# The Ninth International Automated Negotiating Agent Competition (ANAC 2018)

Website: http://web.tuat.ac.jp/~katfuji/ANAC2018/
Held at IJCAI 2018 in Stockholm, Sweden, in July 2018 as part of the IJCAI competition track.

## Motivation, impact, and expected outcomes

The Automated Negotiating Agent Competition (ANAC) is an international tournament that has been running since 2010 to bring together researchers from the automated negotiation, multi-agent, and human-agent communities. ANAC provides a unique benchmark for evaluating practical negotiation strategies in multi-issue domains.

The previous competitions have spawned novel research in AI in the field of autonomous agent design which are available to the wider research community.

This year, we pose the following negotiation research challenges:

- **Repeated multilateral  negotiation for arbitrary domains** (Genius framework)
- **Negotiation strategies for the Diplomacy game** (Bandana framework)
- **Human-agent negotiation** (IAGO framework)

We invite innovative and novel agent strategies to compete in ANAC 2018. After the competition, submitted agents will be made available to the negotiation research community as part of a negotiating agent repository within the aforementioned frameworks. Both Genius and all

agents thus submitted will fall under the [GNU license agreement](#) GPL version 3.

The finalists are very welcome to submit an article explaining their negotiation strategy to the ACAN Workshop@AAMAS/IJCAI/ECAI/ICML 2018 and present their strategy at the workshop, which will be held in conjunction with IJCAI in Stockholm.

**Challenges (details at the [ANAC website](#))**

1. [Repeated multilateral negotiation for arbitrary domains](#)

In multilateral negotiation league,  entrants will to design and implement an intelligent negotiating agent, which negotiates with two opponents and is able to learn from its previous negotiations. The participants will develop their agents in the [GENIUS platform](#). Challenges regarding this league are to design winning strategies for bidding, opponent modeling and bid acceptance strategies when negotiating repeatedly with agents in a multilateral setting. More info [here](#).

2. Negotiation strategies for the Diplomacy game

In the Diplomacy game league, entrants to the competition have to develop a negotiation algorithm for the game of Diplomacy. Diplomacy is a strategy game for 7 players. Each player has a number of armies and fleet positioned on a map of Europe and the goal is to conquer half of the "Supply Centers". What makes this game very interesting and different from other board games, however, is that players need to negotiate with each other in order to play well. Players may team up and create plans together to defeat other players.

Every participant in this competition must implement a negotiation algorithm using [the BANDANA framework](#). This negotiation algorithm will

then be combined with an existing non-negotiating agent (the D-Brane Strategic Module) to form a complete negotiating Diplomacy player.

## 3. Human-agent negotiation

The Human-Agent Negotiation league  is proposed in order to further explore the strategies, nuances, and difficulties in creating realistic and efficient agents whose primary purpose is to negotiate with humans. Previous work on human-agent negotiation has revealed the importance of several features not commonly present in agent-agent negotiation, including retractable and partial offers, emotion exchange, preference elicitation strategies, favors-and-ledgers behavior, and myriad other topics.  To understand these features and better create agents that use them, this competition is designed to be a showcase for the newest work in the negotiating agent community.

The Human-Agent Negotiation competition will involve each entrant submitting an agent that will be tested against human subjects in a study run through the University of Southern California.  All agents must be compliant with [the IAGO](#) [(Interactive Arbitration Guide Online) framework](#) and API, which will allow standardization of the agents and efficient running of subjects on MTurk.  Agents will all be run on the same set of multi-issue bargaining tasks.
For details, you can contact [mell@ict.usc.edu](mailto:mell@ict.usc.edu).

**Prizes**

The prize money will be at least 1000 euros divided over the leagues. The prize will be shared among the top agents.

**Competition Schedule**

Deadline for submitting agents: ~~May 21st, 2018~~ => **May 31st, 2018**

Please fill out the intention form to participate (http://tinyurl.com/ANAC2018Intention) to be added to mailing list and receive updates and answers to frequently asked questions.

**References on ANAC**

Several papers have been published about the setup and results of previous ANAC competitions:

- The First Automated Negotiating Agents Competition (ANAC 2010) (ext. link)
- The Second Automated Negotiating Agents Competition (ANAC2011) (ext. link)
- Evaluating Practical Negotiating Agents: Results and Analysis of the 2011 International Competition (ext. link)
- A Baseline for Non-Linear Bilateral Negotiations: The full results of the agents competing in ANAC 2014 (ext. link)
- The Automated Negotiating Agents Competition, 2010-2015 (ext. link)

**Main Organising Committee:**

- Dr. Reyhan Aydogan, Ozyegin University & Delft University of Technology
- Dr. Tim Baarslag, Centrum Wiskunde & Informatica (CWI)
- Prof. Dr. Katsuhide Fujita, Tokyo University of Agriculture and Technology
- Prof. Dr. Takayuki Ito, Nagoya Institute of Technology
- Prof. Dr. Catholijn Jonker, Delft University of Technology

**League Organising Committee:**

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- Prof. Dr. Katsuhide Fujita, Tokyo University of Agriculture and Technology

- Dr. Dave de Jonge, Western Sydney University
- Johnathan Mell, The University of Southern California

## Website URL

For more details, please visit the competition webpage :

- http://web.tuat.ac.jp/~katfuji/ANAC2018/
- General ANAC website: http://ii.tudelft.nl/anac/