Title: Model predictive control to design optimal treatment regimens for atopic dermatitis

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Project background (200 word limit)

Atopic dermatitis (AD) is a most common chronic skin disease affecting almost 20% of the paediatric population worldwide, and predisposes to other atopic diseases such as asthma and hay fever. Despite its prevalence and high socioeconomic impact, its pathogenic mechanisms remain only partially understood, and there is a lack of clear consensus about the best and safest way of using the current main treatment (corticosteroids and emollients).

This project aims to use optimal control theory to design personalised control regimens (strength/timing/duration) for atopic dermatitis. It is suitable for the students who are strong in mathematical analysis and Matlab.