# Exploring Intrinsic Palm Features for Biometric Recognition: A Comparative Analysis of AI Algorithms

In many of the cases geometric models of biometric hand features, such as skin fingerprints and palm patterns, are easy to hacking due to their reliance on externally measurable traits Criminals can take advantage of these weaknesses to get into systems they're not supposed to, which can be a problem for people who've been targeted. Phalangeal biometric models offer enhanced security by utilizing internal bone structures, avoiding such risks.

Hand biometric recognition based on intrinsic measurement of human bones stand as solution for human identification and crime detection. For which we have to focus on key features for accurate classification. And there are many advantages of using these biometrics.

1. Recognizing unique hand features and personal details (like age, gender, etc.) using biometrics is a tricky process because there are many different factors involved.

2. Pearson Correlation Coefficient (PCC) is a method used to select the most important hand features for accurate recognition. It helps to identify which features are most strongly related to certain characteristics.

3. Researchers use various aspects of the hand, such as finger lengths, palm measurements, and skin texture, to try and figure out details like a person's age, sex, or height.

4. Some methods, like linear or curvy models, aren't very good at accurately predicting these details. They may not capture the complexity of the relationships between hand features and personal characteristics very well.

5. Better methods are needed to improve accuracy in biometric recognition. This is important to avoid mistakes and ensure reliable identification of individuals.

Recognizing hand features and demographics in biometrics is complex, often needing stable methods like Pearson Correlation coefficient (PCC) selection. Machine learning models might give wrong results due to reliance on certain values and cannot capture effectively non-linearity in the features, but AI algorithms handle this complexity better.

Therefore, instead of geometric models of biometric hand features we use intrinsic features of palm and for which I will perform biometric recognition using multiple AI algorithms and we will evaluate the performance and understand which algorithm is suitable in which conditions based on some bench mark results and some comparisons. And we will make comparisons of AI algorithms based on

* Accuracy: Using some error functions/cost calculating functions
* Speed: Based on how fast the algorithm learns and the processing speed of each algorithm.
* Robustness: Test it under various conditions and checking its consistency.
* Sensitivity to noise: Algorithms that can filter out noise effectively are more reliable.
* Generalization: How well it works on test data/unseen data.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_THANK YOU\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_