ELECTION OF GOVERNMENT MINISTERS

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CONTENTS

ABSTRACT

The executive branch (the government) is usually not directly elected by the people, but is created by another elected body or person such as the parliament or the president. As a result, its members are not directly accountable to the people, individually or as a group.

We propose a scenario where government members are directly elected by the people, and seek to achieve proportional representation in the process.

We propose a formal model for the allocation of K offices, each associated with a disjoint set of candidates contesting for that seat.

A group of voters provides ballots for each of the offices. Since using simple majority voting for each office independently may result in minority preferences being completely ignored, here we adapt the greedy version of proportional approval voting (GreedyPAV) to our framework.

In the article Electing the Executive Branch[1] you can find an in-depth explanation of the model and a demonstration - through computer-based simulations - of how voting for all offices together using this rule overcomes this weakness and upholds the axiom of proportionality.

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1 INTRODUCTION

Consider a scenario in which a government in a country has to be populated; i.e., there should be elected members of the government like the minister for health, the minister for education, etc. Usually this assignment process is done via a non-participatory process . In this paper we will detail the problem and how we implemented the solution mentioned in the article[1], by building a website that makes the solution accessible to voters. We will present a survey that simulates the scenario mentioned above and analyze its results.

2 THE PROBLEM WITH THE CURRENT ELECTION SYSTEM

In most democratic countries, the selection of ministers in the government is done through coalition agreements or by the prime minister/president. As a result, the voter has no direct influence on the formation of the government and the choice of ministers, and the government ministers are elected in a way that does not always reflect the will of the voters.

3 METHOD

In this section, we will describe the way we chose to realize the solution to the problem mentioned in the previous section. We used the GreedyPAV algorithm[1] and set up a website[2] that makes the use of the algorithm accessible to voters.

3.1 GreedyPAV

The GreedyPAV voting rule devised and published by Rotvik Page, Ehud Shapiro and Nimrod Talmon in 2021 is used for multi-winner elections and is known to be proportional to that framework. The GreedyPAV algorithm maintains the 'Global Justified Representation' definition which means for each subset of voters of a certain size that agrees on at least one candidate there is a selected candidate that they agree on.

This algorithm receives as input the list of offices to be occupied, a list of candidates for each of the offices and the list of votes of each of the voters.

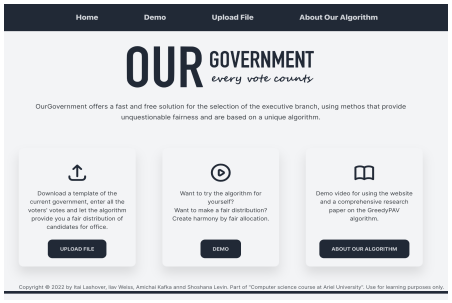
The algorithm gives weight to each pointer and when the pointer is provided its weight is reduced which ensures that in the next round, the weight of the pointers that have not yet been provided will be higher.

Finally, the algorithm emits the selected candidate for each of the offices.

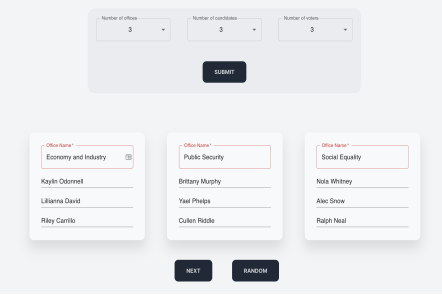
3.2 ourGovernment

Our Government is a web application that makes the use of the Greedy PAV algorithm accessible to voters. Our web application contains two main features:

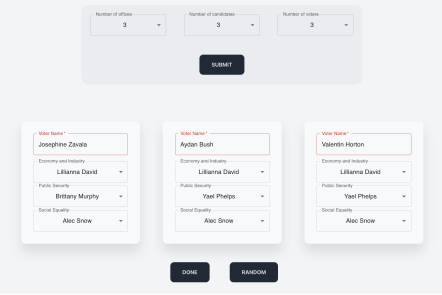
- Using the proposed election system that supports a limited number of voters (demo). The user enters the names of the offices and the names of the candidates for each of the offices, then the user enters the preferences of the voters and finally the algorithm returns a table showing the candidates selected for each of the offices. In addition, the user is provided with an in-depth explanation of the proportionality and correctness of the allocation.
- Using the algorithm for an unlimited number of voters by uploading a file containing all the offices, candidates and citizens' votes.



