Politeknik Caltex Riau

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[IJTech] Reviewer Invitation

1 message

IJTech <noreply@ijtech.eng.ui.ac.id> Tue, Jul 7, 2020 at 7:58 PM
Reply-To: "noreply@ijtech.eng.ui.ac.id" <noreply@ijtech.eng.ui.ac.id>
To: hendriko@pcr.ac.id

International Journal of Technology
www.ijtech.eng.ui.ac.id

Invitation to Review Manuscript #ME-4114

Dear **Dr. Hendriko, , S.T.,M.Eng** ,

You are cordially invited to review a manuscript **#ME-4114** entitled **"Development of Tool Orientation Strategy and Non-Machinable Area Identification in 5-Axis Peripheral Milling of Sculptured Surface Based on Faceted Model "** that was submitted to the International Journal of Technology (IJTech, pISSN: 2086-9614, eISSN: 2087-2100). IJTech is an open-access journal indexed by Scopus, EBSCO, DOAJ, and many internationally-recognized indexer. In 2019, IJTech achieved SJR score of 0.35 (Q2), SJR H-index of 9, acceptance rate of 29.5%, and average submit-to-publish duration of 162 days.

We would appreciate it if you would take a few moments to review the abstract below and confirm your acceptance and ability to provide your review comments by **10 Jul 2020 (Three days after invitation)**

Please use the following links to indicate your response:

Accept: Accept
If the above link does not work, copy-paste this link in your browser to accept: https://ijtech.eng.ui.ac.id/invitation/4114/11389/1

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A short guideline for reviewer can be found here: https://ijtech.eng.ui.ac.id/file/IJTech_reviewer_guideline.pdf.

Article to be reviewed

Title: Development of Tool Orientation Strategy and Non-Machinable Area Identification in 5-Axis Peripheral Milling of Sculptured Surface Based on Faceted Model
Abstract: Abstrak. The peripheral milling strategy using cylinder cutter is an effective milling strategy commonly used on planar or ruled surfaces because of its large material removal rate (mrr). However, using a peripheral milling strategy on a sculptured surface will find many difficulties in adjusting tool orientation during the machining process. Besides the shape complexity of sculptured surface with various normal vector directions, it cause increasing of possible interference so that can reduce the effectiveness of peripheral milling if the tool orientation adjustment is not done properly. In an effort to realizing peripheral milling process on the sculptured surface which is difficult to do on a CAD surface (mathematical surface), in this research developed peripheral milling method for sculptured surfaces based on faceted model. To further enhance the effectiveness of the peripheral milling process, identification of difficult or impossible machining area with peripheral milling is done (example narrow concave surface compared to tool parameters). It also searches for an alternative tool orientation with a reverse tool orientation if the initial orientation of the tool causes gouging / interference. Overall in this research, the development of peripheral machining strategies starts from the creation of tool path generation, initial tool orientation, gouging detection, alternative tool orientation, and identification of non-machinable areas. Then the results of the process strategy are simulated in 3-D simulation and the analysis of the machining area is displayed as a percentage. From the simulation it can be seen that the strategy of orientation and alternative tools and identification of non-machinable areas have been successfully developed for 5-axis peripheral milling sculptured surfaces based on faceted model. The method developed successfully identified areas that capable to milling and maximized machining areas up to 80%. Then it's very applicable for development of further peripheral milling strategies.

We look forward to hearing from you.

Yours sincerely,

Dr. Agus Sunjarianto Pamitran
pamitran@eng.ui.ac.id
Prof. Nandy Putra
nandyputra@eng.ui.ac.id

Editor in Charge for Mechanical Engineering
International Journal of Technology (IJTech)
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Politeknik Caltex Riau

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[IJTech] Review assignment for manuscript #ME-4114

1 message

IJTech <noreply@ijtech.eng.ui.ac.id> Wed, Jul 8, 2020 at 9:42 AM
Reply-To: "noreply@ijtech.eng.ui.ac.id" <noreply@ijtech.eng.ui.ac.id>
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International Journal of Technology
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Review assignment for manuscript #ME-4114

Dear **Dr. Hendriko, , S.T.,M.Eng**

Thank you for your willingness to review manuscript **#ME-4114**, entitled **[Development of Tool Orientation Strategy and Non-Machinable Area Identification in 5-Axis Peripheral Milling of Sculptured Surface Based on Faceted Model]**

You can access the manuscript and fill the review form after logging in at [https://ijtech.eng.ui.ac.id/login] using your IJTech account:

Username: hendriko@pcr.ac.id
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Review guideline: https://ijtech.eng.ui.ac.id/file/IJTech_reviewer_guideline.pdf.

