Cape Peninsula University of Technology

November 2020

HDC 1.2: Registration of Proposal for Dissertation / Thesis

Student's surname	THYS-DINGOU	**Student no.**	214349721
First names	DIEUVEIL ORCEL		
Postal address: 19 Rhos street, Boston, Bellville, Cape Town, South Africa, 7535			
Phone: N/A **Cell phone: 0712004894**		**E-mail: 214349721@mycput.ac.za**	
Gender (circle which is applicable**): M** / F		**Ethnic group* (**underline which is applicable**):** **Black** / White / Coloured / Indian	
Nationality: Congolese			
Prior qualifications (and field**):** BTech: Electrical Engineering		**Status** (underline which is applicable**):** **full-time** / part-time	
Confirmed title of dissertation/ thesis (not in capitals**):** Design and development of the ALICE CRU user logic firmware for the mid readout chain.			
Indicate whether a 50% dissertation or 100% thesis (underline which is applicable**):**		**50% dissertation**	**100% thesis**
Faculty	Engineering and the Built Environment		
Department	Electrical, Electronics and Computer Engineering		
Degree (and field**)**	DEng: Electrical Engineering		
Supervisor	Dr AK Raji		
Position	Senior Lecturer	**Qualifications** (and field):	DTech: Electrical
Co-supervisor(s)	Ass. Prof. E.Z. Buthelezi and Dr. S.V. Förtsch		
Position	Snr Scientist & Snr Researcher	**Qualifications** (and field):	Ph.D. & Ph.D.

The university is required to record this information for national reporting purposes*.**

Summary (Insert a summary of approximately 250 words)

This project which will form part of a master in engineering, concerns the development of the user logic firmware for the muon identifier (MID) readout chain. Recent tests conducted on the MID readout chain showed potential limitations in data rates if data are collected without a pre-analysis performed with the firmware of the common readout unit (CRU). Therefore, alternative solutions are required. This research project will provide a new approach of processing data using a customized common readout unit user logic firmware, to meet these requirements. The MID CRU user logic firmware prototype will be designed for the CRU ARRIA 10 FPGA using VHDL (VHSIC-HDL, Very High-Speed Integrated Circuit Hardware Description Language) as per requirement by the ALICE CRU core team. As one of ALICE collaborators, NRF iThemba LABS houses the MID readout chain components to facilitate the conduction of the research and development of the user logic.

Key terms (max. 10 words or phrases)	CERN; Large Hadron Collider; ALICE experiment; Muon Identifier; Common Readout Unit; user logic firmware.

Student undertaking:

I, the undersigned, certify that:

- This project has not been submitted to any other educational institution for the purpose of a qualification.
- All subsidy-earning outputs (artefacts and publications) from my postgraduate studies will be regarded as the property of the Cape Peninsula University of Technology (CPUT) for subsidy purposes.
- Where intellectual property (IP) is developed under the supervision of the CPUT involving institutional or government expenditure, such IP will be subject to the IP Policy of CPUT and the National Act on Intellectual Property generated from Government funded research.
- I understand that the dissertation/ thesis is the copyright of CPUT and may not be published or reproduced in any form without the prior permission of the university.
- I understand that I am required to submit an article for publication based on my research results, with the CPUT affiliation clearly stated.
- I understand that plagiarism is wrong, and incurs severe penalties including possible suspension or expulsion, according to the university's Policy on Plagiarism.
- I shall list all assistance obtained, such as editorial, financial and statistical assistance, and assistance from other institutions or persons, clearly on the Acknowledgements page of the dissertation/ thesis.
- I have read and taken cognisance of the responsibilities of students and supervisors, as included in the Memorandum of Understanding (MoU) signed with the Faculty.
- I will follow the CPUT guidelines for writing dissertations/ theses.
- I have read and taken note of the guide to postgraduate studies published in the document "Postgraduate Studies @ CPUT" at http://www.cput.ac.za/postgraduate-information.
- I understand that all subsequent registrations are not automatic, but depend on the approval of my supervisor and are based on measurable progress.
- I understand that I may appeal, if my registration is not approved, through the appropriate CPUT appeals system.
- I understand that non-compliance with the MoU may result in disciplinary action that may culminate in de-registration.

