DETECTING NOVELTY SEEKING FROM ONLINE TRAVEL REVIEWS USING DEEP LEARNING APPROACH

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ABSTRACT

The abstract of the paper highlights the importance of understanding novelty seeking (NS) as a natural personality trait that influences travel desires and destination choices. The study aims to address the challenges of manually categorising internet travel reviews by developing a deep learning framework. The NS personality feature is categorised using a multi-dimensional framework based on seeking relaxation, wanting experience, seeking stimulation, and relief of boredom. The proposed deep learning model utilises 30,000 TripAdvisor reviews and employs bidirectional encoder representations with Transformers (BERT) and Bidirectional gates for recurrent units (Bi GRU) to automatically detect non-standard terms related to NS. The classifier trained on the NS and BERT Bi GRU layered scales achieved high accuracy and F1 scores, demonstrating the reliable recognition of the NS personality trait.

The study also shows that the BERT-Bi GRU model outperforms other deep learning models and can automatically identify personality traits in trip reports, offering potential applications in the travel and tourist industry for recommendation and marketing systems.

KEYWORDS

Novelty Seeking, Deep Learning, Framework, BERT, BI GRU, Personality traits

I.INTRODUCTION

The rapid advancement of information technology has seamlessly integrated the internet into various aspects of our daily routines. Concurrently, the tourism industry, both online and offline, has been experiencing consistent growth. An increasing number of travellers now rely on online resources to research destinations and read reviews from fellow travellers before finalising their travel plans, owing to the proliferation of online travel communities. These reviews predominantly reflect the perspectives of the travellers Imagine a scenario where this wealth of information is systematically collected and analysed to visually represent the sentiments and opinions of tourists regarding various aspects of tourism services. Such an approach could assist travelers in making more informed decisions by shedding light on the strong emotions expressed by previous visitors towards specific attractions. Tour guides possess a unique ability to gauge their clients' reactions to feedback, enabling them to accentuate positive aspects while mitigating negative ones. Leveraging feedback to personalize services or enhance programs can provide managers with a competitive edge. Personality traits, which dictate individuals' predictable responses to stimuli, are a culmination of various psychological features. Traditional methods of studying personality traits have heavily relied on selfreporting measures, where individuals assess their own qualities after experiencing a particular situation. However, these selfreported measures can be influenced by subjective feelings and self-statements, potentially leading to biased responses and reduced reliability in measurement outcomes.To overcome the limitations of traditional assessment methods, utilising online behavioural data to dynamically identify and evaluate different personality traits presents a promising alternative. This approach not only circumvents the fixed and subjective aspects of conventional methods but also introduces innovative techniques for capturing visitor personality traits while mitigating measurement biases associated with selfreporting. Individuals with novelty-seeking (NS) tendencies exhibit a proclivity for seeking out complex, diverse, and emotionally stimulating experiences and information. NS is recognised as an inherent trait that significantly influences leisure travel, impacting tourists' perspectives and destination choices. Extensive research has demonstrated the profound effects of NS on tourists' satisfaction, loyalty, and likelihood of revisiting destinations. Marketing strategies in the tourism industry extensively leverage NS to tailor recommendations and target specific consumer preferences, particularly in suggesting new and exotic tourist spots favoured by NS individuals. By incorporating NS identification into online travel reviews, businesses can effectively identify and cater to user groups exhibiting NS characteristics. The abundance of data in online travel assessments poses challenges in identifying passengers' NS features, necessitating time-consuming manual analyses. To address this issue, this study employs deep learning methodologies, specifically the BERTBi GRU model, to detect and classify NS in online vacation reviews based on a multidimensional

scale. The subsequent sections delve into the literature review, development and testing of the deep learning algorithm for NS recognition, and the practical applications and implications of the model for future research and methodology.

II. RELATED WORK

The excerpt provided discusses various research studies related to different fields. Here is a summary of each study mentioned:

A Review of Deep Learning Models for IoT Privacy and Security: This study focuses on the importance of implementing security measures in Internet of Things (IoT) devices to prevent attacks such as botnets, DDoS, and malicious assaults. By utilizing deep learning techniques and standard datasets, the research aims to enhance IoT security. The study evaluates deep learning algorithms and categorisation in the context of IoT security.

The Adoption of User-Generated Content (UGC) and Gender and Age Disparities: This study incorporates believability theory into the Technology Acceptance Model (TAM) to analyze how factors like competence, trustworthiness, perceived ease of use (PEOU), and perceived utility (PU) influence the intention to use UGC and online reviews among male and female travelers of different ages. The research surveyed over 200 individuals from the UK who had used online resources for trip planning. The study sheds light on the impact of gender and age on online travel reviews.

