

Development of BIO-REMOTE

- Toward Aids for Daily Life of the Handicapped -

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We propose and develop a new human interface system for the handicapped. The operator can control various home electrical devices using this interface system. This system composes of a transmitter unit and a receiver unit of bioelectric signals, and the receiver unit includes an infrared remote controller and an interface port connected with a personal computer. Bioelectric signals are preprocessed and discriminated using a statistical neural network, which is described as software in the personal computer, and the operator's intended command is executed through an infrared remote controller.



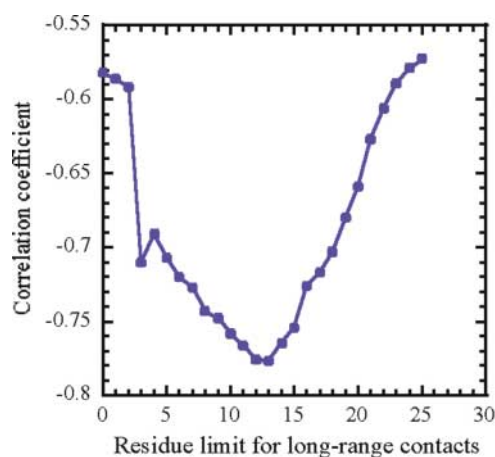
Bio-Remote: The operator can control various home electrical devices based on extracted information from his/her body. The system can adapt itself to the operator's characteristics through adaptive learning using a neural network

Medium and Long-range Interactions in Protein Folding

- Inter-residue Interactions in Protein Folding -

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Elucidating the mechanism of protein folding is an intriguing and challenging task. We have proposed a novel parameter, long-range order (LRO) for a protein from the knowledge of long-range contacts (contacts between two residues that are close in space and far in the sequence) in protein structure. A simple statistical method has been developed for predicting the folding rate of two-state proteins using LRO and we found an excellent agreement between the predicted and experimental protein folding rates. Further, we found that the conformational properties, short and medium-range energy and long-range contacts are the major determinants for transition state structures of two-state proteins.



Plot connecting the correlation coefficient obtained between long-range contacts and folding rate of proteins, and the minimum limit to define long-range contacts.