

# Artificial intelligence (AI) algorithm for assessing children's growth in a real-world setting

**Authors:** M.C. Chua,<sup>1,2,3,4</sup> J. Wong,<sup>5</sup> R. Suryaditama,<sup>5</sup> S. Mukherjee,<sup>5</sup> M. Palaniappan,<sup>5</sup> A.C. Foussat,<sup>5</sup> F. Yap<sup>2,3,4,6</sup>



## 1. BACKGROUND AND AIMS

Regular measurement of length and other anthropometric parameters in children <2 years is critical for growth assessment and monitoring. However, accurate length measurement requires specialised equipment, trained personnel and a cooperative child.

In this study, an AI-based tool was developed to estimate children's body length conveniently from smartphone photos and assessed for suitability in real-world home and clinical use.



## 2. METHODS

### Location and date



This pilot study of **healthy children** was performed at **KK Women's and Children's Hospital, Singapore** from November 2021 to March 2022

### Users



**Investigators** and **parents** captured **2,490 photos of 215 children** (average age: 6 months; median age: 4 months) in a supine position

### Evaluation



Performance was evaluated by **comparing the tool's length estimations with standardised length-board measurements**

### Bias Measures



The bias was calculated by the **difference in estimated length and measured length**

### Data Collection



**User experience feedback** was collected via **questionnaires**

## 3. RESULTS

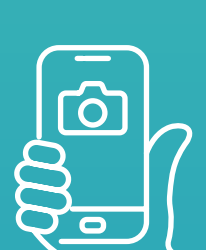


The tool produced a length estimation value for **1599 (72%) of 2226 photos** analyzed



The mean bias was **+2.4 cm** with a mean absolute percentage error of **5.8%**

For most children, **investigators (85%)** and **parents (72%)** reported **no difficulties** in capturing the required photos



## 4. CONCLUSIONS

**The newly developed AI-based growth assessment tool is easy to use and performs sufficiently well for general growth tracking at home. Further algorithm development is needed to improve the performance required for accurate growth assessment in clinical use.**