

Leveraging AI to Examine Diversity in Body Dimensions through Contrasting 3D Scans with Standardized Forms

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Abstract

This study addresses the challenge of providing well-fitting clothing sizes by using 3D body scanning and machine learning algorithms for improved size prediction. Data from 677 female participants' revealed notable variations in body measurements, emphasizing the need for more anthropometric analysis to better understand existing sizing standards. The research compared basic Support Vector Machine (SVM) models, using key measurements such as bust, waist, and hips, with an enhanced PCA-SVM model incorporating additional body dimensions. The basic SVM achieved higher accuracy (89.66%) than the PCA-SVM (68.97%), suggesting that fewer key measurements provide better predictions. These findings highlight the potential of 3D scanning and SVM models in developing sizing systems that accommodate diverse body types.

Keywords: anthropometric 3d body scanning, standardized sizing, AI techniques, diversity in body dimensions