Automated American Sign Language Translation: Identifying the Handshape Component of American Sign Language Using a 3D-camera and Handtracking Middleware Library to Create a Basis for an Automated Sign Translator

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The project seeks to build a program that uses the FORTH 3D HandTracking Library (An API for a framework to track hands in 3D) in conjunction with a 3D camera to identify handshape, one of the key components of a sign in American Sign Language (ASL). The program will focus on classifiers, a specific category of handshapes, which have wide applications in ASL, including classifier predicates and lexicalized signs, and in gestural control for natural user interfaces. The code will build a model of the hand based on data from the 3D camera, using an “initialization position” as a control for the location of the hand when the program begins running. It will then extract the matrices that compose that model, and compare the matrices to those of known handshapes in order to identify the input. Tests will be repeated entirely every time the code is updated. Progress to date includes building a working program that builds the model of the hand, but does not identify any inputs, as well as building a program that builds the model and extracts the matrices of the model (currently being debugged). Research is ongoing: current and future versions of the code will offer handshape identification.

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