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Visualization-Based Feature Extraction for Classification in Real-Time Interaction

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Abstract : This paper introduces a method of using unsupervised machine learning to visualize the feature space of a dataset in 2D, in order to find most characteristic segments in the set. After dimension reduction, users can select clusters by manual drawing. Selected clusters are recorded into a data model that is used for later predictions, based on realtime data. Predictions are made with supervised learning, using Gesture Recognition Toolkit. The paper introduces two example applications: a semantic audio organizer for analyzing incoming sounds, and a gesture database organizer where gestural data (recorded by a Leap motion) is visualized for further manipulation.

Keywords : gesture recognition, machine learning, real-time interaction, visualization
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