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| | **abstract** | | **abstract** | A significant challenge for a supervised learning approach to inertial human activity recognition is the heterogeneity of data between individual users, resulting in very poor performance of impersonal algorithms for some subjects. We present an approach to personalized activity recognition based on deep embeddings derived from a fully convolutional neural network. We experiment with both categorical cross entropy loss and triplet loss for training the embedding, and describe a novel triplet loss function based on subject triplets. We evaluate these methods on three publicly available inertial human activity recognition data sets (MHEALTH, WISDM, and SPAR) comparing classification accuracy, out-of-distribution activity detection, and embedding generalization to new activities. The novel subject triplet loss provides the best performance overall, and all personalized deep embeddings out-perform our baseline personalized engineered feature embedding and an impersonal fully convolutional neural network classifier. | | |
| | **versions** | | **versions** | | | |