Appendix to "Motion Planning and Control of A Morphing Quadrotor in Restricted Scenarios"

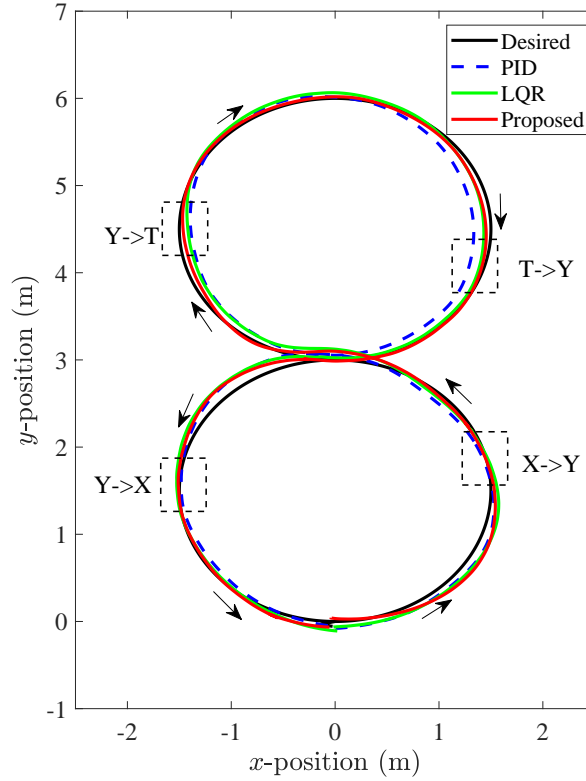Guiyang Cui, Ruihao Xia, Xin Jin, and Yang Tang, *Fellow, IEEE*

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Figure 1: Benchmark of tracking 8-figure trajectories at a maximum velocity of 1.2 m/s while changing the configuration from X to Y, T, Y, and X. More details are included in the video, https://youtu.be/ARP9xfXtMAU.

Furthermore, we also compare the proposed controller with the PID (Ref. [4]) and LQR (Ref. [3]) controller 10 times in real-world environments. The quadrotor flies at a maximum of 1.2 m/s along 8-figure at a height of 1.5 m, transitioning its configuration from X to Y, T, Y, and X. As shown in Table I and Fig. 1, our proposed method has minor tracking errors compared to other methods. The bold values in Table are used solely to emphasize the data for the proposed method.

Table I: Statistical Analysis Trajectory Tracking Error of PID, LQR and Proposed controller

v_{max} (m/s)	Error (average) (m)			Error (max) (m)		
	PID[4]	LQR[3]	Proposed	PID[4]	LQR[3]	Proposed
1.2	0.080	0.055	**0.037**	0.207	0.153	**0.113**