Behavioural Fault-tolerant-control of an Omni-directional Mobile Robot with Four-mecanum Wheels

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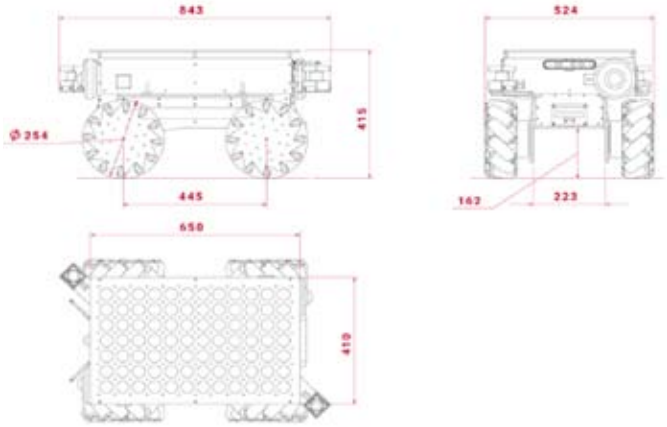


Figure S1. Orthographic views of the JR-2 vehicle-manipulator along with its dimensions (mm).

Table S1. Specification of mobile platform

Aspect	Dimension
Length	445 mm
Width	410 mm
Diameter of Wheel	254 mm
Diameter of Roller	20 mm
Aspect Ratio(d/L)	0.9213

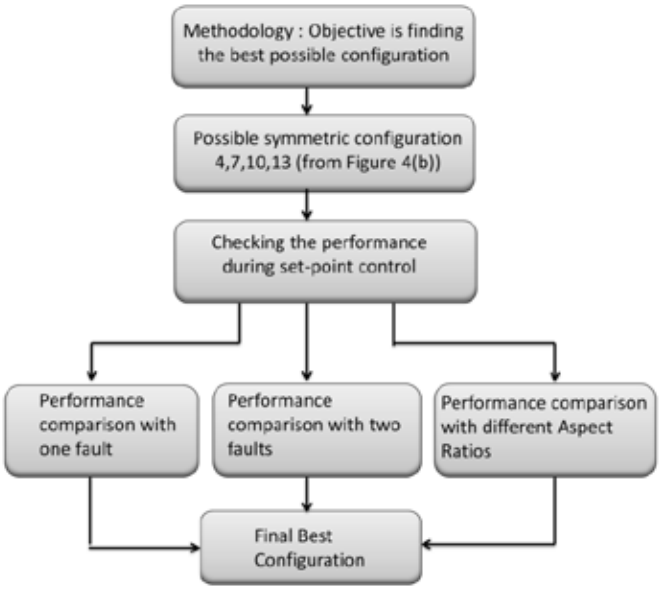
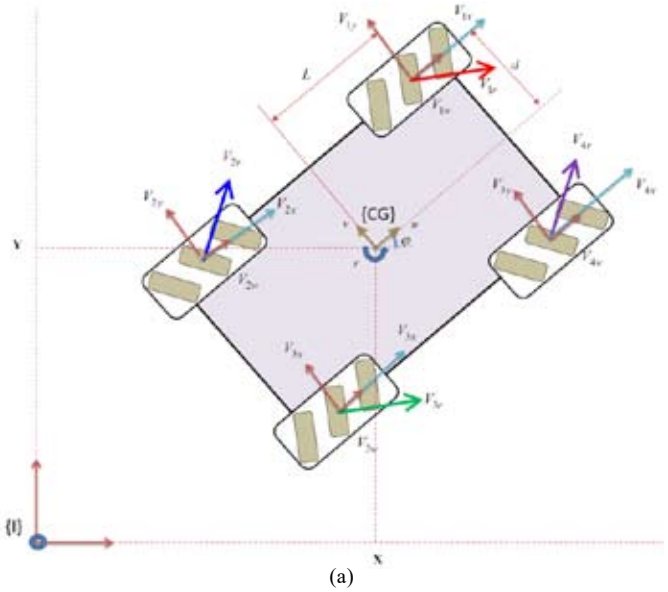
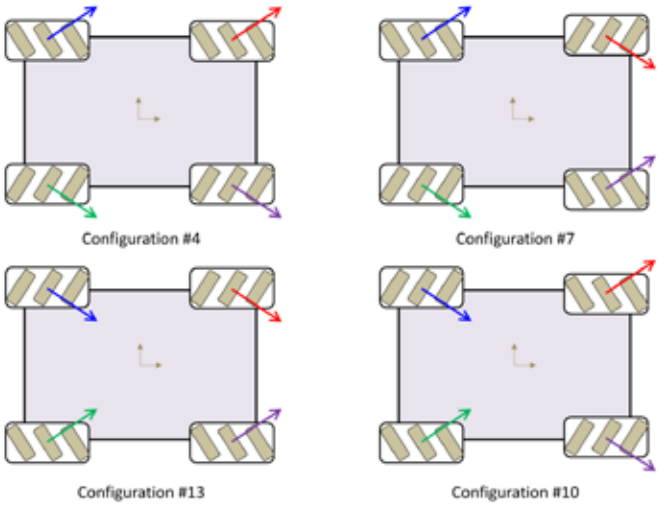


Figure S3. The proposed methodology to identify the best configuration.



