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Highlights:

- Analysis of the temperature effects in a pulse-based ferromagnetic shape memory alloy actuator.
- Experimental results shows the relevant effect of the temperature in the FSMA actuator's performance, showing that those effect must be taken into account.
- The paper remarks the importance of the use of feedback control for achieving required precision with FSMA actuators.
- Modification of an event based control algorithm to achieve sub-micrometric position control, taking into account the temperature effects.

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