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Final Presentation Abstract

This presentation looks at clustering applications in biometrics. The two main types of biometric examined are iris recognition and dynamic keystroke recognition. The presentation first looks at the common steps in iris recognition, including pupil and limbic boundary location, feature extraction, and feature comparison. The most common use of clustering in the field of iris recognition involves using these methods to reduce the size of the search space that must be examined when attempting to do identification based on an iris image. Iris databases can very commonly have millions of enrolled users. Searching this entire set against a probe image can be tie consuming. Consequently, it is common practice to subdivide the overall database into smaller clusters. The two main approaches to this task involve clustering around template features and clustering around template similarity to well-known and purposely design template designs. Clustering applications such as Hadoop provide a ready-to-use framework to not only provide this capability but also enable distribution and parallel search capabilities. Clustering techniques can also be used to parse processed iris images in order to determine common pixilation patterns. This can assist in feature extraction. Next, clustering keystroke dynamics is examined. The example used in this presentation involves clustering peoples typing patterns on a three key basis. Because of the high overlap between the data in this type of biometric, fuzzy clustering must be used. Lastly, conclusions and references are provided.