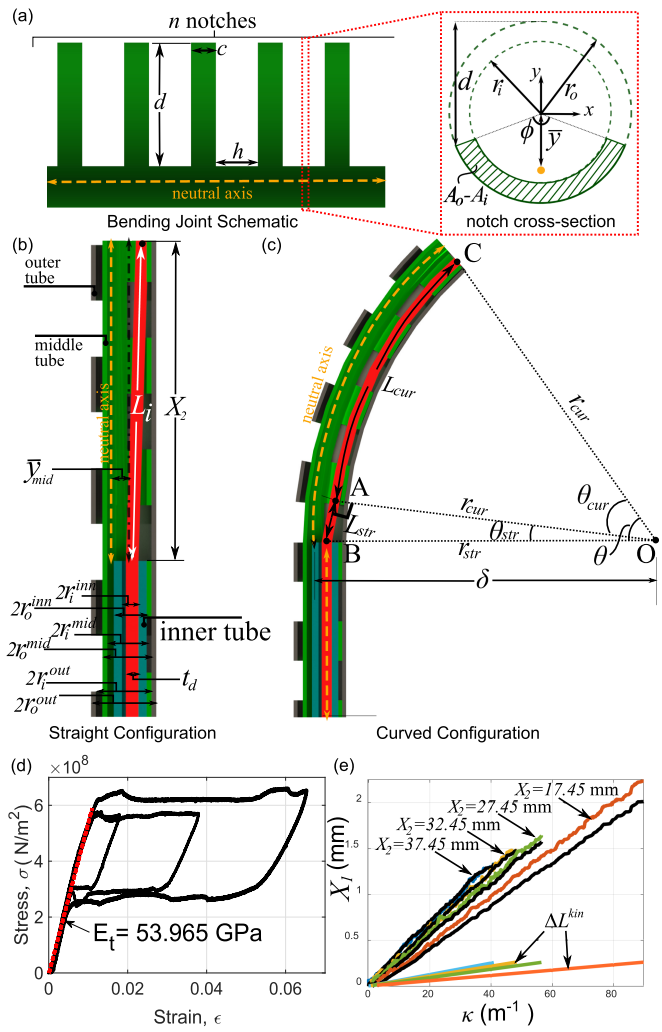

Fig. 4. (a) Bending joint schematic and notch cross-section view. (b), (c) The coaxial tube structure geometry in the straight configuration and with curvature $\kappa = (\frac{1}{\delta})$. (d) Stress-strain curve for the Nitinol tendon. (e) κ-X_1 relationship for several values of X_2 (black lines indicate the experimental value - colored lines indicate theoretical values).

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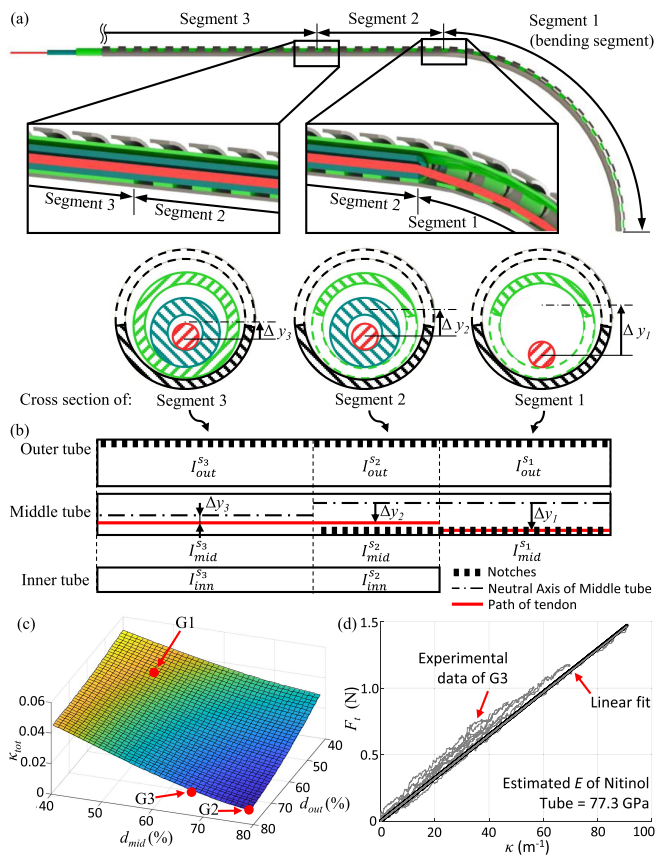

Fig. 5. (a) Cross-sections of the three segments of the robot. (b) Schematic of each segment with inertia values. (c) The decoupling estimate, κ_{tot} for various middle and outer tube depths (in terms of percentage of each tube's outer diameter). (d) Experimental result for κ-F_t relationship.

Acknowledgment

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Reference

[1] S. Jeong, Y. Chitalia, and J. P. Desai, "Design, modeling, and control of a coaxially aligned steerable (COAST) guidewire robot," *IEEE Robot. Automat. Lett.*, vol. 5, no. 3, pp. 4947–4954, Jul. 2020.