Spoken language translation, the process of translating speech in one language into another language automatically, is in increasing demand as a means of overcoming the language barrier. In this thesis, we focus on translation of spoken English into Czech, employed as an aid for international tourists. We built a fully functional speech translation system using freely available components and used it for collecting samples of user input. We then focused on replacing the core components of the system, namely speech recognition (ASR) and machine translation (MT), with our own, domain-adapted models. We evaluated our improvements on the collected data.