CSCI 3210:
Computational Game Theory

Cooperative/Coalitional
Game Theory

Ref: Ch 8 [EGT]

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House Republicans tout infrastructure funding they voted against

Democrats have been quick to criticize it as "voting no and taking the dough."

By Benjamin Siegel
January 24, 2022, 2:50 PM

THE LOWCOUNTRY'S
NEWS LEADER

Rep. Mace touts project funded by infrastructure bill she voted against

CARTA RECEIVES $26 MILLION IN FEDERAL FUNDING
REP. MACE TOUTS PROJECT FUNDED BY INFRASTRUCTURE BILL SHE VOTED AGAINST

By Blair Sabol and Patrick Phillips
Published: Jun. 28, 2023 at 10:01 AM EDT | Updated: Jun. 28, 2023 at 5:35 PM EDT

NORTH CHARLESTON, S.C. (WCSC) - Charleston Congresswoman Nancy Mace called the nearly $26 million federal grant for the Shipwatch Square Transit and Workforce Center project with CARTA a win for the Lowcountry, touting it as "one of the largest grants for this kind of facility."

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Johnson's Plan for Ukraine Aid Meets Republican Pushback, Muddying Its Path

The Republican speaker's strategy for moving foreign aid measures for Israel and Ukraine through the House has outraged many in his own party, increasing calls for his ouster.

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Speaker Mike Johnson has settled on a multipart plan that will require everything to go right for him this week to prevail. Anna Rose Layden for The New York Times

By Catie Edmondson
Reporting from the Capitol

April 16, 2024   Updated 10:02 p.m. ET

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Party	Party leader	Seats	Recommended[20]
Likud	Benjamin Netanyahu	32	Netanyahu
Yesh Atid	Yair Lapid	24	Lapid
Religious Zionist	Bezalel Smotrich	14	Netanyahu
National Unity	Benny Gantz	12	*No one*
Shas	Aryeh Deri	11	Netanyahu
UTJ	Moshe Gafni	7	Netanyahu
Yisrael Beiteinu	Avigdor Lieberman	6	*No one*
United Arab List	Mansour Abbas	5	*No one*
Hadash-Ta'al	Ayman Odeh	5	*No one*
Labor	Merav Michaeli	4	Lapid

Israeli government formation, November 2022

← May 2021   November 2022

Nominee	Benjamin Netanyahu	Yair Lapid
Party	Likud	Yesh Atid
Electoral vote	64	28

Prime Minister before election
Yair Lapid
Yesh Atid

Prime Minister After
Benjamin Netanyahu
Likud

The right-wing bloc of parties, led by Benjamin Netanyahu, known in Israel as the national camp, won 64 of the 120 seats in the elections for the Knesset, while the coalition led by the incumbent prime minister Yair Lapid won 51 seats.[9] The new majority has been variously described as the most right-wing government in Israeli history,[10] as well as Israel's most religious government.[11][12][13]

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"Traffic light coalition" in Germany

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Traffic light coalitions in other countries [edit]

Australia [edit]

> This section **does not cite any sources**. Please help improve this section by adding citations to reliable sources. Unsourced material may be challenged and removed. *(March 2024)* *(Learn how and when to remove this template message)*

In Australia, a "traffic light coalition" could refer to a coalition between the Labor Party, the Australian Greens and Australian Democrats. Though such a coalition was never formed, as Labor and the greens never formed a coalition until the 2010 Tasmanian state election. However, following the 2001 Australian Capital Territory general election, Labor formed a minority government supported by the Greens and the Democrats, the closest thing to a "traffic light" coalition ever experienced. In the lead up to the 2024 Tasmanian state election a coalition involving Labor, the Greens and the Jacqui Lambie Network was discussed.[15] The JLN is not a liberal party but rather a big tent populist party.[16]

Austria [edit]

In Austria, the term *Ampelkoalition* has been borrowed from Germany to describe a theoretical coalition of the Social Democratic Party of Austria (SPÖ), The Greens, and a liberal party. In the 1990s, this referred to the Liberal Forum (LiF). In the 2010s, the term reemerged to describe a theoretical coalition of the SPÖ, Greens, and NEOS – The New Austria, the latter of which is the successor to the Liberal Forum. NEOS's colour is pink, rather than yellow. [17]

