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Intelligent Command Generation to Reduce Machine Vibration

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ABSTRACT OF THE TALK

The rapid movement of machines is a challenging control problem because it often results in high levels of vibration. As a result, flexible machines are typically moved relatively slowly. Much research energy has been directed toward feedback control methods to reduce oscillation while maintaining fast move times. However, implementing such methods is often difficult and expensive. Input shaping is an alternative control method that allows high speeds of motion by intelligently shaping the reference command. This method has the advantage of requiring no additional sensors, providing no risk of instability, and being proven compatible with human operators. This talk will present an overview of the input shaping method, including input shaper design and implementation, example applications, and current research directions.