Perhaps many people are like me in that hearing the word “machine learning” for the first time brings forth images of Skynet from The Terminator movies or Haley Joel Osment’s character from the Steven Spielberg’s film A.I. Artificial Intelligence. However, machine learning has now become a regular part of our vernacular when it comes to predictive modeling in many conditions. In this issue of Pediatrics (10.1542/peds.2019-4096), Ramgopal et al use machine learning methods to derive and validate a new prediction model for risk stratification of febrile infants 60 days of age. Using various machine learning approaches, the authors developed a prediction model with high sensitivity and specificity compared with recent prediction models for febrile infants.

So, are machine learning models the new paradigm for risk stratification of febrile infants? The results are intriguing, particularly the high specificity of the model, but further work must be done, as explained nicely by Chamberlain et al in an accompanying commentary (10.1542/peds.2020-012203). In addition to needing external validation in a new, diverse sample of febrile infants, the biggest question in practice is how to use a machine learning model for risk stratification. Unlike traditional prediction models, machine learning models do not provide clean cutoff values for predictors that can be easily used by clinicians at the bedside. The models use complex algorithms for risk predictions that can, at face value, be challenging to comprehend, not unlike the plotline of the Christopher Nolan movie Inception. However, the models are not intended to be used in a similar manner to traditional prediction models. Machine learning models are to be integrated into electronic health records or other types of clinical decision support to provide more accurate risk predictions for clinicians to use at the bedside.

So, is machine learning the future for risk stratification of febrile infants? Maybe not yet-pending further validation of the model and an assessment of how best to implement it in practice. Nonetheless, it is exciting to see this methodology applied to febrile infants with an eye towards the future.

- Novel Coronavirus Infection in Febrile Infants Aged 60 Days and Younger
- A Prediction Model to Identify Febrile Infants 60 Days at Low Risk of Invasive Bacterial Infection
- Prediction Models for Febrile Infants: Time for a Unified Field Theory
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