Sport Tourism: A Comprehensive Review of Studies: This study examines the growing popularity of sport-related tourism as both a field of study and a marketable product. The analysis assesses the literature on sport tourism, highlighting challenges in defining sport tourism and the increasing importance of sports-related travel. The study emphasises the need for collaboration between tourism and sportsagencies and multidisciplinary research in the field of sport tourism.

An Organised Review and MetaAnalysis of Conspiracy Belief Psychological Research: This study explores the predictors of conspiracy beliefs, such as openness to experience and agreeableness. It investigates the relationships between personality traits and conspiracy beliefs, contributing to the understanding of conspiracy theories within experimental, social, and differential psychology .

These studies cover a range of topics from IoT security to user-generated content, sport tourism, and conspiracy belief psychological research. Each study provides valuable insights into its respective field of study.

III .METHODOLOGY

The methodology described involves extracting novelty seeking from online travel reviews using four-dimensional scales. These scales are based on different aspects of novelty seeking behaviour:

Attempting to Relax (RS) / Relaxation (RL): This dimension focuses on seeking relaxation and comfort during travel experiences.
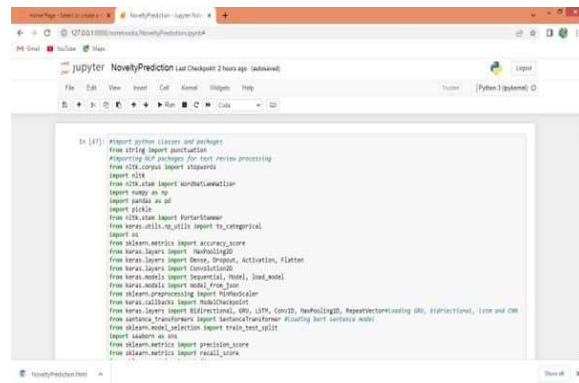
Changing Things Up (CFR), Seeking New Experiences (ES), and Learning Anything New (NL): This dimension involves seeking new experiences, trying different things, and being open to learning during travel.

Thrill (TR), Surprise (SP), Arousal Seeking (AS), Adventure (AT): This dimension encompasses seeking excitement, thrill, and adventure in travel experiences.

Relief from Boredom (BR) or Boredom Alleviation (BA): This dimension relates to seeking activities or experiences to alleviate boredom during travel.

Based on these four dimensions, vacationers document their experiences in online travel reviews. If a review includes terms related to any of these scales, it is labeled as Novelty Seeking (NS) with a label of 0. Reviews that do not contain terms from these scales are designated as Non-Novelty Seeking (NNS) with a label of 1. This methodology allows for the classification of online travel reviews based on the presence or absence of novelty seeking behaviour.

IV. RESULTS AND DISCUSSION:

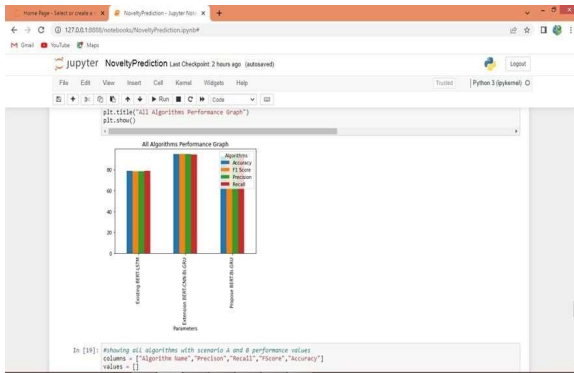Fig 1. Codes and Output Screens with blue comments

Fig 2. Comparison of Algorithm Extensions

The names of the algorithms are on the x-axis, while various coloured bars on the y-axis show the metrics of accuracy and other performance indicators; the extension achieved excellent results across the board.

Fig 3. Output

You can see the TEST data in the output before the arrow sign =➜, and the anticipated output as Novelty Wanting or Non-Novelty seeking after the extension model predicts it. The process begins with reading TEST reviews, then converts them to BERT characteristics.

V. CONCLUSION

This work demonstrates the potential of deep learning to automatically process massive amounts of travel-related online evaluations by using a theory-based classification of NS personality traits. It proves that personality traits can be consistently and automatically identified with the use of advanced computer techniques. But there are a few problems with this research. A number of abstract dimensions are included in the concept, and the NS dimensions are not predetermined. Not only is there the simple two-category approach for novelty recognition, but there is also multicategory recognition that depends on the number of dimensions on the scale. Some potential areas for further research include NS user categorisation, improving the understanding of user portraits, precision marketing, and optimising a travel destination recommendation system based on NS personality.

VI. REFERENCES

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