Ethics and data collection:

Is ethics clearance required for this study?	Yes	**No**
Is data collection permission required for this study?	Yes	**No**

If Yes, the student must:
1. Obtain ethics approval for the research from the Faculty Ethics Committee.
2. ATTACH a STATEMENT of the approval.
3. Obtain data collection permission for the research from the relevant institution.
4. ATTACH a STATEMENT of the permission.

If No, the student must:
1. Obtain ethics clearance for the research from the Faculty Ethics Committee.
2. ATTACH a STATEMENT that ethics approval is not required.
3. Obtain data collection clearance for the research from the relevant institution.
4. ATTACH a STATEMENT that permission is not required.

Signed .....**Date**27-11-2020.....
(Student)

Signed atanda raji .....**Date**27/11/2020.....
(Supervisor)

Signed Marco adonis .....**Date**27/11/2020.....
(HoD)

Faculty approval:

Review Panel* **(please print names)**		**Qualifications (and field)**	
Dr Marco Adonis		DTech: Electrical Engineering	
Dr Ali Almaktoof		DTech: Electrical Engineering	
Recommendations	TO BE APPROVED BY HDC		
Signed (Panel Chair)	DR MARCO ADONIS	**Date**	

*****_The Panel reviews the merit and viability of the research project proposed and so must be comprised of experts in the field to be researched, and at least one member of the FRC_**.**

Date on which proposal was presented in the Faculty:	
Date of FRC Minutes in which recorded:	

Signed .....Date.....
(Chair: Faculty
Research Committee)

CAPE PENINSULA UNIVERSITY OF TECHNOLOGY

ENGINEERING FACULTY

EFRC1.1 - Checklist and Evaluation of Dissertation / Thesis Proposal

Faculty	Engineering	**Department**	Electrical Electronic and Computer	**Degree**	MEng: Electrical
Candidate	DIEUVEIL ORCEL THYS_DINGOU		**Date submitted**	26-10-2020	
Title	Design and development of the alice cru user logic firmware for the mid readout chain.				
Supervisor	Dr AK Raji				

		Yes	No	Un-clear	Comment
1.	**Research Topic**				
1.1	Is the research problem/question clearly stated?	√			
1.2	Is the problem/question researchable?	√			
1.3	Is the topic significant?	√			
1.4	Is the scope appropriate for the qualification?	√			
1.5	Is the research appropriately delimited?	√			
1.6	Are the research aims clear?	√			
1.7	Are the assumptions stated?	√			
1.8	Is the terminology adequately defined?	√			
2.	**Literature review**				
2.1	Is the literature relevant to the problem?	√			
2.2	Has an adequate conceptual framework been developed?	√			
2.3	Is the literature current?	√			
2.4	Has the relationship between the research topic and previous research been outlined?	√			
2.5	Are textual referencing and bibliographic citation correct and consistent?	√			
3.	**Methodology**				
3.1	Does the research design address the research problems/questions?	√			
3.2	Are the data collection/production methods appropriate?	√			
3.3	Are the data analysis methods appropriate?	√			
3.4	Have ethical considerations been addressed? [1]	√			
4.	**General**				
4.1	Is the proposal free of writing/typographical errors?	√			
4.2	Does the proposal appear to be free of plagiarism? [2]	√			
4.3	Is the research manageable in terms of timeframe?	√			
4.4	Is the budget allocated adequate?	√			

[1] Indicate whether ethical clearance through a research ethics committee is required.

[2] In the case of plagiarism, the proposal should be returned to the candidate with a warning. The candidate will need to re-submit (see Policy & Procedures on Plagiarism: HDC 2.1).

