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## From synthetic palm vein imaging to large-scale biometric recognition

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Palm vein recognition is an emerging biometric technique with several advantages, especially in terms of security against forgery, which has gained the attention of the research community. However, collecting large-scale biometric datasets is a challenging task because of restrictions on time, security, and cost. Publicly available databases have a reduced number of individuals and samples lacking detailed annotations on soft traits (e.g., gender, age, weight). Therefore, evaluating the scalability of developed methods on massive datasets is not feasible, and the influences of different attributes have been poorly investigated. This talk will dive deeply into the suitability of synthetic vein images generated to compensate for the urgent lack of publicly available large-scale datasets. Firstly, it will present an overview of recent research progress on palm vein recognition, from the basic background knowledge to vein anatomical structure, data acquisition, public database, and recognition approaches. Later, it will also examine state-of-the-art methods that have allowed the generation of vascular structures for biometric purposes. Finally, it will introduce a general flowchart for creating a synthetic palm vein database and a conceptual mathematical model to generate synthetic palm vein images, analyzing the performance of synthetic palm vein datasets for biometric recognition.

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