Belgium [edit]

The Verhofstadt I Government of Belgium, headed by Prime Minister Guy Verhofstadt from 1999 to 2003, comprised liberals (the Flemish Liberals and Democrats and French-speaking Liberal Reformist Party), socialists (the Flemish Socialist Party and the French-speaking Socialist Party), and greens (the Flemish Agalev and the French-speaking Ecolo).[citation needed] However, as the political colours of the liberal parties were blue instead of yellow, it was known as the "purple-green" coalition.

Luxembourg [edit]

Following the 2013 general election in Luxembourg, negotiations started with the aim of forming a three-party coalition government comprising the Luxembourg Socialist Workers' Party (LSAP), the Democratic Party (DP) and The Greens in order to oust the Christian Social People's Party (CSV) of the incumbent Prime Minister Jean-Claude Juncker.[citation needed] This variant on the traffic light coalition is known as a "Gambia coalition" (German: *Gambia-Koalition*; Luxembourgish: *Gambia(-)Koalitioun, Gambiakoalitioun*), as the party colours match the flag of the Gambia,[18][19] and Luxembourg's liberal party (DP) uses blue as its party colour rather than yellow.

Romania [edit]

In Romania the term of traffic light coalition has recently been described as a coalition consisting of Social Democratic Party (PSD), National Liberal Party (PNL) and the Hungarian Democratic Union of Romania (UDMR/RMDSZ).[20] After political crisis of 2021 which resulted in the breakup of the center-right coalition between the PNL, the USR and the UDMR, a traffic light government was elected (also called the National Coalition for Romania) consisting of PSD, PNL and UDMR, Ciucă Cabinet.[21]

United Kingdom [edit]

In the United Kingdom the term has been used to describe a coalition between the Labour Party, the Liberal Democrats and the Green Party of England and Wales, notably that which has run the City of Lancaster district council from time to time, including from the 2019 election.[22][23]
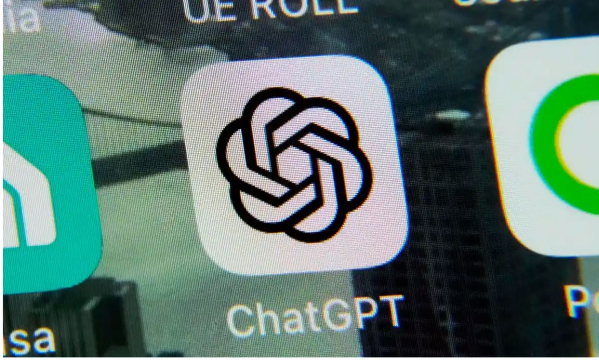
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Two US lawyers fined for submitting fake court citations from ChatGPT

Law firm also penalised after chatbot invented six legal cases that were then used in an aviation injury claim

Dan Milmo *and agency*

Fri 23 Jun 2023 05.14 EDT

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📷 The judge said one of the fake decisions had 'some traits that are superficially consistent with actual judicial decisions' but other portions contained 'gibberish' and were 'nonsensical'. Photograph: Richard Drew/AP

A US judge has fined two lawyers and a law firm $5,000 (£3,935) after fake citations generated by ChatGPT were submitted in a court filing.

A district judge in Manhattan ordered Steven Schwartz, Peter LoDuca and their law firm Levidow, Levidow & Oberman to pay the fine after fictitious legal research was used in an aviation injury claim.

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LAW

Michael Cohen says he unwittingly sent AI-generated fake legal cases to his attorney

DECEMBER 30, 2023 · 8:20 AM ET

By The Associated Press

Michael Cohen arrives at New York Supreme Court for former President Donald Trump's civil business fraud trial on Oct. 25, 2023 in New York. Cohen says he unwittingly passed along to his attorney bogus artificial intelligence-generated legal case citations he got online before they were submitted to a New York judge.
Yuki Iwamura/AP

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Artificial Hallucinations in ChatGPT: Implications in Scientific Writing

Monitoring Editor: Alexander Muacevic and John R Adler

Hussam Alkaissi[1,2,3] and Samy I McFarlane[3]

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Abstract   Go to: ▸

While still in its infancy, ChatGPT (Generative Pretrained Transformer), introduced in November 2022, is bound to hugely impact many industries, including healthcare, medical education, biomedical research, and scientific writing. Implications of ChatGPT, that new chatbot introduced by OpenAI on academic writing, is largely unknown. In response to the Journal of Medical Science (Cureus) Turing Test - call for case reports written with the assistance of ChatGPT, we present two cases one of homocystinuria-associated osteoporosis, and the other is on late-onset Pompe disease (LOPD), a rare metabolic disorder. We tested ChatGPT to write about the pathogenesis of these conditions. We documented the positive, negative, and rather troubling aspects of our newly introduced chatbot's performance.

Keywords: artificial intelligence and writing, artificial intelligence and education, chatgpt, chatbot, artificial intelligence in medicine
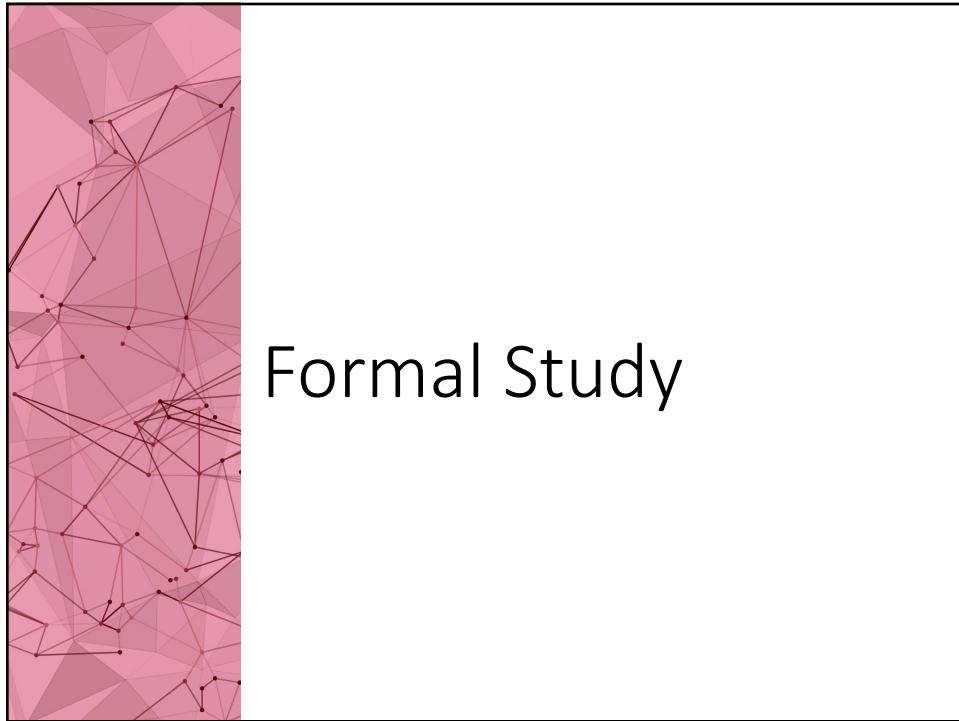
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Coalition formation

Q1. Which coalition will form?