Yours sincerely,

Dr. Nyoman Suwartha
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International Journal of Technology (IJTech)
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[IJTech] Thank you for your review on manuscript #ME-4114

1 message

IJTech <noreply@ijtech.eng.ui.ac.id> Thu, Jul 9, 2020 at 10:10 AM
Reply-To: "noreply@ijtech.eng.ui.ac.id" <noreply@ijtech.eng.ui.ac.id>
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Thank you for your review on manuscript #ME-4114

Dear **Dr. Hendriko, , S.T.,M.Eng**

Thank you for your review on manuscript **#ME-4114** entitled **[Development of Tool Orientation Strategy and Non-Machinable Area Identification in 5-Axis Peripheral Milling of Sculptured Surface Based on Faceted Model]**

As a small thanks token from us, you are welcomed to download a certificate for this contribution in your dashboard. You may access your review comments by logging into the editorial management system at [https://ijtech.eng.ui.ac.id/].

Yours sincerely,

Dr. Nyoman Suwartha
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International Journal of Technology (IJTech)
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[IJTech] Manuscript and Response Letter

1 message

IJTech <noreply@ijtech.eng.ui.ac.id> Thu, Jul 16, 2020 at 9:21 AM
Reply-To: "noreply@ijtech.eng.ui.ac.id" <noreply@ijtech.eng.ui.ac.id>
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Manuscript and Response Letter #R1-ME-4114

Ms ID **#R1-ME-4114**
Title : Development of Tool Orientation Strategy and Non-Machinable Area Identification in 5-Axis Peripheral Milling of Sculptured Surface Based on Faceted Model

Dear **Dr. Hendriko, , S.T.,M.Eng** ,

We have received a copy of the above-quoted manuscript, which is a revised version of an original you have kindly reviewed. We would appreciate it if you could provide us with further comments on its suitability for publication.

It is our commitment to exert our best efforts to provide a prompt response to our authors. Therefore, please register your response as soon as your schedule allows. Should you accept this invitation, you are expected to submit your comments by **[19 Jul 2020]**. In case you forgot, a guideline for how to use our system for reviewing can be found here.

Abstract :

Abstract. The peripheral milling strategy using a cylinder cutter is an effective milling strategy commonly used on planar or ruled surfaces because of its large material removal rate [MRR]. However, using a peripheral milling strategy on a sculptured surface presents many difficulties in adjusting the tool orientation during the machining process. Besides the complexity in the shape of a sculptured surface, with various normal vector directions, there is an increase in possible interference, which can reduce the effectiveness of peripheral milling if the tool orientation is not adjusted properly. In an effort to realize the peripheral milling process on a sculptured surface, which is difficult to do on a CAD surface (mathematical surface), this research developed a peripheral milling method for sculptured surfaces based on a faceted model. To enhance further the effectiveness of the peripheral milling process, machining areas to which it is difficult or impossible to apply peripheral milling are identified. In addition, an alternative tool orientation is determined with a reverse tool orientation if the initial tool orientation causes interference. Overall, in this research, the development of peripheral machining strategies starts from the generation of a tool path, an initial tool orientation, and an alternative tool orientation, as well as gouging detection and the identification of non-machinable areas. Then, the results of the process strategy are simulated in 3D, and presentage of applicable machining area. From the simulation, it can be seen that the strategy of choosing an initial and alternative orientation of tools and identifying of non-machinable areas has been successfully developed for the five-axis peripheral milling of sculptured surfaces based on a faceted model. The developed method successfully identified areas able to be milled, and it maximized machining areas up to 80%. Thus, it is highly applicable to the development of further peripheral milling strategies.

We look forward to hearing from you.

Yours sincerely,

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2 attachments

R1-ME-4114-20200716035429.pdf
1522K

Response_letter_R1-ME-4114-20200716040658.pdf
510K

List of Changes

Manuscript: Development of Tool Orientation Strategy with Alternative Orientation and Non-Machinable Area Identification in 5-Axis Peripheral Milling of a Sculptured Surface Based on a Faceted Model

Response and Revision made by Author(s)

Reviewer #1:

No	Comments	Revision/Changes
1	The paper is not easy to read. Besides the language, many typos, word missing, and ineffective sentences. The authors are suggested to check their article **to professional proof-reader.**	Revise and proof-reader order to scribendi.com
2	Introduction is expected to have an extensive literature review followed by an in-depth and critical analysis of the state of the art. The authors suddenly explained that interference between tool and material is obstacle during sculptured surface machining. They proposed to use faceted model to solve the problem. However, there is no strong analysis on the gap of the problem with the existing works. Please discuss how other studies solve this problem, and then show clearly the gap.	Revise on introduction paragraph-2
3	The novelty of the proposed approach to answer the gap is not presented satisfactorily. Please clearly indicate this aspect in the last paragraph of introduction section	Revise on pragraf-2 & 3
4	Most part of this article discusses about the faceted method developed by Gandjar Kiswanto et.al. Hence, it is difficult to see the new aspect proposed in this study..	New aspect is two direction peripheral used on surface and detection non-machinable area identification, revise flow method fig.2
5	The strategy is difficult to understand. If possible, please summarize the overview of your method and strategy by using flow charts instead of block diagram as shown in Figure 13	revision of fig 13 to fig 2 and more in detail
6	When the tool is lifted to avoid interference, another issue raise. The scallop height increases if the step over is not adjusted. Did the authors consider this issue in the proposed strategy?	Revise fig 2 step 1, input parameter using cylindrical end mill and more detailing in sub 3.2 on explaination …increment 10 degree rotation matrix to inclination
7.	. Please put caption in figure appropriately. Text on Figure 16 use very	Revise on figure caption and text.

