#7 (1570609164): *Calcification Detection for Intravascular Ultrasound Image using Direct Acyclic Graph Architecture: Pre-Trained Model for 1-Channel Image*

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Conference and *track*		**2020 3rd International Conference on BioSignal Analysis, Processing and Systems (ICBAPS)** - *2020 International Conference on BioSignal Analysis, Processing and Systems*
Authors		

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Title	*Calcification Detection for Intravascular Ultrasound Image using Direct Acyclic Graph Architecture: Pre-Trained Model for 1-Channel Image*
Abstract	Atherosclerosis is a global disease due to unhealthy diet of Non Communicable Diseases. 31% of non-communication disease is caused by cardiovascular disease. The development of plaque and calcification at the artery wall will make the artery wall narrowed and hence obstructing the blood flow. Thevisual inspection is the standard practice to detect the calcification on the intravascular ultrasound image by the radiologist. In this study, the automated system is proposed by using Transfer Learning Direct Acyclic Graph architecture to detect the calcification absence and calcification presence in coronary artery disease. The proposed system with 1-channel and total parameters 55668 is tested with two types of Intravascular Ultrasound images. The performance evaluation was carried out using k-fold, with value k were 2, 3, 5 and 10. The performance measure such as the accuracy obtained for Cartesian Coordinate images 98.16% and Polar Reconstructed Coordinate images, 99.08.
Keywords	Calcification; Cartesian coordinate; Intravascular Ultrasound
Topics	Image Analysis and Processing
Presenter(s)	presenter not specified
Registration	Hannah Sofian has registered and paid for NR:Students
DOI	
Appears in attendee proceedings and proceedings?	neither: copyright form missing
Status	Accepted Visible since Feb 20, 2020 21:48:46 EST.
Notes	
Visa letter	none

Review manuscript

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Final manuscript

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Reviews

4 Reviews

Review 1 (Reviewer A)

Reviewer Fei Siang Tay (A); expired; assigned Feb 3, 2020 00:31:16 UTC by Siti Armiza Mohd Aris; due Feb 10, 2020 12:59:00 +08

Review 2 (Reviewer B)

Reviewer Hua Nong Ting (B); completed; assigned Feb 3, 2020 00:34:52 UTC by Siti Armiza Mohd Aris; due Feb 10, 2020 12:59:00 +08 ; completed Feb 7, 2020 08:45:50 UTC

Appropriateness for Journal (Rate the paper organization, the clearness of text and figures, the completeness and accuracy of references.)	Adequacy of Literature Review (A sufficient literature review has been done for the study. The source of reference is correctly cited.)	Quality of Research Design (Demonstrates an extremely high level of competence in selecting appropriate techniques/tools in solving problems and interpreting results.)	Adequacy of Data Analysis (Systematically data process has been performed by ensuring data integrity, accurateness, and appropriate data analysis technique.)	Contributions to the Literature (The findings of the study contribute to the body of knowledge.)	Conceptual Significance (Does the finding help the reader understand better?)	Practical Significance (Explains the relevance of the study under consideration.)	Legitimacy of Conclusions (Does the study in accordance with the laws of reasoning: logically inferable? How well the author (s) conclude their work?)	Clarity of Presentation & Readability (Shows exceptional written communication skills with faultless grammar and spelling. Tables/ diagrams/charts are appropriately labeled. Well organized paper structure. An extremely independent candidate.)	Final Decision (Based on the OVERALL review, please suggest your final decision.)
Readable, but revision is needed in some parts. (3)	Well written. (4)	Readable, but revision is needed in some parts. (3)	Readable, but revision is needed in some parts. (3)	Well written. (4)	Readable, but revision is needed in some parts. (3)	Readable, but revision is needed in some parts. (3)	Readable, but revision is needed in some parts. (3)	Readable, but revision is needed in some parts. (3)	Accept after specified revision (2)

Overall comments to author (What are the major issues addressed in the paper? Do you consider them important? Comment on the degree of novelty, creativity and technical depth in the paper. Please provide detailed comments that will be helpful to the TPC for assessing the paper, as well as feedback to the authors.)

The paper investigated the detection of calcification in coronary artery disease using Transfer Learning Direct Acyclic Graph architecture and CNN. I believe the authors used K-fold cross validation for the training and testing of proposed method. The total testing data supposes to be same as the total number of the dataset, i.e. 2175. Thus, the figures in Table 2 need to be revised accordingly. For example, for a 2-fold cross validation, the experiment is conducted two times, with each time, the total training data number is same as the total testing number.

Review 3 (Reviewer C)

Reviewer Hezerul Abdul Karim (C); expired; assigned Feb 7, 2020 01:55:46 UTC by Siti Armiza Mohd Aris; due Feb 16, 2020 12:59:00 +08

Review 4 (Reviewer D)

Reviewer Mahfuzah Mustafa (D); completed; assigned Feb 14, 2020 01:10:35 UTC by Siti Armiza Mohd Aris; due Feb 17, 2020 12:59:00 +08 ; completed Feb 16, 2020 08:44:19 UTC

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Appropriateness for Journal (Rate the paper organization, the clearness of text and figures, the completeness and accuracy of references.)	Adequacy of Literature Review (A sufficient literature review has been done for the study. The source of reference is correctly cited.)	Quality of Research Design (Demonstrates an extremely high level of competence in selecting appropriate techniques/tools in solving problems and interpreting results.)	Adequacy of Data Analysis (Systematically data process has been performed by ensuring data integrity, accurateness, and appropriate data analysis technique.)	Contributions to the Literature (The findings of the study contribute to the body of knowledge.)	Conceptual Significance (Does the finding help the reader understand better?)	Practical Significance (Explains the relevance of the study under consideration.)	Legitimacy of Conclusions (Does the study in accordance with the laws of reasoning; logically inferable? How well the author (s) conclude their work?)	Clarity of Presentation & Readability (Shows exceptional written communication skills with faultless grammar and spelling. Tables/ diagrams/charts are appropriately labeled. Well organized paper structure. An extremely independent candidate.)	Final Decision (Based on the OVERALL review, please suggest your final decision.)
Well written. (4)	Well written. (4)	Well written. (4)	Readable, but revision is needed in some parts. (3)	Well written. (4)	Well written. (4)	Well written. (4)	Readable, but revision is needed in some parts. (3)	Excellent. (5)	Accept after specified revision (2)

Overall comments to author (What are the major issues addressed in the paper? Do you consider them important? Comment on the degree of novelty, creativity and technical depth in the paper. Please provide detailed comments that will be helpful to the TPC for assessing the paper, as well as feedback to the authors.)

1. Please describe the ground truth of data in Methods and Material section. For example, the images of calcification had been verified by dentist. Age mean, location, year, gender and so om.

2. Please write the accuracy, sensitivity, specificity, and so on in terms of value in Conclusion section.