(a)



(b)

Figure S2. Four-mecanum wheel mobile platform. (a) A mobile robot with four mecanum wheels and (b) Wheel configurations.

Figure S4. Algorithmic representation of the proposed fault tolerant control scheme.

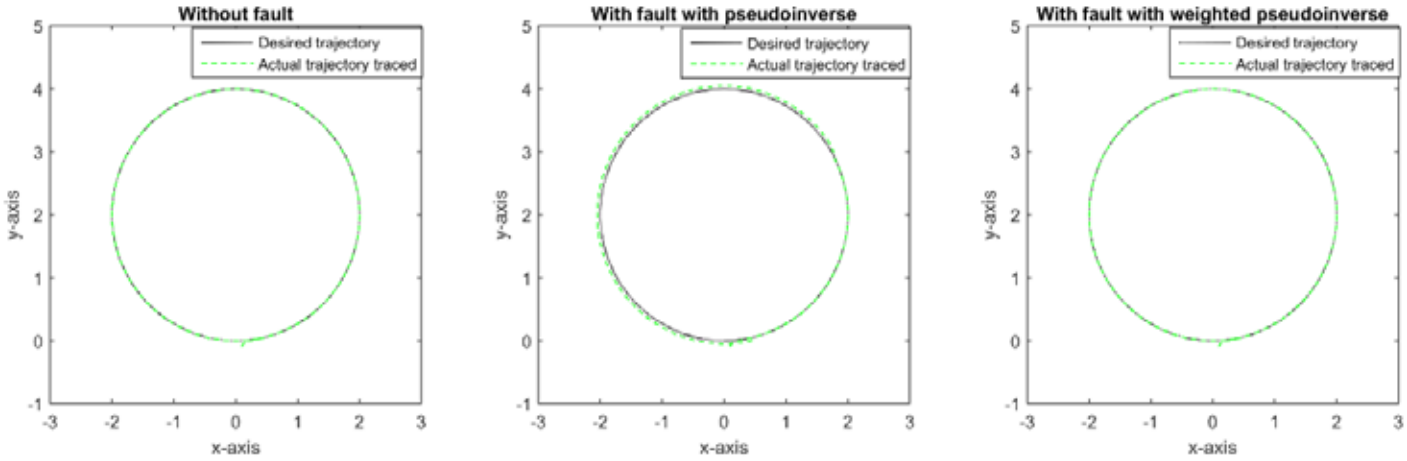


Figure S5. Desired and actual path followed by the robot.

