Review Form 3

Journal Name:	**Current Journal of Applied Science and Technology**
Manuscript Number:	**Ms_CJAST_121656**
Title of the Manuscript:	**Integration of Non-Destructive Testing Techniques and Machine Learning Algorithms for Enhanced Structural Health Monitoring of Bridges**
Type of the Article	

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.		
Is the title of the article suitable? (If not please suggest an alternative title)		
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.		
Are subsections and structure of the manuscript appropriate?		
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. -		

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	The authors provide a review of NDT and integration of it with machine learning for bridge systems. There are some technical comments that should be done to be accepted. 1) "Nonetheless, many of these bridges, as a result of general increase in axle loads and traffic volume, carry considerably larger loads more than what they were designed for originally." Is there any articles to support this claim? Please add them as many as possible. 2) "In the past few years, a specialized subset of machine learning called deep learning was evolved. It practically involves more sophisticated algorithms, architectures and models for the prediction of future outcomes with difficult events and handling of multifaceted problems [10]." Regarding this sentence, the core and key article for the deep learning based SHM is: Deep learning-based crack damage detection using convolutional neural networks; Autonomous structural visual inspection using region-based deep learning for detecting multiple damage types. The authors pursue to cite the core and key papers to give the credits of the originality not random selection. 3) "The shortcomings of visual testing include (1) it can work only with surface defects, (2) there is possibility of flaws in misinterpretation and (3) without additional optical instruments, it cannot detect minute defects [10]." What about the accessibity to specific parts of the bridge? To overcome these, autonomous drones were developed: Autonomous UAVs for structural health monitoring using deep learning and an ultrasonic beacon system with geo-tagging; Real-time multiple damage mapping using autonomous UAV and deep faster region-based neural networks for GPS-denied structures; Deep learning-based obstacle-avoiding autonomous UAVs with fiducial marker-based localization for structural health monitoring. These should be discussed. 4) "After the visual inspection testing, the ultrasonic testing stands out as the most popular non-destructive testing method." Based on what, you think ultrasonic testing is most popular one? Provide rationale with evidences. 5) Section 1 is too ambiguous in terms of scope of this paper and methodologies you will review and why? 6) Section 2 provides some methods of NDT but there is no rationale why and how you choose those methods. There are so many other NDTs for bridge damage detection., Please see: Deep learning-based structural health monitoring. 7) Section 3 also needs to be drastically improved. Clarify what is deep learning and machine learning by reviewing Deep learning-based structural health monitoring. There are so many applications with integration of NDT and machine and deep learning. Examples: external damage, supervised: SDDNet: Real-time crack segmentation; Efficient attention-based deep encoder and decoder for automatic crack segmentation External damage unsupervised: Unsupervised deep learning approach using a deep auto-encoder with a one-class support vector machine to detect damage; Unsupervised novelty detection–based structural damage localization using a density peaks-based fast clustering algorithm Internal damage, supervised: Subsurface damage detection of a steel bridge using deep learning and uncooled micro-bolometer; Attention-based generative adversarial network with internal damage segmentation using thermography.	

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PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Youngjin Cha**
Department, University & Country	**University of Manitoba, Canada**