

Seminar: Advanced Topics in Economics and Computation

- Kick-off Meeting -

Prof. Sven Seuken & Paul Friedrich

22.2.2023

Timeline

- **Kick-off meeting**
- Date: 22.02.2023, Time: 12:15-13:00
 - BIN.1.D.29
- **Presentation day** Date: 02.06.2023, Time: 9:00-17:00
 - BIN.1.D.29

Agenda

- Goals of the Seminar
- Some Logistics
- Quick Presentation of Topics/Papers
- Next Steps
- Questions

Goals of the Seminar

- Get a deep understanding of an advanced topic/paper in algorithmic game theory/economics and computation
- Focus on one technical paper (not an overview of ten papers!)
- Give a talk on this paper + lead discussion
- Act as a buddy to another student (also read paper, give feedback)

Prerequisites

- Successful completion of one of the following courses:
 - Introduction to Market Design (Pycia)
 - PhD Course: Market Design (Pycia)
 - Algorithmic Game Theory (Penna/Dütting/Widmayer)
 - Economics and Computation (Seuken)
 - Algorithmic Game Theory and Mechanism Design (Seuken)
- If you have not successfully completed one of these courses and if you have not acquired equivalent knowledge in another course (in algorithmic game theory, auction theory, mechanism design, matching markets, etc.), then you cannot attend this seminar! This rule is the same for all students; for fairness reasons, we have to apply it the same to all students!
- If you have not successfully completed one of these courses, but believe to have the necessary knowledge (in algorithmic game theory, auction theory, mechanism design, matching markets, etc.), please send a mail including **transcripts and short descriptions** of the relevant courses you have taken in this areas to seuken@ifi.uzh.ch and paul@ifi.uzh.ch

Attendance Limitation

- We will present 11 papers
- If too many students want to take the seminar, we will choose randomly among all students, maintaining a balance among students from ETH and UZH, giving preference to students who have pre-registered via the departmental seminar assignment system

Preferences on Topics and Buddies

- You will get the chance to submit your preferences on topics (and on topics for which you want to be a buddy)
- We will use RSD to assign 1) topics and 2) buddies

Paper Number	Details
1	Generative Adversarial Equilibrium Solvers (Supervisor: Michael Curry) https://arxiv.org/pdf/2302.06607.pdf
2	Performative Power (Supervisor: Michael Curry) https://arxiv.org/pdf/2203.17232.pdf
3	Learning Stackelberg Equilibria and Applications to Economic Design Games (Supervisor: Jakob Weissteiner) https://arxiv.org/pdf/2210.03852.pdf
4	Reinforcement Learning of Sequential Price Mechanisms (Supervisor: Ermis Soumalias) https://ojs.aaai.org/index.php/AAAI/article/view/16659/16466 (access via UZH VPN)
5	Transaction Fee Mechanism Design (Supervisor: Ermis Soumalias) https://arxiv.org/pdf/2012.00854.pdf
6	Reverse Auctions are different from Auctions (Supervisor: Paul Friedrich) https://www.sciencedirect.com/science/article/pii/S0020019019300560 (access via UZH VPN)
7	Optimal Auctions through Deep Learning (Supervisor: Paul Friedrich) http://proceedings.mlr.press/v97/duetting19a/duetting19a.pdf
8	Automated Dynamic Mechanism Design (Supervisor: Vinzenz Thoma) https://proceedings.neurips.cc/paper/2021/file/e995f98d56967d946471af29d7bf99f1-Paper.pdf
9	Safe and Nested Subgame Solving for Imperfect-Information Games (Supervisor: Vinzenz Thoma) https://proceedings.neurips.cc/paper/2017/file/7fe1f8abaad094e0b5cb1b01d712f708-Paper.pdf
10	The Good Shepherd: An Oracle Agent for Mechanism Design (Supervisor: Barna Pásztor) https://arxiv.org/pdf/2202.10135.pdf
11	Artificial Intelligence, Algorithmic Pricing, and Collusion (Supervisor: Barna Pásztor) https://pubs.aeaweb.org/doi/pdfplus/10.1257/aer.20190623 (access via UZH VPN)

