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Karlsruhe Institute of Technology

Game Theory and Behavioral Economics
(Bachelor + Master Seminar)

I. Topic Description

Game theory's strength lies in its mathematical precision and broad applicability. However, its predictions often diverge from real-world behavior in specific strategic situations. For example, in Prisoners' Dilemma and in Public Goods Games observed cooperation levels are higher than predicted. Similarly, in Dictator, Ultimatum and Bargaining Games, more equal allocations are observed than standard models suggest. In Dominance Solvable and Beauty Contest Games, there is a discrepancy of outcomes compared to the equilibrium prediction.

Where game theory's predictions fall short, behavioral economics steps in. By incorporating psychological insights and experimental evidence from lab and field experiments, it provides a deeper understanding of how people actually behave in strategic situations. Combining these two fields allows for the creation of models that not only describe but also predict behavior more accurately.

Coming back to the examples from before, some behavioral models add so called "social preferences" (preferences about the payoffs of others or the way of interaction) into the utility function. This can explain cooperative behavior and reciprocal actions of decision makers. Other models assume only limited cognitive abilities of the agents and relax the assumption of rationality and common knowledge of rationality. This also can explain why in some cases agents fail to play Nash equilibrium outcomes, in particular if there are many steps of iterations necessary.

In this seminar, you will explore prominent strategic situations through the lens of both game theory and behavioral economics. The goal is to understand how behavioral insights explain deviations from standard predictions and how these insights complement game theory to create more realistic models of human decision-making. As a basis we use Camerer's textbook *Behavioral Game Theory* (2003). This book contains a comprehensive list of topics covering the most common classes of games.

Participants are expected to work in small research groups of 2-3 people (exceptions possible). Each group will be handed out one topic corresponding to a chapter of the book. Groups are expected to thoroughly familiarize with the content of the chapter and further relevant literature.

In a second step, groups are expected to develop an own research idea related to their topic, which goes beyond the results/studies examined in the book. This can be a proposed extension of preexisting models or the analysis of further potentially relevant factors by experimental methods. (*Note:* Carrying out the experiment itself will not be part of the seminar.)

II. Organizational and Procedural Details

Application will be possible via the centralized platform **until October 6, 2024**. Please shortly describe your prior knowledge in the areas of game theory and behavioral economics as well as your motivation for participating in the seminar (3-4 sentences). Also add your current transcript of records.

The seminar starts with an **introductory meeting on October 23, 2024 at 2 pm** (KD2 Lab, "Teamraum A+B", 1st floor in building 01.85). The meeting is supposed to last for approx. 1-1.5h.

In the weeks after the introductory meeting, students will collaborate within their research group and receive feedback/support by the seminar instructors. Groups are expected to present their preliminary findings and research ideas during a **block seminar on January 13, 2025**. Each presentation should last approximately 20 minutes, followed by a discussion.

Full attendance in all meetings is required for successful participation in the seminar.

At the end of the semester, each group has to hand in a seminar paper (approx. 8 – 10 pages) summarizing the main findings of the topic and outlining their research ideas.

Prior attendance of the courses "Einführung in die Spieltheorie" and “Economics and Behavior” is helpful, but not required. For any further questions or clarifications, feel free to reach out to Dr. Hannes Rau (hannes.rau@kit.edu) or Dr. Frank Rosar (frank.rosar@kit.edu).

III. References

Camerer, C. F. (2003). *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton University Press.