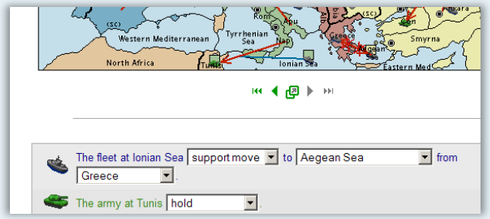
webDiplomacy and AI Research

A summary of webDiplomacy with regard to supporting AI research: Our background, contributions so far, and capabilities, with the hope that the project will continue to benefit AI R&D .

Background

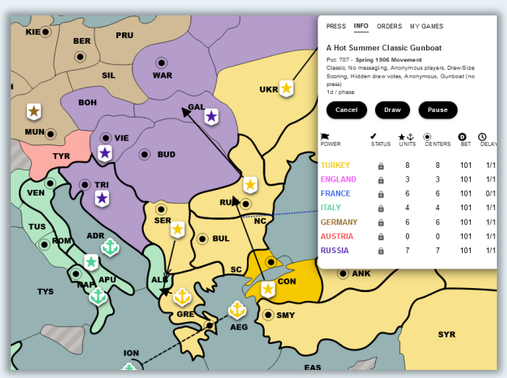
Started in 2005 as a student project, webDiplomacy continued on from other open-source projects that previously brought Diplomacy to new platforms, like e-mail judges developed in the 80's based on text orders.

webDiplomacy brought Diplomacy to "Web 2.0" in 2005. Bringing maps, selectable orders, community forums, rankings, etc, exposing the game to new players and providing a hub for existing players.



It caught on and has continued to develop as a hobby project over time: Developers adding features; forking translation / variant sites; moderators managing cheaters/abuse; and a community of players adding to an ever growing library of games, and donating funds to maintain the infrastructure.

Being involved in computer science as much as Diplomacy we suspected the huge database of Diplomacy games and correspondence could yield some interesting info, whether in Diplomacy or NLP.



MILA, Philip Paquette et al.

Various academic groups requested datasets and expressed interest fairly regularly since ~2010, without success, until in 2019 Philip Paquette's group from Mila managed to use the dataset to develop the first an AI that could beat most human players in games no-press / no-message games.

Press/message data was also provided under strict NDAs, as players' message information is considered as revealing their strategies and possible deception against other players.

As part of these efforts Philip Paquette started an API to allow bots to interact with the server, and used webDiplomacy to test and develop the AI against human players.

```
// Load API object, load API entries, parse API
$api = new Api();
$api->load(new ListGamesWithPlayersInCD());
$api->load(new ListGamesWithMissingOrders());
$api->load(new ListActiveGamesForUser());
$api->load(new GetGamesStates());
$api->load(new GetGameOverview());
$api->load(new GetGameData());
$api->load(new GetGameMembers());
$api->load(new SetOrders());
$api->load(new ToggleVote());
$api->load(new SetVote());
$api->load(new SendMessage());
$api->load(new GetMessages());
$api->load(new MessagesSeen());
$api->load(new MarkBackFromLeft());

$jsonEncodedResponse = $api->run();
// Set JSON header.
header('Content-Type: application/json');
// Print response.
print $jsonEncodedResponse;
```

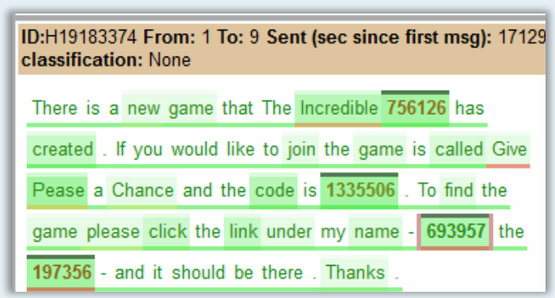
Paquette et al published his ground breaking work, and he has provided many no-press datasets from webDiplomacy to other researchers that have been used to the basis for other efforts, including DeepMind I think.

Unfortunately he wound things up at MILA so didn't go on to work on a full press bot.

Facebook AI Research / FAIR

FAIR began discussions with us a few months later about developing an AI that could communicate via press / message, based on the work started by MILA.