Next Steps (1/4): Assignment of Topics

- We will put these slides online on my teaching website within next 2 hours: <https://www.ifi.uzh.ch/en/ce/teaching/spring2023/seminar.html>
- Until tomorrow night (23.2.2023), 23:59, send an email to Paul Friedrich (paul@ifi.uzh.ch) containing the following information:
 - Name
 - Matrikelnummer (e.g., 18-123-456) (ETH/UZH)
 - Completion of AGT/E&C course (when?) or explicit consent of instructor?
 - Ordinal preferences for papers, with indifferences (e.g., 3a, 3b, 3c):
 - 1) Number of Paper A (most preferred)
 - 2) Number of Paper B
 - 3a) Number of Paper C
 - 3b) Number of Paper D
 - 3c) Number of Paper E
 - 4) Number of Paper F (least preferred)
- We will use *the random serial dictatorship (RSD) mechanism* to assign topics to students
- We will send you your assigned topic, + the list of all assigned topics

Next Steps (2/4): Assignment of Buddies

- Within 24h, you need to confirm your participation in the seminar!
- Additionally, you need to send us your buddy topic preferences from among the list of all topics that were given out, using the same format as before.
- We will use the reverse RSD order from the paper assignment round to assign buddies, and send you your buddy topic assignment
-> if you “lose” in the papers round, you “win” in the buddy round.
- All assignments will also say who is the advisor for that topic

Next Steps (3/4): Preparing a Manuscript + Talk

- Read your paper
- Read related papers as far as necessary to understand the main paper
- Write manuscript (~10 pages), like a „speaker’s manuscript“, i.e., how would you present it during the seminar (e.g., motivation, formal model, selected most interesting proofs)
→ see <https://www.ifi.uzh.ch/ifi/en/ce/teaching/spring2023/seminar.html> for details and examples!
- **Send your manuscript to your buddy + to the advisor (Prof. Seuken, PhD student) 4 weeks before your talk (by 05.05.2023)**
- **Meet with advisor and buddy ~3 weeks before your talk to receive feedback**
- Meet with buddy to do practice talk and receive additional feedback on manuscript and practice talk
- **Two nights before the seminar day: submit final version of manuscript! (so by 31.05.2022)**
- Give talk (20min) + lead discussion (10min), on
 - **Friday, 02.06.2023, between 9:00 – 17:00; location: BIN.1.D.29**
 - Participate actively in the discussions of the other talks
- Notes on giving the talk:
 - It is important that you give the talk „freely“ (do NOT „read“ from the speaker’s manuscript!!)
 - You can use a whiteboard talk or PPT slides

Next Steps (4/4): Acting as a Buddy

- Read the paper of your buddy
- Read the manuscript of your buddy before the meeting with the advisor
- In the meeting, show that you have a good understanding of the paper and the manuscript, and give feedback on the manuscript!
- Later, meet again with buddy, give more detailed feedback on manuscript, attend practice talk, give detailed feedback on practice talk, and on slides, etc.
- Be active in the discussion part of the seminar

Grading will be based on

- Presentation: 40%
- Manuscript: 30%
- Buddy: 20%
- Seminar participation: 10%

Questions?

- More information: <http://www.ifi.uzh.ch/ce/teaching/spring2023/seminar.html>
- More questions? → email: paul@ifi.uzh.ch

- Sample manuscripts from previous years:
 - [Vitor Bosshard's manuscript](#)
 - [Adrian von Schie's manuscript](#)

- Some useful pointers:
 - How to read a paper:
 - [Focus questions](#) to help identify the main contributions of a paper, a
 - [Survival kit](#) for reading the technical sections, and a
 - [Three-pass approach](#) to tie it all together.
 - How to give a talk:
 - [These two](#) articles have a number of good suggestions.
 - [This video](#) is pretty good as well.