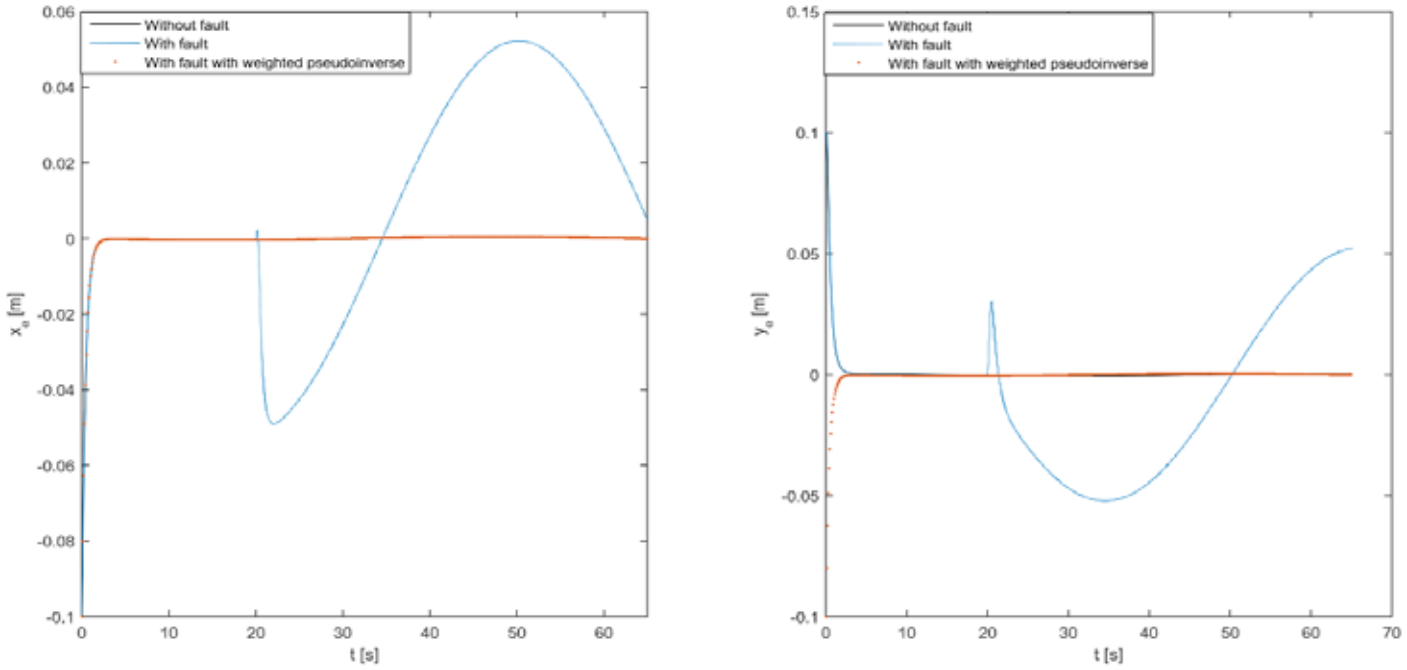


Figure S6. Steady State error for both the x and y positions (One fault case).

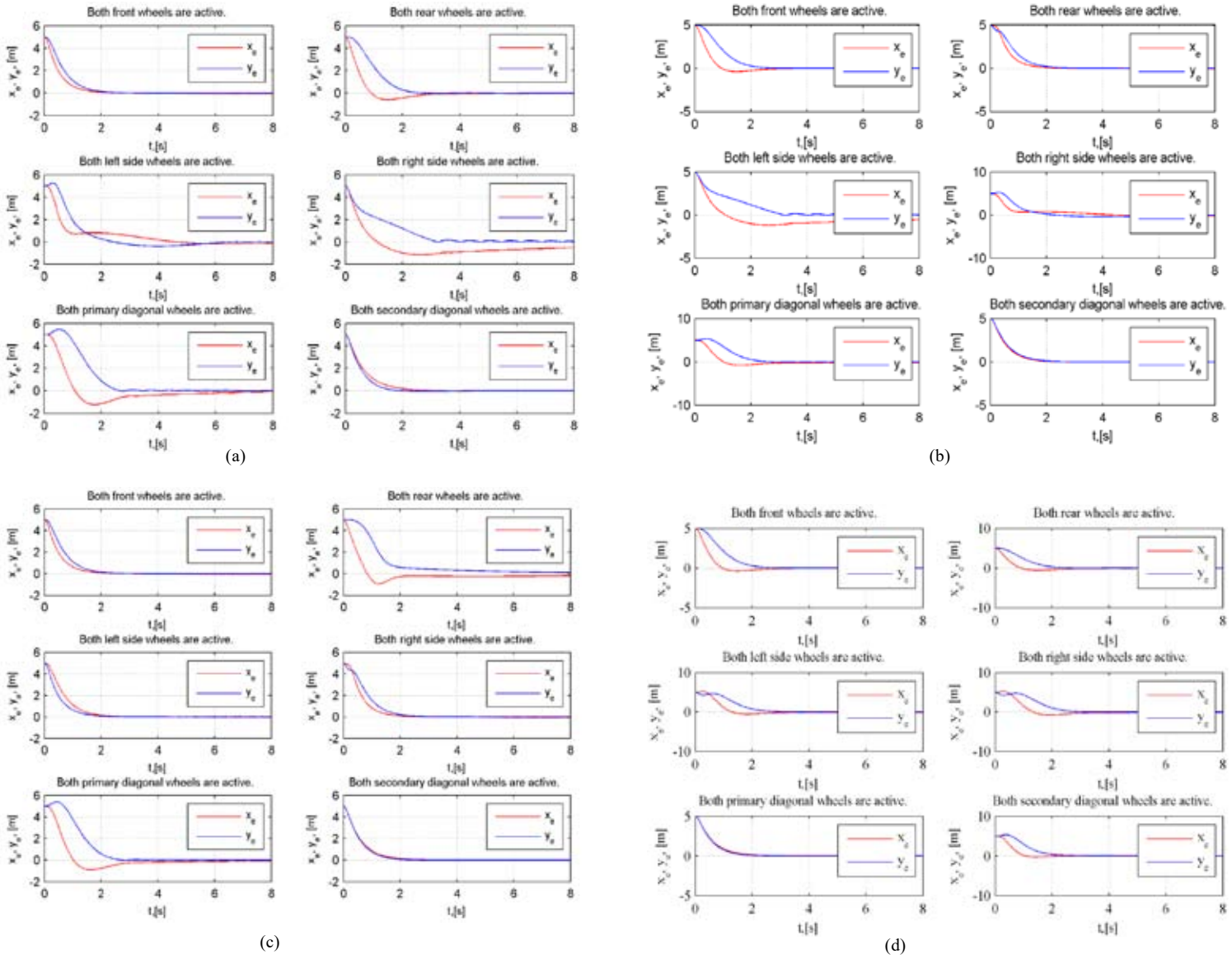


Figure S7. Tracking position errors of the robot during set-point control task with two actuator faults: (a)Wheel-configuration 1, (b) Wheel-configuration 2, (c) Wheel-configuration 3, and (d)Wheel-configuration 4.

