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Traction Control System using Computer Vision based Analysis

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Abstract: The evaluation encompasses quantitative analysis, qualitative assessment, and real-world validation to assess the system's efficacy and robustness. Quantitative metrics include traction improvement percentage, slip reduction ratio, and vehicle stability index, while qualitative evaluation involves visual inspection of traction control behavior under different terrain scenarios.

Results demonstrate significant improvements in traction control performance compared to baseline methods, with the TCS showcasing robustness in adapting to dynamic terrain conditions and maintaining stability at varying speeds. Comparative analysis with state-of-the-art systems validates its competitiveness, while statistical analysis confirms the significance of observed improvements.

Robustness testing reveals the TCS's resilience to sensor noise and environmental factors, ensuring consistent performance in challenging conditions. Generalization testing underscores its adaptability across different vehicle platforms and lighting conditions, highlighting its versatility and applicability in real-world driving scenarios

Keywords: Traction control system using computer vision based analysis, Vision based traction control system