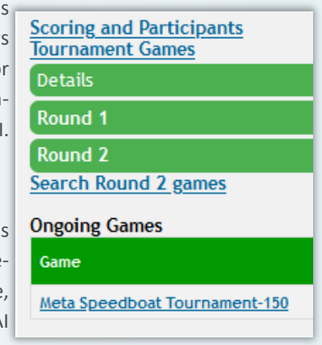
This required access to a large press / message database, so an agreement was reached where we would provide our press database under strict NDA and with thorough redaction. FAIR would provide funding, and contribute to modernizing the software.



Our cooperation with FAIR expanded a few times during the project, and we've both worked pretty closely on a few things .

We assisted FAIR with:

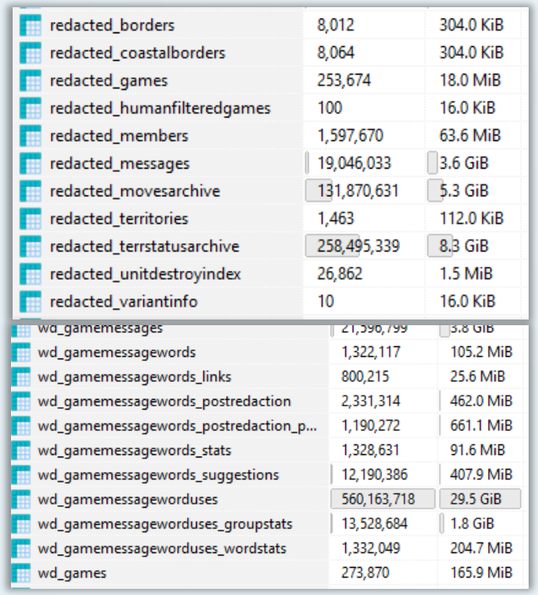
- Hosting tournaments where select players played against AI bots for rewards, allowing controlled testing of the AI. **(4) (5)**



- Organized paid interviews with our top players regarding AI performance, giving their evaluation of AI games.

- Human redaction of 100 games to provide an initial dataset of cleansed message data o work with.

- Automated ongoing redaction of the entire game database, using an NLP-based redaction system, provided in batches every month.



- Live whitelist based redaction of messages and bot API extensions, allowing FAIR to test their press AI (under supervision) against human players, without biasing the human players' gameplay or risking PII leaks. The live redaction testing page can be accessed here: **Live Redaction Demo**

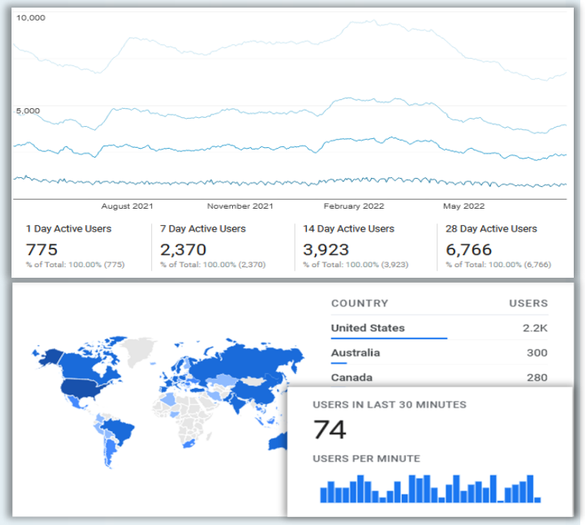
- Exclusivity and non-disclosure agreements to give their team the ability to take risks and time to work on other initiatives in parallel. *(Of course we've been released from this, or I wouldn't be discussing it, as they are now nearly ready to publish and want to encourage further research.)*

Looking forward

So those are the sorts of things we have helped with. Things you've mentioned like allowing bots to play on webDip but with changes to allow choice-based communication we haven't done, but are very doable.

Our goals in this area are:

- Continue contributing to AI/CS/NLP R&D, ideally via partnerships that prevent us needing donations / ads.
- Try to broaden the appeal with a very easy to pick up, quick-play AI based user experience, maybe lead more people into the community and grow our community further.



- Make the API better documented/understood/used. It's likely our fork sites like vDip/PlayDip will adopt it, and if widely used it would allow people to use their favourite client on their favourite server, cross-server games/ tournaments, etc.

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(1) Github API sourcecode (2) Bot/Server API JSON Spec (3) Sample redacted output available on request (4) Tournament guide (5) Recent tournaments