	big font size and cover the figure. Keep text in the illustrations to a minimum	
8	Figure 15 and Figure 16 are not clear. Please denote the figure/illustration with (a), (b), etc if there are more than one figure/illustration in every Figure. Then ensure that each illustration has a caption	Revise on fig 15 and 16
9	The authors do not cite the references in correct way. Please follow the instruction on the guideline for citing the references in the body of text. For example: a. Redundancy: … several researchers such as J. Senator et al, C.H Chu et al, Gong et al, Wang et al to C Menzel (C. H. Chu, Huang, & Hsu, 2008; C.-H. Chu, Hsieh, Lee, & Yan, 2015; Gong, Cao, & Liu, 2005; Hsieh & Chu, 2012; Menzel, Bedi, & Mann, 2004; Senatore et al., 2012; Wang & Elber, 2014; Xie et al., 2015). b. Incomplete: … was developed by C-H Chu et al	Revise on reference and introduction text
10	The structure of article does not follow the standard format. This article has section "3. Discussion" since beginning. Normally this section is aimed to discuss the result. Number of sub-sections is too many. Every sub-section should consist of more than 1 paragraph.There are several sub-sections which are only constructed by 1 paragraph, such as section 3.1 and 3.2. 12. Font size for text in Figure 6 is very small	Revise on sub-section 3.1, 3.2 and revise font-size for text on all figure

Reviewer #2:

No	Comments	Revision/Changes
1	- The statement "In fact, many manufactured products contain sculptured or highly curvature surfaces, which generally use the end milling process to produce them." We think that the end-tool is usually used for roughing process, and ball-end tool is used for the finishing of free-form surface.	Revise on introduction. This research purpose try to single tool used from rough until finish with general cutter (cylindrical tool)
2	- It is mentioned that modelling a free-form surface with faceted model can easy the surface modelling. However, the	Revise in section 3.2. The accuracy discussion requires in-depth research by comparing the different types of avoidance gouging and will

	conversion from the nominal mathematical model of a free-form surface (from a CAD file) to faceted model will cause accuracy reduction of the surface. The authors can elaborate more in this aspect, for example, how much the surface accuracy is reduced from using the faceted model? Is it significant?	add more than 10 pages. In this paper the limitations of avoidance of gouging with incriment matrix rotation of 0.5 from 0 to 10 degrees of freedom of gouging test.
3	- in Section 2, the three types of surfaces. Can their complexity be represented with a number? Such as curvature? To quantitatively compared the three surfaces?	Revise on bab-2. Due to research on sculptured surfaces, the data points obtained are irregular, so it is quite difficult to compare linearly, therefore we represent in the sample facet that represents it
4	- When building the facet model, we can set different level of resolutions of the facet. How this different resolution can affect the accuracy of the finished surface?	Revise on bab-2, in the three models we use the same resolution to get facet data by CAD software and the same tool parameters to use in algorithm, so result process of that can be compared and represented in table 1. Thanks very much for that idea to next research, where is to compare all different parameter tool and diferent resolution facet
5	- From figure 2, from the way of path generation, it seems it is the tool-path for finishing operation? How about the tool-path for roughing operation?	Revise on bab-2. Peripheral milling is usualy for finishing and the distance between slicing refers to the effective length of the peripheral tool.
6	- Scale in many figure cannot be read, they are too small.	Revise all figure and ajusted
7	The authors can elaborate more, whether the interference avoidance is by lifting the cylindrical tool or by changing the orientation of the tool or both (avoidance strategy comparison)	Revise on sub-bab 3,2 before fig 8, detailed use rotation matrix to make tool inclination with increment step 0.5 from 0 untuk 10 degree.
8	- The authors state that with peripheral milling higher MMR can be obtained and yield to faster machining time. However, with this tool, it may cause more unmachinable compare to normal end-tool mill. The authors should discuss this trade off	In result, this research is the beginning of research that examines up to non-machinable areas, research developments are still needed to discuss themes about the combination of peripherals and end milling as a final solution, as stated at the end of the conclusion. Thank you very much for inputting ideas for further research
9	? - Figure 13 should be at the beginning of the paper as it gives the overall picture of the paper. - The authors may also test their algorithm for a surface that has undercut features?	Revise fig 13 and now be fig.2 (at the beginning), and more detailed. avoidance of gouging is done by inclination with rotation matrix, and if the avoidance fails and more than 10 degrees of inclination, then it is considered as a non-mechinable peripheral area as shown in figure 15b, and in that area

		there is a red color and then the data is entered through the database for further processing

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[IJTech] Thank you for your review on manuscript #R1-ME-4114

1 message

IJTech <noreply@ijtech.eng.ui.ac.id> Sun, Jul 19, 2020 at 3:17 PM
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