Review Panel	**Qualification**
Dr Atanda Raji atanda raji	DTech: Electrical Engineering

Recommendations	TO BE APPROVED BY HDC		
Review Panel Chair	DR ATANDA RAJI	**Date**	28/11/2020

CAPE PENINSULA UNIVERSITY OF TECHNOLOGY

ENGINEERING FACULTY

EFRC1.1 - Checklist and Evaluation of Dissertation / Thesis Proposal

Faculty	Engineering	**Department**	Electrical Electronic and Computer	**Degree**	MEng: Electrical
Candidate	DIEUVEIL ORCEL THYS_DINGOU		**Date submitted**	26-10-2020	
Title	Design and development of the alice cru user logic firmware for the mid readout chain.				
Supervisor	Dr AK Raji				

		Yes	No	Un-clear	Comment
1.	**Research Topic**				
1.1	Is the research problem/question clearly stated?	X			Clear
1.2	Is the problem/question researchable?	X			
1.3	Is the topic significant?	X			Yes
1.4	Is the scope appropriate for the qualification?	X			
1.5	Is the research appropriately delimited?	X			
1.6	Are the research aims clear?	X			Clear
1.7	Are the assumptions stated?	X			
1.8	Is the terminology adequately defined?	X			
2.	**Literature review**				
2.1	Is the literature relevant to the problem?	X			Yes
2.2	Has an adequate conceptual framework been developed?	X			
2.3	Is the literature current?	X			Yes
2.4	Has the relationship between the research topic and previous research been outlined?	X			
2.5	Are textual referencing and bibliographic citation correct and consistent?	X			Yes
3.	**Methodology**				
3.1	Does the research design address the research problems/questions?	X			Yes
3.2	Are the data collection/production methods appropriate?	X			
3.3	Are the data analysis methods appropriate?	X			Yes
3.4	Have ethical considerations been addressed? [1]	X			
4.	**General**				
4.1	Is the proposal free of writing/typographical errors?	X			Yes
4.2	Does the proposal appear to be free of plagiarism? [2]	X			Yes
4.3	Is the research manageable in terms of timeframe?	X			
4.4	Is the budget allocated adequate?	X			

[1] Indicate whether ethical clearance through a research ethics committee is required.

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Review Panel	**Qualification**
Dr Marco Adonis	DTech: Electrical Engineering
Dr Ali Almaktoof	DTech: Electrical Engineering

Recommendations	TO BE APPROVED BY HDC		
Review Panel Chair	DR ATANDA RAJI	**Date**	27/11/2020

CAPE PENINSULA UNIVERSITY OF TECHNOLOGY

ENGINEERING FACULTY

EFRC1.1 - Checklist and Evaluation of Dissertation / Thesis Proposal

Faculty	Engineering and the Built Environment	**Department**	Electrical Electronic and Computer	**Degree**	MEng: Electrical
Candidate	DIEUVEIL ORCEL THYS_DINGOU		**Date submitted**	26-10-2020	
Title	Design and development of the alice cru user logic firmware for the mid readout chain.				
Supervisor	Dr AK Raji				

		Yes	No	Un-clear	Comment
1.	**Research Topic**				
1.1	Is the research problem/question clearly stated?	X			Yes, adequate
1.2	Is the problem/question researchable?	X			
1.3	Is the topic significant?	X			Yes, very significant and relevant
1.4	Is the scope appropriate for the qualification?	X			Yes
1.5	Is the research appropriately delimited?	X			
1.6	Are the research aims clear?	X			Yes, very clear
1.7	Are the assumptions stated?	X			
1.8	Is the terminology adequately defined?	X			Yes, well defined
2.	**Literature review**				
2.1	Is the literature relevant to the problem?	X			Yes
2.2	Has an adequate conceptual framework been developed?	X			
2.3	Is the literature current?	X			Yes
2.4	Has the relationship between the research topic and previous research been outlined?	X			
2.5	Are textual referencing and bibliographic citation correct and consistent?	X			
3.	**Methodology**				
3.1	Does the research design address the research problems/questions?	X			Yes
3.2	Are the data collection/production methods appropriate?	X			
3.3	Are the data analysis methods appropriate?	X			
3.4	Have ethical considerations been addressed? [1]				
4.	**General**				
4.1	Is the proposal free of writing/typographical errors?	X			It seems to be
4.2	Does the proposal appear to be free of plagiarism? [2]	X			
4.3	Is the research manageable in terms of timeframe?	X			
4.4	Is the budget allocated adequate?	X			Adequate

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Review Panel	**Qualification**
Dr Marco Adonis	DTech: Electrical Engineering
Dr Ali Almaktoof AMA Almaktoof	DTech: Electrical Engineering

Recommendations	TO BE APPROVED BY HDC		
Review Panel Chair	DR ATANDA RAJI	**Date**	27 NOVEMBER 2020