

**Annual Report of the McLeod Institute of Simulation Sciences**

**Center...Leicester UK.....**

Center Postal Address:	<b>De Montfort University School of Engineering &amp; Technology The Gateway, Leicester LE1 9BH</b>
Center Director:	<b>Prof. Marwan Al-Akaidi</b>
Center Phone:	<b>0116 2577087</b>
Center Fax:	
Center E-mail:	<a href="mailto:mma@dmu.ac.uk"><b>mma@dmu.ac.uk</b></a>
Center Web Address:	<a href="http://www.dmu.ac.uk/cse/eng_and_tech/index.jsp"><b>http://www.dmu.ac.uk/cse/eng_and_tech/index.jsp</b></a>
List of Research Activities & Projects <ul style="list-style-type: none"> <li>- Subject</li> <li>- Type [Topic/Project]</li> <li>- Description</li> <li>- Year</li> </ul>	<p><b>ADAPTIVE ROUTING IN MOBILE NETWORKS</b>  <b>The work has recently been completed. A number of approaches were proposed and evaluated using simulation. Clear improvements in the adaptive routing process were achieved.</b></p> <p><b>ROUTING IN AD_HOC MOBILE NETWORKS</b>  <b>This research looks at establishing efficient routing based on angular headings of mobile devices. A number of algorithms have been proposed and simulated. Now in final stages of evaluation</b></p> <p><b>OPTIMISATION OF MIMO-OFDM TRANSMISSION IN MOBILE NETWORKS</b>  <b>The research is based on optimising the peak-average power ratio of these transmissions. A number of algorithms have been proposed and simulated. Now in final stages of evaluation</b></p> <p><b>SECURITY IN WMANET APPLICATIONS</b>  <b>The research has proposed a novel solution to the issue of security by defining a WMANET</b></p>

	<p><b>architecture. Currently the work is focussed on simulating a number of encryption-based security measures.</b></p> <p><b>MULTIMEDIA USING VoIP TECHNOLOGY</b>  <b>The work is at a fairly early stage but is attempting to optimise the use of bandwidth and reduce errors thus allowing multimedia to of an acceptable quality to be used in this type of network. Simulations have give encouraging results</b></p> <p><b>SPEECH RECOGNITION</b>  <b>This research has propposed a new algorithm for speech rcognition and is currently in the process of optimising the process. Initial simualtions are currently being ran to verify the theoretical analysis.</b></p>
<p>List of Educational</p> <ul style="list-style-type: none"> <li>- Title</li> <li>- Type [University Course/Professional Course]</li> <li>- Year</li> </ul>	
<p>Center publications</p>	<p>July 2005 M. Al-Akaidi, Jonathan Ivins Multimedia, 3G and Beyond 3G, TVTEurope.</p> <p>Almomani, M. Al-Akaidi, J Ivins, P. Reynolds, “Architectural Framework for Wireless Mobile Ad hoc Networks (WMANETs)”, Proceedings of IEE, Sixth International conference on 3G&amp; Beyond, 7-9 November, London, UK, 2005.</p> <p>Marwan Al-Akaidi and Omar Alani, Jon Ivins, Teleservice Model and Resource Allocation Scheme for Multimedia Communication systems Proceedings of IEE, Sixth International conference on 3G&amp; Beyond, 7-9 November, London, UK, 2005</p> <p>O. Daoud, M. Al-Akaidi and J. Ivins, “<i>The capability of Reducing the PAPR by Turbo Coding</i>”, <i>MESM 2005, Monastir, Tunisia, 05-07 September 2005.</i></p> <p>M. Al-Akaidi, M. Alchaita, J. Ivins Service-Aware Routing Protocols (SARP): Exploiting mobility with loose delay constraints in ad hoc networks, <i>MESM 2005, Monastir, Tunisia, 05-07 September 2005</i></p> <p>M. Al-Akaidi, M. Alchaita, J. Ivins Mobility-based routing methods for mobile ad hoc networks <i>MESM 2005, Monastir, Tunisia, 05-07 September 2005</i></p> <p>M. Al-Akaidi, M. Alchaita, J. Ivins Heading routing protocols: mobility-based routing for ad-hoc networks. Sixth International Conference on 3G and Beyond, the IEE, Savoy place, London, 07-</p>

	<p>09 November 2005.</p> <p>O. Daoud, M. Al-Akaidi and J. Ivins, "Performance Analysis of OFDM by optimising PAPR", Sixth International Conference on 3G and Beyond, the IEE, Savoy place, London, 07-09 November 2005.</p> <p><b><u>Forthcoming Publications</u></b></p> <p>Iman Almomani, Marwan Al-Akaidi, Jon Ivins "Novel Security Mechanism for Managing Digital Certificates in WMANETs" MESM 2006</p> <p>Mousa Al-Akhras, Marwan Al-Akaidi, Jon Ivins "Improving the speech quality in the presence of packet loss using dual-transmission" 8th International Middle Eastern Simulation Multiconference (MESM 2006) August 28-30, 2006, Alexandria-Egypt</p>
Center simulation tools	<b>MATLAB, NS2</b>
Center highlights	