

Expert Neural System to parse Arabic Language¹

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Abstract

New intelligent neural network built in an expert system has been designed to parse Arabic Language. Arabic sentences have been studied and analyzed, also classified into new syntactical fields. Each syntactical field consists of essential sentence components; verb, object,All emerging Arabic sentences have been calculated and detailed into verbal and noun fields. Neural Network (NN) which has been designed for this aim, gets sentence inputs and gives conventional syntactical field. Supervised learning has been developed to train the NN apart from learning algorithm. Post and pre neurons have been fully connected; each post neuron has been connected to all previous neurons. The weights have been updated according to first order differential equation, and have been approached to digital sentence component, indicating to syntactical function. System's inputs have been updated through filter of type Γ . Expert system has been supplied with data based system, knowledge based system and lexicon. The system has been acting on rule based system, giving the right response according to working memory and search mechanisms, also supplying correct generalization on old and new data.

The system has been tested on many verbal and noun sentences. The NN has selected convenient output neuron, indicating to the right syntactical field and components. The expert system subjects inputs to a number of data, knowledge and rules necessary to obtain the right response. Double check has been made between neural and expert responses. Compare to other techniques, the new system has been able to give correct parse with less error and faster response.

¹ For the paper Arabic see pages (59-85).

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