26th Summer School of the Institute Vienna Circle

12–16 July 2027, Vienna

Rational Machines:

Exploring the Frontiers of AI Reasoning in the Age of Large Language Models

https://summerschool-ivc.univie.ac.at/

Call for Applications

Application deadline: 15 January, 2027
Notification of acceptance: 15 March, 2027

Lecturers

- Gregor Betz (Karlsruhe Institute of Technology)
- Kyle Richardson (University of Tübingen)
- Nora Heinzelmann (Heidelberg University)

Course Description

Large language models and the agentic systems built on them increasingly deliberate, argue, weigh evidence and make decisions. AI research that aims to improve these capacities relies, often implicitly, on normative standards of good reasoning. These are questions philosophers have studied for a long time: what counts as truthful or coherent belief, as sound inference, as faithful explanation. AI reasoning has become a field where philosophical accounts of rationality can be put into practice, tested and revised, and where philosophical expertise can help to understand and improve real systems.

This hands-on summer school prepares researchers and students with a background in philosophy and/or AI to work at this intersection. Participants learn to read and analyze research papers and technical reports in AI reasoning, to identify the epistemic and logical standards these assume, and to propose improvements or alternatives. They also learn how empirical findings about AI systems can count as evidence for or against general normative accounts, and how to plan and carry out such empirical research themselves.

The school combines morning lectures that give an overview of each day's theme with seminars that go into exemplary topics in depth, some of them proposed and presented by participants. In the afternoons, participants work in small groups on projects that run through the whole week, for example building a benchmark or an AI agent, reproducing a research paper, or implementing and testing a philosophical account of rationality. The week closes with project presentations. The

curriculum responds to participants' backgrounds and interests: applicants are invited to suggest project ideas or to bring their own project, and lectures and seminars are adapted to the projects chosen.

Topics (preliminary)

- Rationality and irrationality in philosophy, including non-ideal accounts of reasoning
- Large language models: pre-training, fine-tuning and reinforcement learning
- Evaluation and benchmarking of AI systems, and their limitations
- Mechanistic interpretability
- Design patterns of agentic AI: from language models to multi-agent systems
- AIs as rational decision makers: accuracy, calibration, deliberation and reason-responsiveness
- Back-tracking and self-correction in AI reasoning; reflection and self-knowledge in AI
- AIs as epistemic inquirers: AI for science, belief coherence and consistency
- Inference and argumentation in AI systems
- Epistemic cooperation and trust in multi-agent systems; scalable oversight through debate

Who Should Apply

We welcome applications from graduate students and postdoctoral researchers in philosophy, especially those working in epistemology and logic. We equally encourage applications from early-career researchers in computer science, machine learning, cognitive science and related fields who are interested in working with philosophers on questions of AI reasoning.

Participants should be open to working with AI systems and code (e.g. Python, Jupyter notebooks). Advanced programming skills or machine learning experience are not required. Project groups are formed so that participants with different backgrounds can complement each other.

How to Apply

Applications are submitted via the online form on the Application page (https://summerschool-ivc.univie.ac.at/application/) and should include:

- A letter of motivation
- A short project pitch (max. 300 words): an idea for a group project or a project of your own that you would like to work on during the school
- A brief questionnaire on your background and interests (e.g. experience with Python and machine learning, topics you would most like to work on)
- Transcript of undergraduate/graduate marks
- Copy of your last degree
- Name, affiliation and email address of a referee (no letter of recommendation needed)

Application form and further information

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USS-SWC operates under the academic supervision of an International Program Committee of distinguished philosophers, historians, and scientists. Its members represent the scientific fields in the scope of USS-SWC, make contact to their home universities and will also support acknowledgement of courses taken by the students. The annual summer school is organised by the Institute Vienna Circle of the University of Vienna. (https://wienerkreis.univie.ac.at/)

Find information about our exchange programme with Duke University (North Carolina) here: https://international.univie.ac.at/en/international-cooperation/university-wide-partnership-agreements/north-america/

Inquiries

Administrator
Valentina Kantner
Institute Vienna Circle
summerschool.ivc@univie.ac.at

Scientific director
Tarja Knuuttila
Institute Vienna Circle
tarja.knuuttila@univie.ac.at