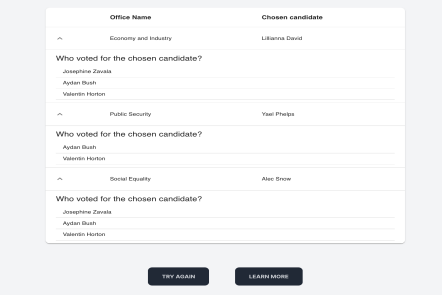
(a) OurGovernment HomePage.



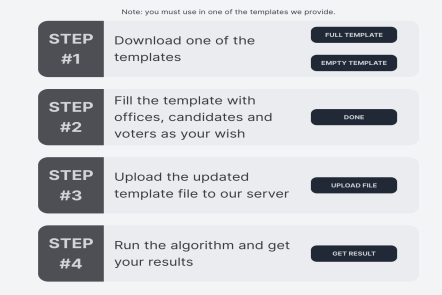
(b) Demo: Entering offices and candidates.



(c) Demo: Entering votes.



(d) Demo: Algorithm results.



(e) UploadFile: The steps to be followed to upload the file.

Figure 1: Some pictures from OurGovernment web application.

4 SURVEY

After in the last sections we discussed the importance of the algorithm and its implementation, now, we would like to make sure that the algorithm does solve the problem mentioned on the previous page. To do this, we conducted a survey for a representative sample of 300 citizens who have the right to vote in Israel. In the next sections we will present the survey we conducted, its results and their analysis.

4.1 Introducing the survey

This survey proposes a system for selecting ministers in the government, while implementing an innovative algorithm that ensures that the ministers represent the entire public. The purpose of the survey is to check how well the results of the algorithm proportionally and fairly represent the preferences of the voters. Each participant was asked to answer the questions according to what he would do if the elections were held today, and in the manner that best reflects his opinion today. All participants may not answer all or part of the questions in the survey.

The survey consists of two parts:

4.1.1 First part: Choosing preferences for each office.

In this part, two questions will be presented to each survey participant.

- In the **first question** we present the problem, describe to the participant the current election system in the State of Israel (coalition elections) which do not directly represent all voters. We then present the alternative we propose to the current system in which members of the government are directly elected by the people, and promise to achieve proportional representation of all the voters as part of the elected government. After that, each participant was asked whether the alternative we offer is better than the method used today?
- In the **second question**, we present to each of the participants a list of 12 ministries in the government where each ministry has four candidates.

  Note: We note that the selection of candidates for each of the offices was done by us and does not necessarily reflect the wishes of the candidates. The survey was conducted in the run-up to an election period in the country, so we compiled the lists of candidates in a proportional way according to the estimated number of mandates each party received (according to the most updated election surveys as of the day the survey was sent). That is, suppose there is an estimate that one of the parties will receive 30 mandates (which is a quarter of the number of mandates in Israel) then 12 of the 48 candidates for the 12 ministries will be members of this party.

  Each participant in the survey must choose his preferred candidate for each of the offices.

After the 300 participants answered the first part of the survey, the results reach us (the personal identity of the participants is discreet), we enter the preferences of all participants into the algorithm and receive the final results.

4.1.2 Part two: presenting the results of the algorithm to the participants.

In this section, two additional questions are presented to the participants.

- In the first question, we present to them the distribution of the elected ministers to each of the ministries according to the algorithm and point out to them that this distribution is fair and proportional. That is, each group in the population receives proportional representation according to the size of the group. Should each participant in the survey indicate how satisfied he is with the distribution received.
- In the second question, according to the results of the algorithm, each participant was asked whether the method for allocating government ministers that we propose is superior to the current system.

4.2 Survey results

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4.3 Analysis of survey results

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5 CONCLUSIONS

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REFERENCES

[1] Rutvik Page, Ehud Shapiro, and Nimrod Talmon. Electing the executive branch. *Fair distribution algorithm*, 2021.

[2] Itai Lashover, Liav Weiss, Amichai Kafka, and Shoshana Levin. Ourgovernment. https://our-government-front.herokuapp.com/, 2022.