THESIS SUPERVISOR'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Adaptive Local Binarization to Improve the Performance of the UVDAR-COM System**
Author's name:	**Marlon Rivera**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of cybernetics
Thesis reviewer:	Daniel Bonilla Licea, PhD
Reviewer's department:	Department of cybernetics

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment — challenging

How demanding was the assigned project?

The assignment consist in developing a local adaptive thresholding algorithm for the UVDAR-COM system which is an optical communications systems designed for drones. The assignment includes also the experimental testing and validation of the designed system which makes the assignment challenging,

Fulfilment of assignment — fulfilled

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

All the points required by the assignment were fulfilled. Particularly the design of the local adaptive thresholding designed by the students showed great performance and it was validated with an extensive amount of experiments.

Activity and independence when creating final thesis — A - excellent.

Assess whether the student had a positive approach, whether the time limits were met, whether the conception was regularly consulted and whether the student was well prepared for the consultations. Assess the student's ability to work independently.

The development of the algorithms and the design and implementation of the experiments were mostly done by the student who showed a great level of independence and proactivity,

Technical level — A - excellent.

Is the thesis technically sound? How well did the student employ expertise in his/her field of study? Does the student explain clearly what he/she has done?

The content of the thesis is technically sound, the student explained clearly all the technical aspects of the thesis

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

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

The thesis is well written and well organized

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

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

The number and quality of citations is great

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

The thesis titled 'Adaptive Local Binarization to Improve the Performance of the UVDAR-COM System' written by the student Marlon Rivera presents a novel adaptive thresholding algorithm to improve the UVDAR-COM system which is an optical communications system designed for UAVS and based on camera and UV light.

The thesis motivates well the need for adaptive local thresholding in OCC systems devised for UAVs. The design of the adaptive thresholding technique is well documented. Two versions are proposed. The first is based on Otsu's method and the second is based on the Kullback-Leiber divergence.

The number of tests and experiments presented in the thesis are exhaustive and show the benefits of using the local adaptive thresholding algorithm proposed, Among the benefits observed there is an increase in the communications range and improved detection levels.

The presentation of the thesis is of good quality, the technique proposed is original, well justified, experiments validate the technique proposed, and the literature review is adequate.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE
Summarize your opinion on the thesis and explain your final grading.

The grade that I award for the thesis is | A - excellent. |

Date: **30 May 2024**   Signature: