

**Alexis Quesada-Arencibia
José Carlos Rodríguez
Roberto Moreno-Díaz
Roberto Moreno-Díaz jr.
Gabriel de Blasio
Carmelo Rubén García (Eds.)**

EUROCAST 2019

Computer Aided Systems Theory

EXTENDED ABSTRACTS

**17th International Conference on Computer Aided Systems Theory
Las Palmas de Gran Canaria, Spain, February 2019**

**Seventeenth International Conference on
COMPUTER AIDED SYSTEMS THEORY**

EUROCAST 2019

Edited by

Alexis Quesada-Arencia
José Carlos Rodríguez-Rodríguez
Roberto Moreno-Díaz and
Roberto Moreno-Díaz jr.
Gabriel de Blasio
Carmelo Rubén García

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Technical Secretariat

Instituto Universitario de Ciencias y
Tecnologías Cibernéticas
Universidad de Las Palmas de Gran Canaria
Campus de Tafira
35017 Las Palmas de Gran Canaria, Spain

Phone: +34-928-457108

Fax: +34-928-457099

E-mail: euroccast@iuctc.ulpgc.es

Preface

The Eurocast Conferences are particularly unique among the European Scientific-Technical Congresses because it is one of the few periodic meetings that is promoted and organized exclusively by university and socio-cultural institutions, without the tutelage, direction or funding of associations, professionals or companies. It is currently the oldest of those. It is celebrated every two years. Initially, alternating Las Palmas de G.C. and a university in continental Europe, and since 2001, always in Las Palmas de G.C.

The idea of the first Eurocast was developed in 1988 by Prof. Franz Pichler, of the University of Linz and Prof. Roberto Moreno, at a meeting in Vienna promoted by the present Honorary President, Dr. Werner Schimanovich. The first meeting, Eurocast 1989, took place in February of that year, in Las Palmas School of Industrial Engineers, promoted by the Faculty of Informatics of Las Palmas and the Institute of Systems of the University of Linz. The Opening Session took place in the town of Gáldar, February 26th, 1989.

Obviously, one may expect to make now, at least briefly, a reflection of what we intended then to be Eurocast and what it is.

Science, and especially Technology, have moved in an almost vertiginous way, driven by the need and the promotion of consumerism, associated with the change of values that has been printed in the new generations. And Eurocast, within what we understand as a certain freedom, and with prudence, has been adapting the profile of its organization from a meeting of very specific specialists, to a practically multidisciplinary, flexible and changing conference, which in each event try to attract the experts and especially young researchers, facilitating the interaction between them, which is a generator of creativity.

When Prof. Pichler and Prof. Moreno considered the call for Eurocast 30 years, they wrote an invitation, which appears on the web, and which is approximately reproduced here, to reflect where it is, according to the initial objectives.

"The key to the success of Eurocast for 30 years has been in the quality of the contributions of its participants. This has to be recognized in the first place. They have made possible, with the help of the Springer Verlag publications in Computer Science, the worldwide distribution of the most important effect of Eurocast: that of joining together for many years, scientists and engineers of ages, training, interests and from very different European and non-European institutions. And that they could share their experiences in the design and analysis of systems using the most advanced mathematical methods to make efficient models and algorithms in computers. And this from the socio-economic, biological, medical technologies and sciences and information and communication engineering topics. All in a multidisciplinary atmosphere, which has facilitated the appearance and discussion of new and creative ideas and developments "

In this open multidisciplinary spirit, the 2019 edition consists of 12 major thematic blocks, which sweep a broad spectrum of cutting-edge research in computer and systems sciences and technologies, including the modelling of social, biological and technical, stochastic systems, the methods of programming complex systems, the advanced processing of signals and artificial vision, the simulation and modelling of tourist flows, intelligent transport systems, robotic systems and virtual reality, signal processing and technological applications in biomedicine.

Among the about 150 submissions of papers to participate in the Conference, around 128 have been selected and will be presented and defended by their authors during the four days of scientific sessions. Among them, we will proceed to a final selection, after the Conference, which will be published by Springer Verlag and distributed to the scientific community.

But, again, the kernel of the success of Eurocast lays in the right proposals of subjects for Workshops, their resonance and impact, their diffusion and their strict selection of the many intended contributions, all by the Workshops Chairpersons. They are Eurocast.

