



HAL
open science

Leveraging app features to improve mobile app retrieval

Messaoud Chaa, Omar Nouali, Patrice Bellot

► **To cite this version:**

Messaoud Chaa, Omar Nouali, Patrice Bellot. Leveraging app features to improve mobile app retrieval. International Journal of Intelligent Information and Database Systems, 2021, 14 (2), pp.177. 10.1504/IJIDS.2021.114530 . hal-03521201

HAL Id: hal-03521201

<https://hal.science/hal-03521201>

Submitted on 11 Jan 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Leveraging app features to improve mobile app retrieval

Messaoud Chaa*

Department of Computer Science,
Faculty of Exact Sciences,
University of Bejaia,
06000 Bejaia, Algeria
and
Research Center on Scientific and Technical Information,
CERIST,
Ben Aknoun 16030, Algiers, Algeria
Email: mcha@cerist.dz
Email: chaa.messaoud@gmail.com
*Corresponding author

Omar Nouali

Research Center on Scientific and Technical Information,
CERIST,
Ben Aknoun 16030, Algiers, Algeria
Email: onouali@cerist.dz

Patrice Bellot

Aix Marseille University,
Université de Toulon,
CNRS,
LIS,
Campus de Saint Jérôme,
Marseille, France
Email: patrice.bellot@univ-amu.fr

Abstract: The continued increase in the use of smartphones and other mobile devices has led to a substantial increase in the demand for mobile applications. With the growing availability of mobile apps, retrieving the right application from a large set has become difficult. However, the existing term-based search engines tend to retrieve relevant apps based on query terms rather than considering app features really required by users, such as functionalities, technical or user-interface characteristics. The novelty of this paper lies in extracting app features from app description and social users' reviews, extracting user-requested features and matching between them to get the feature-based score. In addition, we propose effective techniques that extract and weight features requested in the query. Finally, we combine Feature-based and term-based scores together to obtain the app

relevance score. The experimental results indicate that the proposed approach is effective and outperforms the state-of-the-art retrieval models for app retrieval.

Keywords: app retrieval; feature extraction; social information retrieval; natural language processing; NLP; feature-based score; term-based score.

Reference to this paper should be made as follows: Chaa, M., Nouali, O. and Bellot, P. (xxxx) ‘Leveraging app features to improve mobile app retrieval’, *Int. J. Intelligent Information and Database Systems*, Vol. x, No. x, pp.xxx–xxx.

Biographical notes: Messaoud Chaa is currently a PhD student at the Abderrahmane Mira University, Bejaia, and a research assistant at the Research Center on Scientific and Technical Information (CERIST), Algiers. He was awarded Magister degree from the Abderrahmane Mira University, in 2013. His research interests include information retrieval, machine learning and social networks.

Omar Nouali is currently the Director of Research and the Head of the Security Department at the Research Center on Scientific and Technical Information (CERIST), Algiers, Algeria. He received his PhD in Computer Science from the University of Sciences and Technology Houari Boumediene, Algiers, Algeria, in 2004. His research interests include information filtering and computer security.

Patrice Bellot is a Professor of Computer Science at the Aix-Marseille University since 2011 and a scientific representative at CNRS/INS2I in charge of Text and Data Mining. He is currently the Scientific Director of the OpenEdition Lab which works on text mining for Humanities and Social Sciences and the Head of the DIMAG Team at the Laboratoire d’Informatique et Systèmes (AMU-CNRS). He obtained his PhD in 2000 and his HDR in 2008. His research topic are artificial intelligence, information retrieval, text mining and natural language processing (sentiment analysis, content-based recommendation, question-answering) based on statistical machine learning approaches. He is a co-author of more than 100 publications, member of ACM, IEEE CS, ATALA and the Vice President of ARIA, the French Scientific Society on Information Retrieval.

1 Introduction

The use of smartphones and other mobile devices is on the rise. This has led to increase the demand for mobile applications (apps); there were about 28.7 billion downloads in the second quarter of 2019 combined Global Apple App Store and Google Play Store (Statista, 2020c). On the other side, the number of apps available for download in Google Play Store was about 2.9 million (December 2019) (Statista, 2020b) and was about 2.2 million in Apple App Store (Statista, 2020a) (January 2017). Therefore, an efficient app search system is essential.