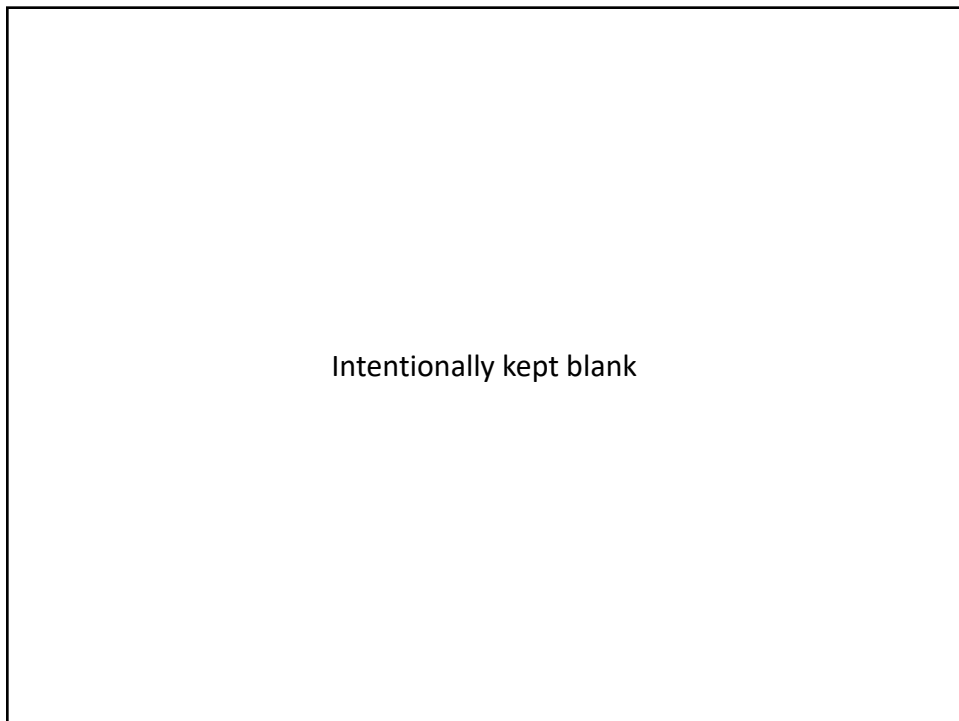## Q2. How should the coalition distribute its payoff among its members?

[Transferable utility model]

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Formal Study

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Intentionally kept blank

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Example: superadditive game

Need at least 50 seats to form a government and get a collective payoff of 100.

Party	Seats
A	45
B	25
C	15
D	15

We first show that B, C, and D are interchangeable.

$x_A = ?$

$x_B = X_C = X_D = ?$

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Shapley value of player i

# of sequences forming S

# of sequences forming N\S\{i}

$$\phi_i(N, v) = \frac{1}{N!} \sum_{S \subseteq N\setminus\{i\}} |S|!(|N| - |S| - 1)! \Big[v(S \cup \{i\}) - v(S) \Big]$$

Average over N! Sequences of grand coalition formation

Sum over all possible sets S

Player i's marginal contribution

S = Set of players arriving **before i**	Player i	N \ S \ {i} = Set of players arriving **after i**

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$$\phi_i(N, v) = \frac{1}{N!} \sum_{S \subseteq N \setminus \{i\}} |S|!(|N| - |S| - 1)! \Big[v(S \cup \{i\}) - v(S) \Big]$$

Party	Seats
A	45
B	25
C	15
D	15

|S| = 3: {B, C, D}
x_A = 1/4! [(1) 3! 0! (100 - 100)

+

|S| = 2: {B, C}, {C, D}, {D, B}
(3) 2! 1! (100 − 0)

+

|S| = 1: {B}, {C}, {D}
(3) 1! 2! (100 − 0)

+

|S| = 0: { }
(1) 0! 3! (0 - 0)]

x_A = 50

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$$\phi_i(N, v) = \frac{1}{N!} \sum_{S \subseteq N \setminus \{i\}} |S|!(|N| - |S| - 1)! \Big[v(S \cup \{i\}) - v(S) \Big]$$

Party	Seats
A	45
B	25
C	15
D	15

|S| = 3: {A, C, D}
x_B = 1/4! [(1) 3! 0! (100 - 100)

+

|S| = 2: {A, C}, {C, D}, {D, A}
(1) (3) 2! 1! (100 − 0)

+

|S| = 1: {A}, {C}, {D}
(1) (3) 1! 2! (100 − 0)

+

|S| = 0: { }
(1) 0! 3! (0 - 0)]

x_B = 16.66 = x_C = x_D

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