(Code: 2506)

Title: Acoustic Normalization for Improving Children's Speech Recognition

Ghamarnaz Tadayon Tabrizi, Saeed Setayeshi, Mohammd Molavi Kakhki

Abstract: Developmental changes in speech recognition applications introduce age dependent spectral and temporal variability in the speech signal produced by children. Such variabilities pose challenges for robust automatic recognition of children's speech. Recognition experiments using acoustic models trained from adult speech and tested against speech from children of various ages clearly show performance degradation with decreasing age. On average, the word error rates are two to five times worse for children speech than for adult speech. The accuracy among the children is correlated to some features of the child, such as age, gender, fundamental frequency and height. In this paper, we describe and compare some techniques for improving speech recognition on children's speech including Vocal Tract Length Normalization (VTLN), Speaker Adaptive Training (SAT) and Constrained MLLR based Speaker Normalization (CMLSN).

Keywords: Adaptive modeling, Speech recognition for children, Speaker normalization, Voice transformation.

(Code: 3164)

Title: Promoter region recognition using support vector machines

Pooya Zakery, Javad Askari

Abstract: During the past six years, the support vector machine learning algorithm has been extensively applied within the field of computational biology. Analysis of a DNA sequence and identifying promoter regions is difficult task in the computational biology. A promoter is a short DNA sequence that precedes a gene sequence. We take advantage of support vector machine to promoter region recognition in a DNA sequence. Various kernels functions are applied in order to learn support vector machine. The results are compared and the best support vector machines results are evaluated further in comparison with other learning methods on the issue.

Keywords: Promoter, Support vector machine, Kernel, Computational biology

COMP2
Sensor Networks

(Code: 1710)

Title: A Learning Automata-based MAC Protocol for AdHoc Networks

Nacer Farajzadeh, Mohammad Reza Meybodi

Abstract: This paper proposes a learning automata-based MAC protocol for AdHoc networks. According to the proposed protocol (MAHLAP), the mobile station that is granted permission to transmit is selected by means of learning automata. Via the computer simulation, the performance of the proposed protocol is evaluated in the case of successful sends and unsuccessful sends, and compared with IEEE 802.11 DCF, AHLAP and DCC_V protocols. Simulation results show the performance of the proposed protocol.

Keywords: AdHoc networks, MAC, Learning Automata

(Code: 2336)

Title: Formal Modelling and Performance Evaluation of a Medium Access Control Protocol in Wireless Sensor Networks

Ali Khalili, Mohammad Abdollahi Azgomi

Abstract: Formal modeling techniques can be used for analysis of wireless sensor networks (WSNs). Coloured Petri nets (CPNs) that are an extension of Petri nets is a powerful modeling technique. In this paper, we propose a CPN model for modeling and performance evaluation of a medium access control protocol in WSNs named S-MAC. S-MAC is a power-aware MAC protocol with node scheduling. The proposed model for this protocol uses the hierarchical modeling capability of CPNs. By using CPNs and the proposed method for modeling packet broadcast in the above case study, we have shown that it is possible to model any other MAC protocols in WSNs or mobile AdHoc networks.

Keywords: Coloured Petri net (CPN), Formal modeling, Medium access control protocol (MAC), Wireless sensor network (WSN)

(Code: 2867)

Title: A New Exploration Tabu-Based Method in LEACH-C Routing Protocol for Sensor Networks

Mehdi Aminian, Siavash Khorsandi, Mohammad Kazem Akbari, Mojtaba Soltani

Abstract: An efficient node-energy utilization is one of the important performance factors in wireless sensor networks, since the sensor nodes operate with limited battery power. In this paper, we extended the centralized cluster based routing algorithm (LEACH-C) to prolong the lifetime of the networks and maintain balanced energy consumption within the nodes. To achieve this, we used the tabu search method to find the best cluster head in each round of cluster head selection process along with a new method for cost function calculation. Simulation results indicate that we show that using this optimization method helped to gain better durability than traditional LEACH.

Keywords: Sensor network, Routing algorithm, Exploration algorithm, Tabu search