

Programmable Logic Controller based Embedded Quadratic Programming for input-constrained Internal Model Control

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Abstract – Compared to classical control system strategies, optimization-based control algorithms are known to offer superior performance but are more complex. A controller such as a programmable logic controller (PLC) with limited memory and computational ability has difficulty implementing such algorithms. This poster presents the capability of a low-cost, low-end PLC for use in advanced control. The PLC is used to implement an online quadratic program within an input-constrained internal model control loop, and a hardware-in-the-loop experiment is used to show the effectiveness of the controller.