Mapping the Landscape of Service Robots in Hospitality: A Bibliometric Analysis

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Target conference topic: Assessing research impact on technological development and innovation in hospitality.

Abstract

In recent times, the sector of robotic hospitality has undergone considerable growth and diversification, positioning itself as one of the most relevant and rapidly expanding economic fields globally. As a result of its increasing significance, it is imperative to conduct an analysis and synthesis of the existing literature on this subject over the past years. To achieve this objective, this bibliometric analysis examines the publications indexed in the Web of Science bibliometric database on the topic of `service robots` within the `Hospitality, Leisure, Sport, and Tourism` categories. The study retrieved 111 publications through a search query conducted on March 8, 2023, with the time range of analysis limited to 2017-2023. After considering the findings and reviewing the extensive literature available, we have reached a point where we can now present our primary conclusions. Among all Web of Science categories, Hospitality, Leisure, Sport, and Tourism accounted for 5% of all publications and ranked eighth. The study identified Chinese funding agencies as the most frequent funding source, alongside institutions from the USA, UK, Bulgaria, Turkey, and Macau. Ivanov, S. and Seyitoglu, F. had the most individual contributions, with 9 and 5 articles, respectively. The International Journal of Contemporary Hospitality Management and the International Journal of Hospitality Management published the most articles, with 23 and 21, respectively. In addition to providing a bird's-eye view of the emerging field through a literature map, the study also aims to investigate the top ten most cited articles in the category with a focus on ethics versus impact. This study offers valuable insights into the current state of service robots in the hospitality industry and a foundation for future research.

Keywords: Service Robots, Hospitality, Bibliometric Analysis

Introduction

Methodology

On Mar 08, 2023, Web of Science delivered 2 888 results on a query with "service* robot*" in all fields. The star (*) placed at the end of the word in this type of search query ensures that all word variants with different endings are included in the results. Of these, 2 252 results were publications dated since the year 2013. The Hospitality Leisure Sport Tourism category was ranked 8th with 111 publications (Table 1). 2017 marked the frontier publications, where a gradual increase in the number of publications was observed, with the year 2022 marking the highest with 47 publications (Figure 1).

Table 1. Web of Science Top Ten Categories of Publications

| Categories	Record Count	% of 2,252
Robotics	884	39.254%
Engineering Electrical Electronic	476	21.137%
Automation Control Systems	272	12.078%
Computer Science Information Systems	258	11.456%
Computer Science Artificial Intelligence	236	10.480%
Telecommunications	207	9.192%
Instruments Instrumentation	156	6.927%
Hospitality Leisure Sport Tourism	111	4.929%
Management	107	4.751%
Business	106	4.707%
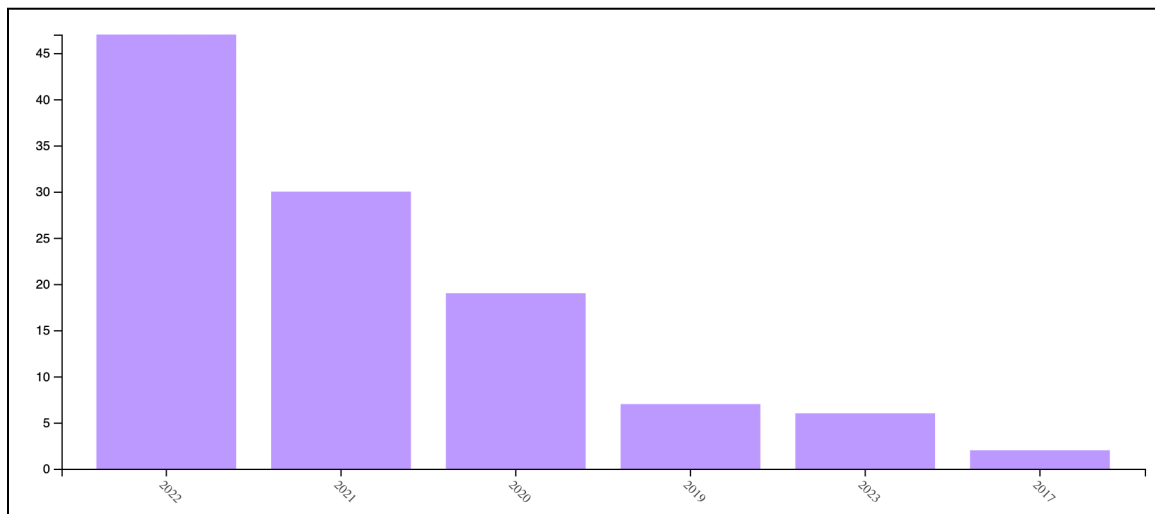
Figure 1. Yearly Distribution of the Number of Publications