Three invited Plenary Conferences are presented: the first, by Prof. Cull from the University of Oregon, known expert in Biomathematics, from the pioneer school that created the concept. The second, by Prof. Stiller, from the Technological Institute of Karlsruhe, one of the first European experts in Intelligent Transport. And the third, by the distinguished Austrian mathematician Prof. Buchberger, discoverer of procedures that have allowed the solution of problems in robotics, cryptography, computer design and software verification.

Special thanks to our hosts, partners and most of all, friends, colleagues of Elder Museum.

The Eurocast 2019 Conference, in line with its 30 years of history, once again offers an opportunity for Canary, Spanish, European and global science and technology for openness and international relations, which will benefit our society. Welcome to **Eurocast 2019-30years.**

Las Palmas de Gran Canaria, February 2019.
The Editors.

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Promentor – Data Mining Applied to Job Search

J.C. Rodríguez-Rodríguez, A. Quesada-Arencibia^[0000-0002-8313-5124], G. de Blasio^[0000-0002-6233-567X] and C.R. García^[0000-0003-1433-3730]

Institute for Cybernetic Science and Technology, University of Las Palmas de Gran Canaria
jrodriguez@iuctc.ulpgc.es

Abstract. Promentor is a solution that advises jobseekers on how to effectively improve their chances of obtaining employment in a specific field by focusing on what, at least historically, seems to have produced the best results.

First, Promentor analyses previous selection processes to quantitatively evaluate the value of the information provided by the candidates during the process. Promentor uses this evaluation to assess the value of the profile of the jobseeker who is requesting advice based on the information it contains. It then conducts a simulation by applying each suggestion to the profile and evaluating the results. In this way, it identifies which suggestions improve the profile the most.

Promentor is a module on the GetaJob.es employment website, which was developed in parallel and equipped with specific capabilities for capturing the data that Promentor requires.

Keywords: Data mining, job search, employment website, training.

1 Introduction

Those that seek to gain access to an increasingly competitive labour market will have to invest time, energy and resources in acquiring and perfecting knowledge, skills, abilities and experiences to succeed in employee selection processes. But what knowledge, skills, abilities and experiences are the most decisive factors in finding a job? How will jobseekers decide where to make the most effective investment of the time, energy and resources that are unavoidably limited?

Promentor is a solution that, based on intensive monitoring of selection processes, advises jobseekers on how to improve their chances of obtaining employment in a specific field by focusing on what, at least historically, seems to have produced the best results.

Data mining can be a very useful job search tool since jobs and jobseekers tend to be characterised by sets of descriptors. A jobseeker's CV can be assimilated into a collection of descriptors, and an offer of employment is usually expressed in terms of conditions and descriptors. With regard to job searches, we may find thousands of jobseekers applying for hundreds of job offers over time. It becomes clear that there are an enormous number of descriptors in play. Data mining techniques could identify which descriptors are the most sought after amongst job offers, or which jobseeker descriptors

are most frequently found amongst the candidates that most quickly enter the labour market [1].

The applied strategy is based on the analysis of real selection processes that have already been completed and the candidate profiles that were assessed during those processes. During the learning phase, Promentor immersed itself in these profiles, extracting their information in order to discern the most popular common patterns of greater and lesser success. A classical data mining technique was used for this [2, 3]. The result of this process provides Promentor with the ability to quantitatively assess jobseeker profiles in terms of their chances of success.

Equipped with this evaluation capacity, Promentor responds to a request for advice from a jobseeker by exhaustively simulating and assessing the possible modifications that can be made to the jobseeker's current profile. These evaluations enable us to build a ranking in terms of benefit (but not cost/benefit) that shows us which changes in the profile of the jobseeker would most help them attain their goals, at least according to their selection process history. This ranking is the basis of the recommendation that Promentor offers to the jobseeker.

The current implementation of Promentor operates within an employment website as an independent and decoupled module. This website, which was developed in parallel, has been specifically adapted to meet certain needs of Promentor. For example, the breakdown of personnel selection processes. The candidate profiles are broken down and categorised by the human recruiter in different stages. The website captures these categorisations, which are transferred to Promentor to feed its analysis. The website also has a tool for describing training with generic tags that are critical to the performance of Promentor. Tagging is done by the community of users and validated by the administrators of the website.

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