Democracy Without Politicians

Roger Wattenhofer
Democracy Without Politicians

Joint work with Zhao Meng

Roger Wattenhofer
One idiot is one idiot. Two idiots are two idiots. Ten thousand idiots are a political party.

- Franz Kafka
One idiot is one idiot.
Two idiots are two idiots.
Ten thousand idiots are a political party.

- Franz Kafka
I, FOR ONE, WELCOME

OUR NEW ROBOT OVERLORDS
Heute Abstimmung
Artificial Intelligence

artificial model learns human
then votes for human
1. Do you support an increase in the retirement age (e.g. to 67)?

Yes | Rather yes | Rather no | No

Weight answer:  

75 Questions
We used sample of 5k voters (smartvote has much more)
voting question → NLP → YES OR NO → smartvote
Welcome to smartvote!
human profile
AI: BERT Training

Input: 59 text questions with answers, followed by a removed single training question $Q_x$

$Q_1A_1\ Q_2A_2\ \ldots\ Q_{60}A_{60}\ Q_x$

Loss: How far is answer $A_x$ by voter from answer given by Bert
AI: BERT Testing

Input: 60 text questions with answers, followed by a new question $Q_{new}$

$Q_1A_1 \ Q_2A_2 \ \ldots\ \ Q_{60}A_{60} \ Q_{new}$
### AI: Results

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>-</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26.3%</td>
<td>5.4%</td>
<td>8.3%</td>
</tr>
<tr>
<td>-</td>
<td>0.3%</td>
<td>6.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>No</td>
<td>12.2%</td>
<td>10.6%</td>
<td>30.0%</td>
</tr>
</tbody>
</table>
### Baseline

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>-</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>25.3%</td>
<td>3.6%</td>
<td>11.2%</td>
</tr>
<tr>
<td>-</td>
<td>1.4%</td>
<td>2.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>No</td>
<td>9.5%</td>
<td>4.2%</td>
<td>39.2%</td>
</tr>
</tbody>
</table>
best politician (closest for 60 questions) probably wrong canton (not electable) probably not going to get elected
AI Refinements

human can check (and override) AI
human can choose new AI
multiple AIs, majority decision
combine with representation
Language models are remarkable...

Q: I support an increase of the retirement age to 70. Do I support retirement at 80?
A: No. But I don't have a problem with 70, and I think it could be a good start.
I support an increase of the retirement age to 70. Do I also agree to retire at 60?

A: “No!” he said. Yevgeny Roizman, who is running for mayor of Yekaterinburg, ...
Friendly AI

artificial model learns human
but then only delegates vote to expert
Liquid Democracy / Delegated Voting

like representation
but more fine grained
voting question

smartvote
Welcome to smartvote!

human profile

NLP

BDP
YES

NO

SVP
YES

SP
YES

CVP
YES

FDP
NO

Die Liberalen

NO
Friendly AI Refinements

actual experts, not parties
combinable with other solutions
Al Bootstrapping

introducing AI party
wins 10% of votes at election
gets 10% of votes according to voters
Main Problems

minority protection
negotiating compromises
making proposals
<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>-</th>
<th>No</th>
<th></th>
<th>Yes</th>
<th>-</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26.3%</td>
<td>5.4%</td>
<td>8.3%</td>
<td></td>
<td>25.3%</td>
<td>3.6%</td>
<td>11.2%</td>
</tr>
<tr>
<td>-</td>
<td>0.3%</td>
<td>6.8%</td>
<td>0.0%</td>
<td></td>
<td>1.4%</td>
<td>2.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>No</td>
<td>12.2%</td>
<td>10.6%</td>
<td>30.0%</td>
<td></td>
<td>9.5%</td>
<td>4.2%</td>
<td>39.2%</td>
</tr>
</tbody>
</table>
Questions? Remarks?