

I. IDENTIFICATION DATA

Thesis name:	Random Access Procedure for Machine Type Communication in Mobile Networks
Author's name:	Yi-Shin Huang
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Telecommunication Engineering
Thesis reviewer:	Professor Jonathan Loo
Reviewer's department:	School of Computing and Engineering, University of West London, UK

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
In a nutshell, the work of this thesis includes a proposal of a new random access procedure in view of the existing of LTE-A random access procedure, and evaluating its effectiveness as well as performance analysis with an analytical model, was in fact, very challenging.	

Satisfaction of assignment	fulfilled with minor objections
<i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>	
<p>This work has produced a new random access procedure called two-phase random access procedure (TPRA). Besides that this work has produced an analytical model in order to evaluate the effectiveness of the proposed procedure as well as its performance. Performance results were obtained and discussed rather well.</p> <p>The only part in this thesis that fall short lies in the introduction section. In the introduction section, few push-based and pull-based approaches of RAN overload control scheme were briefly discussed. The discussions merely were introduction, and lack, however brief, the discussions of their strengths and weaknesses. There is also no clear discussion how the proposed novel solution relates to the existing push-based and pull-based approaches, and also the justification of strengths (or weaknesses) over the existing approaches. After all, these shortcomings can be easily fulfilled by some amendments in the thesis.</p>	

Method of conception	correct
<i>Assess that student has chosen correct approach or solution methods.</i>	
I can confirm that the approach and solution method taken by the candidate is correct.	

Technical level	A - excellent.
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
<p>The candidate has demonstrated a mastery knowledge and skill in research e.g. surveying of the subject area, identifying research problem; thereafter, adopting appropriate approach for deriving solution, and evaluate the solution, in this case, through analytical study and computer simulations. There is still room for improvement i.e. candidate can improve on providing justification(s) whenever possible in supporting the presented work.</p>	

Formal and language level, scope of thesis**A - excellent.**

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

In general, the thesis was well organized and well written where the standard is of publishable in IEEE journals.

Selection of sources, citation correctness**B - very good.**

Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.

I observed some good sources related to the work such as 3GPP technical reports, and few academic papers. However, I think the selection of sources could be improved by adding further more academic papers to help justifying and strengthening the value of this work.

Additional commentary and evaluation

Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.

Please insert your commentary (voluntary evaluation).

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

Summarize thesis aspects that swayed your final evaluation. Please present apt questions which student should answer during defense.

The work presented in this thesis is timely, technically sound and is of important for addressing the needs of mobile network technology to be responsive considering MTC massive random access problems. The thesis is generally well written especially the technical part of the work. First of all, the existing LTE-A random access procedure was adequately highlighted, which then followed by the detail description of the proposed procedure called Two-phase Random Access Procedure (TPRA). In order to evaluate the effectiveness of the proposed random access procedure, this work has proposed an analytical model was proposed. This work also defined few metrics for evaluating the performance of the proposed RA procedure. Last but not least, the performance results were well discussed.

For the purpose of clarification, I suggest the following:

- 1) Candidate should be asked to clarify the strengths and weaknesses of the existing push-based and pull-based approaches of RAN overload control scheme.
- 2) Candidate should then clarify how the proposed solution relates to the existing push- and pull-based approaches, and also provide justification of the strengths and weaknesses over the existing approaches.

I evaluate handed thesis with classification grade **A - excellent**.

Date: **9.6.2017**

Signature: