COMPARISON OF FORECASTING METHODS AND DETERMINING MASTER PRODUCTION SCHEDULES FOR DRILL AND HSS PRODUCTS AT PT. GI

UNDERGRADUATE FINAL PROJECT

Submitted as one of the requirements to obtain Sarjana Teknik (S.T.)

By

Farah Mira Rosita

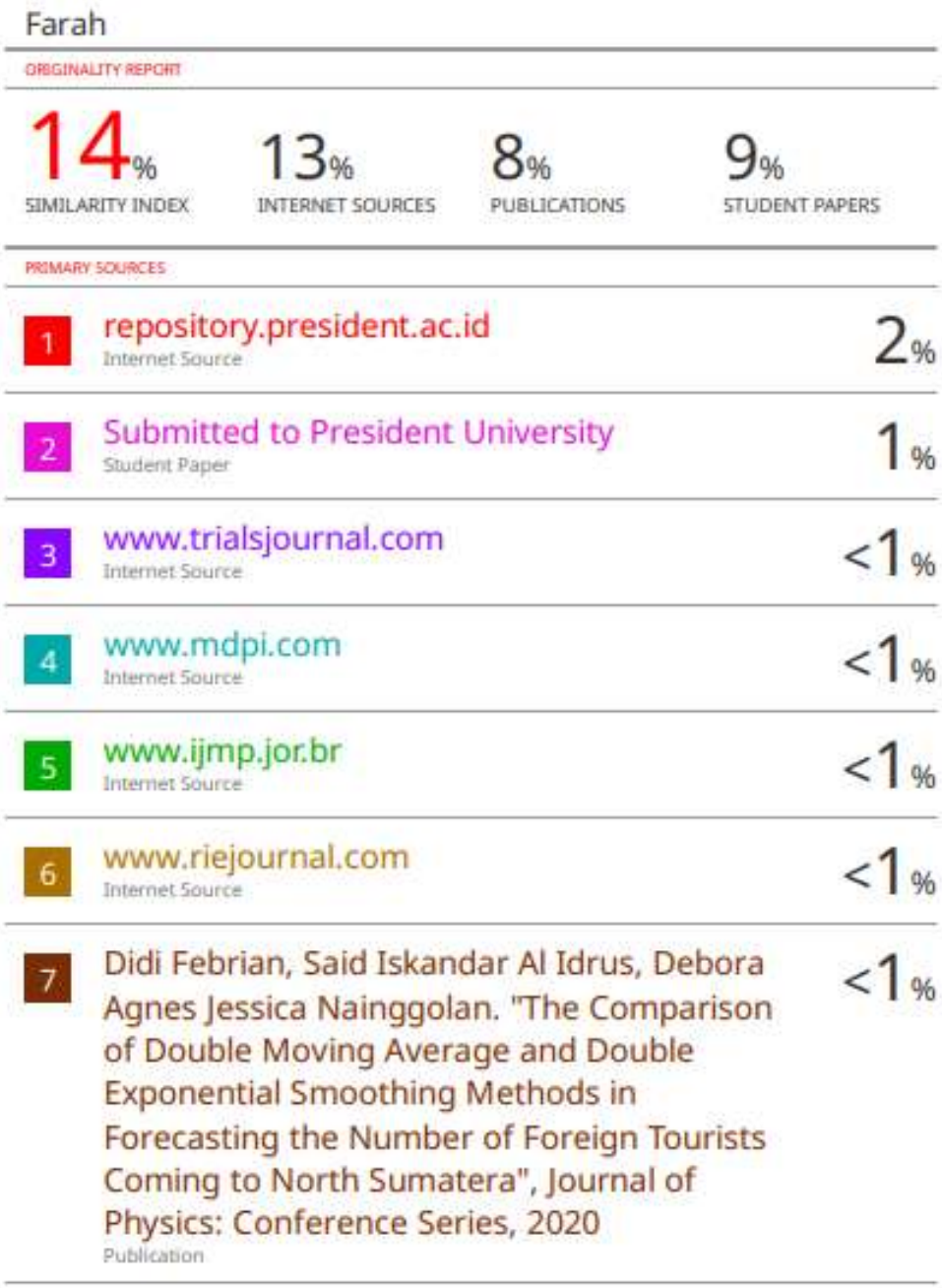
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FACULTY OF ENGINEERING

INDUSTRIAL ENGINEERING STUDY PROGRAM

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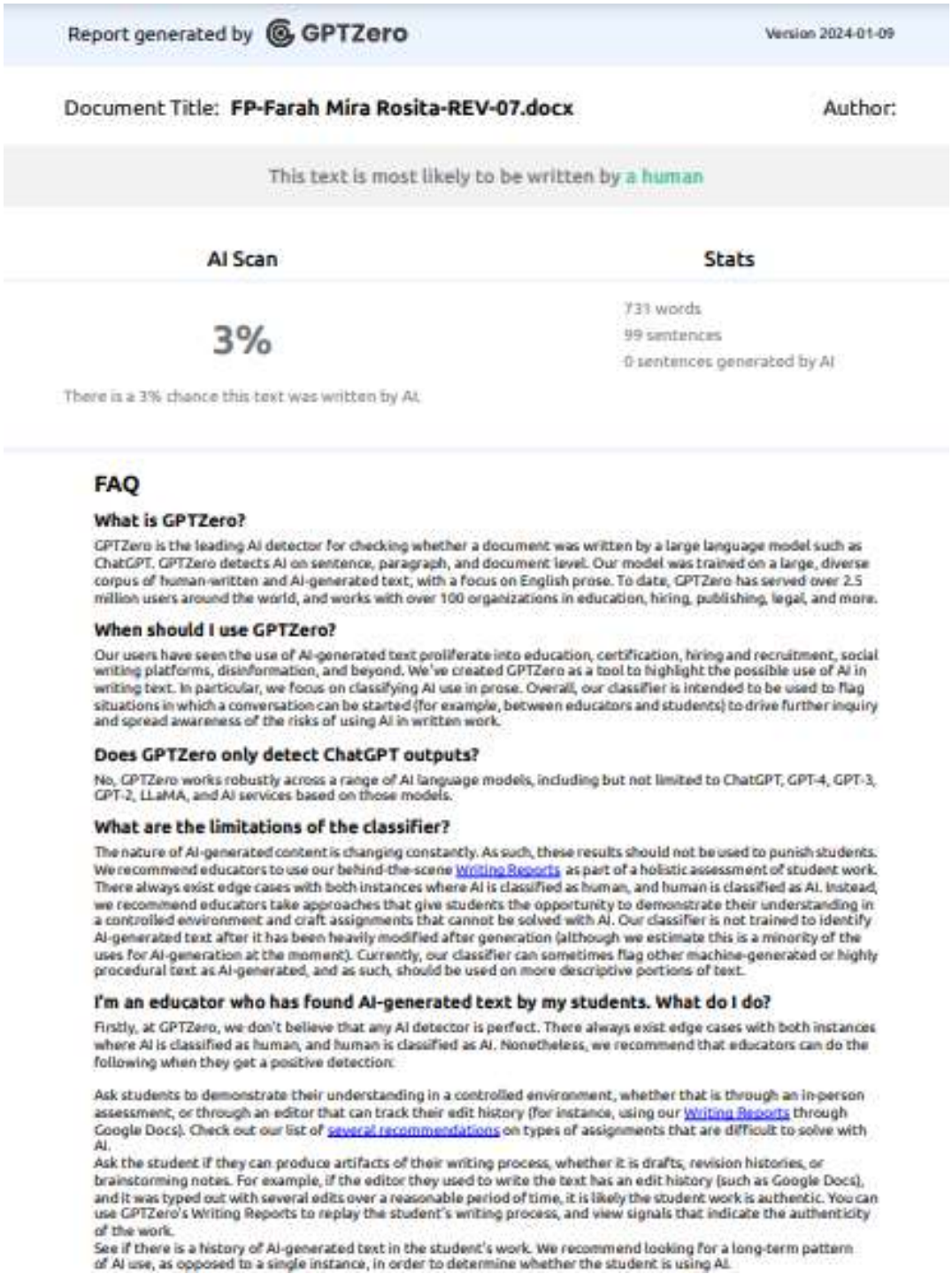
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FAQ

What is GPTZero?

GPTZero is the leading AI detector for checking whether a document was written by a large language model such as ChatGPT. GPTZero detects AI on sentence, paragraph, and document level. Our model was trained on a large, diverse corpus of human-written and AI-generated text, with a focus on English prose. To date, GPTZero has served over 2.5 million users around the world, and works with over 100 organizations in education, hiring, publishing, legal, and more.

When should I use GPTZero?

Our users have seen the use of AI-generated text proliferate into education, certification, hiring and recruitment, social writing platforms, disinformation, and beyond. We've created GPTZero as a tool to highlight the possible use of AI in writing text. In particular, we focus on classifying AI use in prose. Overall, our classifier is intended to be used to flag situations in which a conversation can be started (for example, between educators and students) to drive further inquiry and spread awareness of the risks of using AI in written work.

Does GPTZero only detect ChatGPT outputs?

No, GPTZero works robustly across a range of AI language models, including but not limited to ChatGPT, GPT-4, GPT-3, GPT-2, LLaMA, and AI services based on those models.

What are the limitations of the classifier?

The nature of AI-generated content is changing constantly. As such, these results should not be used to punish students. We recommend educators to use our behind-the-scene Writing Reports as part of a holistic assessment of student work. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Instead, we recommend educators take approaches that give students the opportunity to demonstrate their understanding in a controlled environment and craft assignments that cannot be solved with AI. Our classifier is not trained to identify AI-generated text after it has been heavily modified after generation (although we estimate this is a minority of the uses for AI-generation at the moment). Currently, our classifier can sometimes flag other machine-generated or highly procedural text as AI-generated, and as such, should be used on more descriptive portions of text.

I'm an educator who has found AI-generated text by my students. What do I do?

Firstly, at GPTZero, we don't believe that any AI detector is perfect. There always exist edge cases with both instances where AI is classified as human, and human is classified as AI. Nonetheless, we recommend that educators can do the following when they get a positive detection:

Ask students to demonstrate their understanding in a controlled environment, whether that is through an in-person assessment, or through an editor that can track their edit history (for instance, using our Writing Reports through Google Docs). Check out our list of several recommendations on types of assignments that are difficult to solve with AI.
Ask the student if they can produce artifacts of their writing process, whether it is drafts, revision histories, or brainstorming notes. For example, if the editor they used to write the text has an edit history (such as Google Docs), and it was typed out with several edits over a reasonable period of time, it is likely the student work is authentic. You can use GPTZero's Writing Reports to replay the student's writing process, and view signals that indicate the authenticity of the work.
See if there is a history of AI-generated text in the student's work. We recommend looking for a long-term pattern of AI use, as opposed to a single instance, in order to determine whether the student is using AI.

ABSTRACT

PT G.I. is a leading manufacturer of precision cutting tools and related instruments for the engineering and industrial industries. Some of these items are drill and HSS. Based on observations of historical supply, sales and inventory data, it was concluded that PT G.I. experiencing problems with overstocked data, where the level of sales is lower than production. In December 2022 to May 2023, there was excess stock in inventory, so PT GI remained consistent in supplying HSS and Drill goods even though sales was low. It was recorded that in April 2023 PT G.I estimated that it would sell a total of 185 units but only sold 103 drill units, and conversely PT G.I estimated that it would sell 82 HSS but in reality, in May 2023 it only sold 50 units of HSS tools. The current forecasting method, namely the Simple Moving Average, influences the number of incoming goods, resulting in too much inventory being stockpiled. Items that are buried can cause their selling value to decrease, one of the factors being rusty items. This research aims to find appropriate forecasting methods for PT G.I., such as Double Moving Average, Weighted Moving Average, and Des Brown, to prevent excess stock from occurring in the next period. This research suggests that the Double Moving Average is a method that has been tested and is the best forecasting methods because it produces the lowest forecasting error value compared to the other two methods that have been tested. This research also develops a master production plan to reduce the impact of the company's increasing inventory so that production time remains neat and structured.

Keywords: *Forecasting, Master Production Schedule, Inventory*

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