

DEVELOPING AUTOMATED INFORMATION SYSTEM TO ENHANCE MEDICAL STAFF RECRUITMENT

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Automated information systems for recruiting medical personnel address critical challenges by optimizing the search for highly competent specialists, key to high-quality healthcare. To recommend the best matches, these systems efficiently analyze extensive candidate data, including skills, education, experience, and specialization. This enhances the efficiency and objectivity of hiring, reducing time and resource expenditure. Additionally, automation improves medical institutions' overall productivity by minimizing human factors' influence on candidate selection.

In our work, we analyzed existing information systems in medical personnel recruitment [1,2,3], identified key parameters for searching for medical staff, and designed a system for automating the recruitment process. A prototype of the automated information system was developed, which provides the capability to administer the hiring process for medical personnel.

The implemented system is a web application tailored for recruitment companies specializing in medical staff selection. Medical institutions can submit candidate search requests based on specific profiles. Recruiters can then review these requests, access the candidate database, and propose the most suitable options. The automated system further assists by generating a list of candidates most likely to match the requirements, leveraging statistical data from past requests and successful hires.

The working prototype was tested through 50 experiments utilizing test data. During these experiments, 50 requests were processed, yielding 500 automatically recommended candidates. Data on the speed of generating recommendations were collected, and the candidates were evaluated for compliance with request requirements. Table 1 illustrates examples of the requests employed in the testing, built upon the key parameters we identified.

Table 1 – Candidate search requests for testing.

Parameter	Request #1	Request #2	Request #3
Position	Nurse	Neurosurgeon	Trichologist
Field/Direction	Surgery	Neurosurgery	Dermatology
Preferred Gender	Male	None	None
Age Range	30–55	45–66	31–60
Hourly Rate Range	59–151	87–127	96–189
Education Level	Tech School/ADN	Master's	Master's
Duration of Experience	5	8	6
Languages	DE, IT, PT	FR, PL	UA, ES

The results from testing our prototype are presented, featuring automatically suggested candidates based on key parameters: feedback and ratings, the status of similar requests (closed or accepted), and details of similar requests and accepted candidates, as shown in Table 2.

Table 2 – Results of automatic request processing.

Name	Field	Education	Age	Gender	Experience	Languages	Rate
Request #1. Time: 0.6 sec., total number of candidates: 500, number by specialization: 37							
D. Smith	Surgery	ADN	40	Male	15y	DE, IT, ZH	92
D. Johnson	Surgery	ADN	42	Male	11y	DE, PL, UA	96
A. Johnson	Surgery	ADN	30	Male	7y	PT, DE	113
R. Smith	Surgery	ADN	32	Male	5y	DE, ES	60
Request #2. Time: 0.3 sec., total number of candidates: 500, number by specialization: 23							
V. Wilson	Neurosurgery	Doctor	55	Male	15y	FR, PL, EN	99
J. Taylor	Neurosurgery	Doctor	47	Female	10y	FR, DE	212
J. Wilson	Neurosurgery	Master's	45	Female	11y	PL, EN.	126
M. Jones	Neurosurgery	Master's	44	Male	5y	PL	90
Request #3. Time: 0.4 sec., total number of candidates: 500, number by specialization: 31							
I. Mitchell	Dermatology	Doctor	33	Male	7y	EN, UA, DE	90
D. Williams	Dermatology	Master's	36	Female	9y	FR, UA	86
D. Davis	Dermatology	Doctor	48	Male	5y	DE, UA	83
A. Simons	Dermatology	Master's	31	Female	3y	DE, AR	73

The average time for automatic candidate selection was 0.4 seconds over 50 experiments. This is considered a very satisfactory outcome, as the system efficiently generates N candidates matching the specified request parameters within this brief interval. By comparing these candidates to those previously hired for similar requests, the system significantly accelerates the candidate search process, outperforming manual methods that require handling large volumes of data.

Some details of the system were published in [4]. Currently, we are working on studying the system's effectiveness.

References:

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