Analysis and Findings

Retrieved data indicated that the National Natural Science Foundation of China, the National Natural Science Foundation of Guangdong Province and Fundamental Research Funds for the Central Universities placed China as the most prominent country with its funding resources devoted to the research published in the Hospitality Leisure Sport Tourism category. On the other hand, affiliations from other parts of the globe hosted some of the highest numbers of publications (Table 2). Institutions from the USA, the UK, Bulgaria, Turkey and Macau have been listed among such hosts.

Table 2. Top Ten Affiliations hosting the highest number of publications.

Affiliations	Record Count	% of 111
HONG KONG POLYTECHNIC UNIVERSITY	10	9.009%
PENNSYLVANIA COMMONWEALTH SYSTEM OF HIGHER EDUCATION	9	8.108%
VARNA UNIVERSITY OF MANAGEMENT	9	8.108%
UNIVERSITY OF SURREY	8	7.207%
SUN YAT SEN UNIVERSITY	7	6.306%
PENNSYLVANIA STATE UNIVERSITY	6	5.405%
PENNSYLVANIA STATE UNIVERSITY UNIVERSITY PARK	6	5.405%
BALL STATE UNIVERSITY	5	4.505%
MARDIN ARTUKLU UNIVERSITY	5	4.505%
UNIVERSITY OF MACAU	5	4.505%

Ivanov, S. and Seyitoglu, F. contributed most to the category with 9 and 5 publications, respectively (Table 3). International Journal of Contemporary Hospitality Management and International Journal of Hospitality Management published 23 and 21 articles, respectively, placing them as the titles of the publications with most of the articles (Table 4).

Table 3. Top Ten Authors with most publications

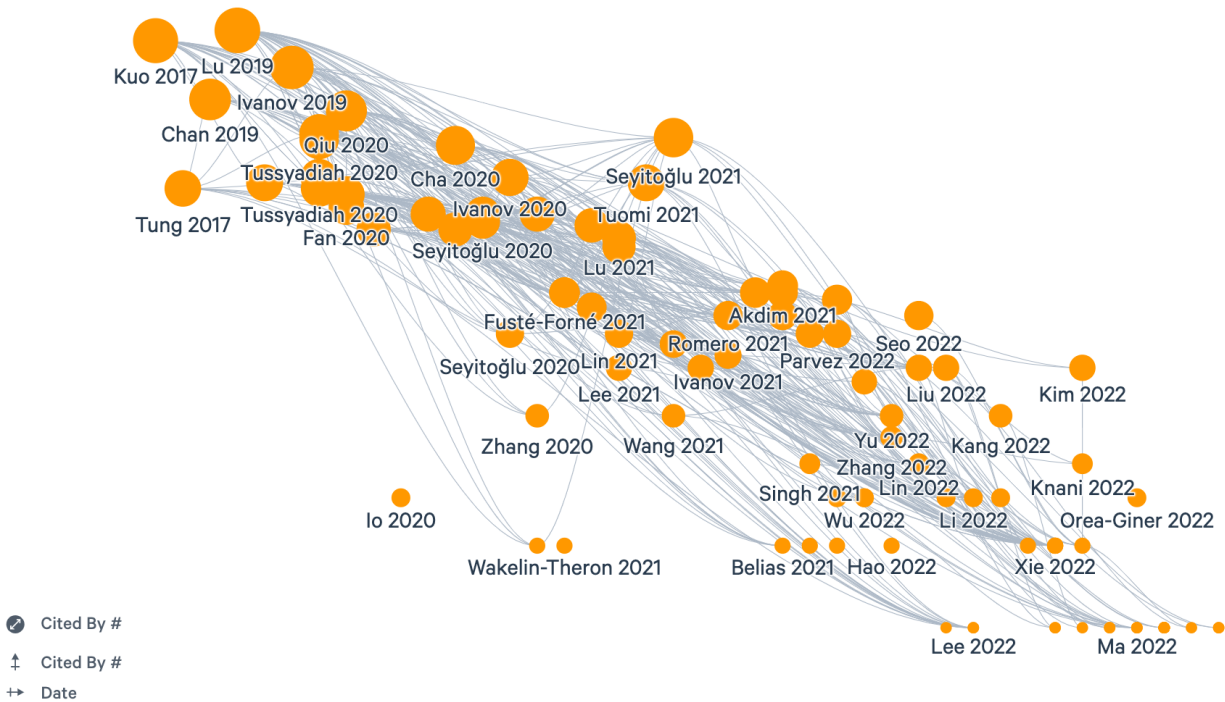| Authors	Record Count	% of 111
Ivanov S	9	8.108%
Seyitoglu F	5	4.505%
Tuomi A	4	3.604%
Webster C	4	3.604%
Xie LS	4	3.604%
Choi M	3	2.703%
Choi Y	3	2.703%
Kim S	3	2.703%
Li DM	3	2.703%
Liu X	3	2.703%