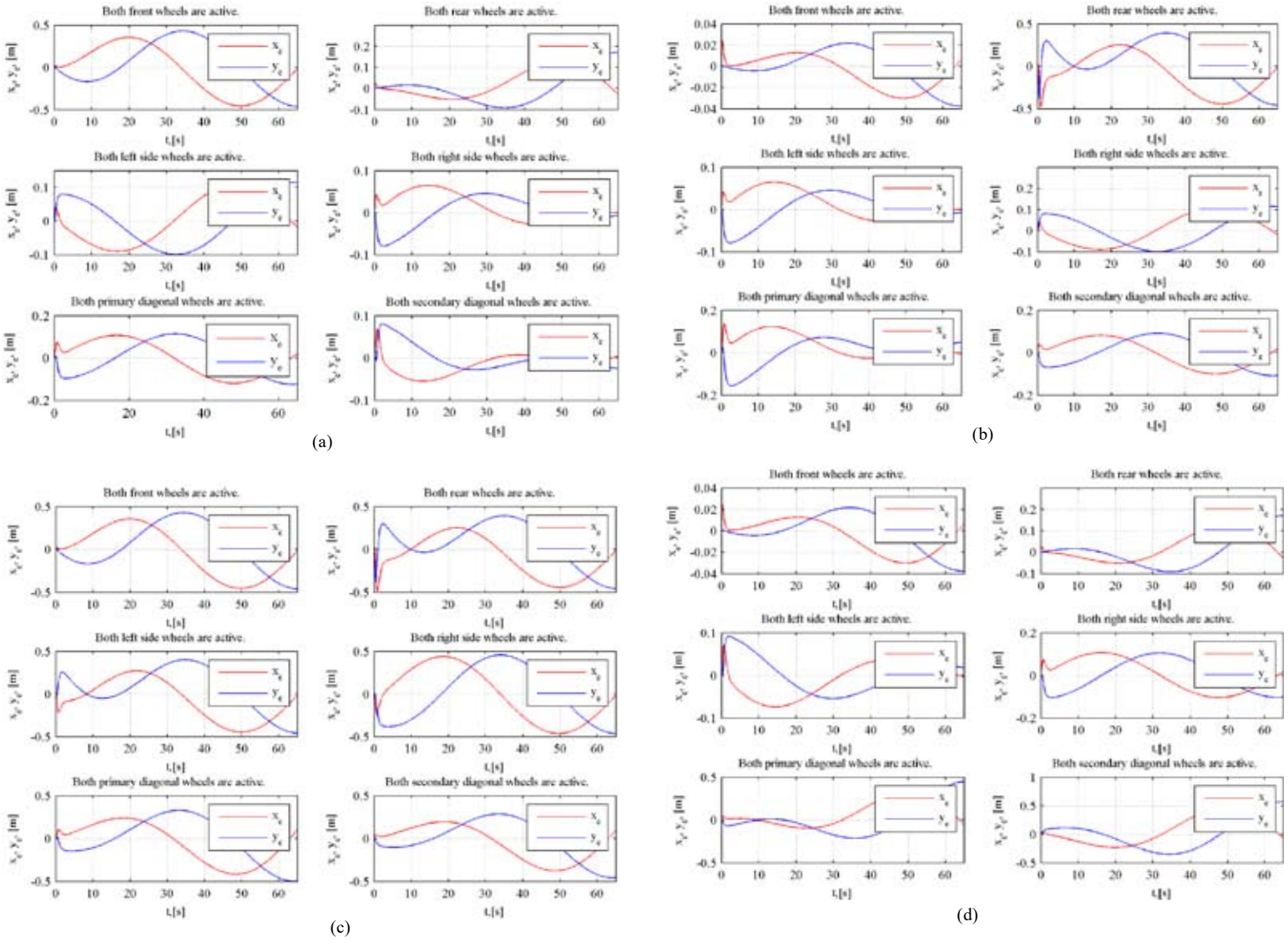


Figure S8. Tracking errors of the robot during circular profile tracking task with two actuator faults. (a)Wheel-configuration 1, (b) Wheel-configuration 2, (c)Wheel-configuration 3, and(d)Wheel-configuration 4.