NTU Chinese 2.0: A Personalized Recursive Dialogue Game for Computer-Assisted Learning of Mandarin Chinese

Pei-hao Su#1, Tien-han Yu#, Ya-Yunn Su*, and Lin-shan Lee#2

#Graduate Institute of Communication Engineering, National Taiwan University
*Graduate Institute of Computer Science and Information Engineering, National Taiwan University
Taipei, Taiwan, R.O.C

1r00942135@ntu.edu.tw, 2lslee@gate.sinica.edu.tw

Abstract

We present and demonstrate a cloud-based personalized dialogue game for computer-assisted learning of Mandarin Chinese. A sequence of tree-structured sub-dialogues in restaurant scenario are linked recursively and used as the script for the game. Based on NTU Chinese, a Mandarin Chinese pronunciation evaluation software (http://chinese.ntu.edu.tw/), the user can get immediate evaluation on pronunciation, pitch, timing and emphasis and corresponding corrective feedback on each syllable as well as on sentence level for each utterance produced. The system policy is optimized to offer personalized dialogue path planning for each individual learner such that more practice opportunities are given along the dialogue path to poorly produced pronunciation units. When using the system, the learner can practice the sub-dialogues in either sequential or random order; at each dialogue turn, the learner also can choose to pronounce an arbitrary candidate sentence or following the recommended sentences by the system policy. Following the system recommendation along the sub-dialogues sequentially offers the fastest learning though. The above evaluation and learning records are displayed and stored in personal profile.

The system framework is modeled as a Markov Decision Process (MDP) with high-dimensional continuous state space considering the learning status of the learner. The dialogue policy is trained using a huge number of simulated learners generated from a corpus recorded by 278 real Mandarin Chinese learners from 36 countries with various mother tongues. The detailed principles of this system are presented in a companion paper also submitted to SLaTe 2013 [1]. This is a joint work with the International Chinese Language Program of National Taiwan University.

Reference