Figure 2. Map of the past literature

Table 4. Top Ten Journals with the most publications

Journals	Record Count	% of 111
INTERNATIONAL JOURNAL OF CONTEMPORARY HOSPITALITY MANAGEMENT	23	20.721%
INTERNATIONAL JOURNAL OF HOSPITALITY MANAGEMENT	21	18.919%
ANNALS OF TOURISM RESEARCH	9	8.108%
JOURNAL OF HOSPITALITY AND TOURISM TECHNOLOGY	7	6.306%
JOURNAL OF HOSPITALITY MARKETING MANAGEMENT	7	6.306%
TOURISM MANAGEMENT	6	5.405%
TOURISM MANAGEMENT PERSPECTIVES	4	3.604%
CORNELL HOSPITALITY QUARTERLY	3	2.703%
JOURNAL OF HOSPITALITY AND TOURISM MANAGEMENT	3	2.703%
TOURISM REVIEW	3	2.703%

Table 5.Top Ten Most Cited Articles

Title	Authors	Source Title	Year	DOI	Total Citations
Developing and validating a service robot integration willingness scale	Lu, Lu; Cai, Ruiying; Gursoy, Dogan	INTERNATIONAL JOURNAL OF HOSPITALITY MANAGEMENT	2019	10.1016/j.ijhm.2019.01.005	215
A review of research into automation in tourism: Launching the Annals of Tourism	Tussyadiah, Iis	ANNALS OF TOURISM RESEARCH	2020	10.1016/j.annals.2020.102883	162

Research Curated Collection on Artificial Intelligence and Robotics in Tourism					
Investigating an innovative service with hospitality robots	Kuo, Chun-Min; Chen, Li-Cheng; Tseng, Chin-Yao	INTERNATIONAL JOURNAL OF CONTEMPORARY HOSPITALITY MANAGEMENT	2017	10.1108/IJCHM-08-2015-0414	150
The potential for tourism and hospitality experience research in human-robot interactions	Tung, Vincent Wing Sun; Law, Rob	INTERNATIONAL JOURNAL OF CONTEMPORARY HOSPITALITY MANAGEMENT	2017	10.1108/IJCHM-09-2016-0520	135
Progress on robotics in hospitality and tourism: a review of the literature	Ivanov, Stanislav; Gretzel, Ulrike; Berezina, Katerina; Sigala, Marianna; Webster, Craig	JOURNAL OF HOSPITALITY AND TOURISM TECHNOLOGY	2019	10.1108/JHTT-08-2018-0087	121
Enhancing hospitality experience with service robots: the mediating role of rapport building	Qiu, Hailian; Li, Minglong; Shu, Boyang; Bai, Billy	JOURNAL OF HOSPITALITY MARKETING & MANAGEMENT	2020	10.1080/19368623.2019.1645073	121
Service robots in hotels: understanding the service quality perceptions of human-robot interaction	Choi, Youngjoon; Choi, Miju; Oh, Munhyang (Moon); Kim, Seongseop (Sam)	JOURNAL OF HOSPITALITY MARKETING & MANAGEMENT	2020	10.1080/19368623.2020.1703871	98
Service robots as a tool for physical distancing in tourism	Seyitoglu, Faruk; Ivanov, Stanislav	CURRENT ISSUES IN TOURISM	2021	10.1080/13683500.2020.1774518	87
Multifaceted trust in tourism service robots	Park, Sangwon	ANNALS OF TOURISM RESEARCH	2020	10.1016/j.annals.2020.102888	86
Examining the effects of robotic service on brand experience: the moderating role of hotel segment	Chan, Ambrose Pak Ho; Tung, Vincent Wing Sun	JOURNAL OF TRAVEL & TOURISM MARKETING	2019	10.1080/10548408.2019.1568953	86