

الحديث

عن ابي الدرداء رضي الله عنه قال: سمعت رسول الله صلى الله عليه وسلم يقول: (من سلك طريقاً يطلب فيه علماً سلك الله به طريقاً من طرق الجنة، وإن الملائكة لتضع أجنحتها رضا لطالب العلم، وإن العالم ليستغفر له من في السموات ومن في الأرض والحيتان في جوف الماء، وإن فضل العالم على العابد كفضل القمر ليلة البدر على سائر الكواكب، وإن العلماء ورثة الأنبياء، وإن الأنبياء لم يورثوا ديناراً ولا درهماً، ورثوا العلم فمن أخذه أخذ بحظ وافر)

To our Families...

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Abstract

Mobile communication technology aims to provide the seamless continuous connection to access various wireless technologies and to maintain this connection with the best quality of service (QoS). To achieve this goal a good decision making algorithm should be considered to decide the best QoS for its service. Handover decision making algorithm aims to provide best QoS and best user satisfaction by using different handover parameters. In this thesis the Receive Signal Strength and Signal to Interference and Noise Ratio together with the bandwidth management matrix were used in the decision making.

MATLAB was used for the evaluation of handover decision making algorithm. The results showed that as the distance increase for one user the RSS decrease in WLAN and CN. The simulation also showed that as the number of users increases the handover probability decrease due to limited resource of the selected network. It was also noticed that as the number of users increases the blocking probability increase due to the available limited resources. The results also showed that as the number of available bandwidth unit (bbu) increases the blocking probability decreases.

المستخلص

تهدف تكنولوجيا الإتصالات المتنقلة إلى توفير إتصال سلس مستمر للوصول إلي مختلف التقنيات اللاسلكية والحفاظ علي هذا الإتصال مع أفضل جودة للخدمة. لتحقيق هذا الهدف لمحطة متنقلة عند الإنتقال من شبكة إلي اخرى لابد من وجود خوارزمية إتخاذ قرار جيدة والتي تقرر ما إذا كان هذا المستخدم يحتاج إلى الإنتقال من شبكة إلي أخرى, وتقرر كذلك أفضل جودة للخدمة سواء كانت هذه الخدمة بيانات أو صوت. وتهدف خوارزمية إتخاذ قرار الانتقال لتقديم أفضل جودة للخدمة وأفضل رضا للمستخدمين عن طريق الجمع بين عدة عناصر(شدة الإشارة المستقبلية،النسبة بين الإشارة والضجيج والتداخل، والتكلفة...الخ) وخوارزميات إدارة عرض النطاق الترددي.

تم إستخدام الماتلاب لتقييم خوارزمية إتخاذ قرار الإنتقال. أظهرت النتائج أنه مع زيادة المسافة لمستخدم واحد تنخفض قوة الإشارة المستقبلية، كما أظهرت المحاكاة أنه عند زيادة عدد المستخدمين تنخفض إحتمالية إنتقال المستخدمين للشبكة الجديدة وأيضا زيادة عدد المستخدمين يزيد من إحتمالية قطع الإتصال بسبب الموارد المحدودة مثل عدد المستخدمين المتاح وعرض النطاق الترددي. وأظهرت النتائج أنه عند زيادة عدد وحدات النطاق الترددي تنخفض إحتمالية قطع الاتصال.

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List of Abbreviation

3G:	Third Generation
3GPP:	Third Generation Partnership Project
AP:	Access Point
BE:	Best Effort
BS:	Base Station
CN:	Cellular Network
ERTPS:	Extended Real-Time Polling Services
GSM:	Global System for Mobile
ITU:	International Telecommunication Unions
LAN:	Local Area Network
MS:	Mobile Station
MSC:	Mobile Station Center
MT:	Mobile Terminal
NRTPS:	Non-Real-Time Polling Services
OFDMA:	Orthogonal Frequency Division Multiple Access

QAM:	Quadrature Amplitude Modulation
QoS:	Quality of Service
R_{BS} :	Base Station Data Rate
R_{AP} :	Access Point Data Rate
RSS:	Received Signal Strength
RTPS:	Real Time Polling Services
SINR:	Signal to Interference and Noise Ration
TDMA:	Time Division Multiple Access
UGS:	Unsolicited Grant Service
UMTS:	Universal Mobile Telecommunication System
VHD:	Vertical Handover Decision
VHO:	Vertical Handover
VOIP:	Voice over Internet Protocol
WAN:	Wide Area Network
WCDMA:	Wideband Code Division Multiple Access
WLAN:	Wireless Local Area Network