(Code: 2506)

**Title:** Acoustic Normalization for Improving Children's Speech Recognition
Ghaznavi Tadayon Tabrizi, Saeed Setayeshi, Mohammd Molavi Kakaki

**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.

(2336)

**Title:** Formal Modelling and Performance Evaluation of a Medium Access Control Protocol in Wireless Sensor Networks
Ali Khalili, Mohammad Abdollahi Aghomi

**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)

(2867)

**Title:** A New Exploration Tabu-Based Method in LEACH-C Routing Protocol for Sensor Networks
Mehdi Aminian, Siavash Khorsandi, Mohammad Kazem Azbari, Majidah 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 balance 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.

(1910)

**Title:** A Learning Automata-based MAC Protocol for AdHoc Networks
Necar Farajzadeh, Mohammad Reza Meybodi