



JGU RESEARCH CENTER

Algorithmic Intelligence as Emergent Phenomenon

funded by the **Carl Zeiss Stiftung**

CALL FOR PROPOSALS & MEMBERSHIPS

RESEARCH

The Emergent AI Center performs fundamental research in **machine learning** from an **interdisciplinary** perspective.

Data driven learning systems – natural and artificial – rely on inductive bias in order to generalize from limited sets of examples. Correspondingly, the research center aims at studying the **connection between naturally arising structures** and their understanding by **intelligent (learning) systems** and **algorithms**.

In the EAI center, researchers from various research backgrounds try to gain a better understanding how the phenomenon of intelligence is linked to the structure of the outer world.

BECOME A MEMBER

The Emergent AI Center is an interdisciplinary research center that is open to all researchers on JGU campus.

If you are interested in this area of research and would like to **actively participate** in the center's activities you should **become a member**. Please submit a short CV and letter of motivation to the EAI steering committee via emergent-ai@uni-mainz.de.

Do not hesitate to contact the steering committee or its members in case of any questions.

CALL FOR PROPOSALS

The EAI center will fund up to seven additional research projects that aim improving the understanding of statistical learning, algorithms, systems, or methods from an interdisciplinary perspective. Example topics include (not limited to):

- Machine learning and artificial intelligence
- Statistics and statistical learning theory
- Statistical and multi-scale physics
- Neuromorphic computing
- Biological adaptation and evolution
- Neuroscience
- Social systems and self-organization
- Big Data and learning algorithms



Research teams must consist of at least 2 PIs from different disciplines. It is recommended that one PI has a background in formal modeling or algorithms (such as mathematics, theoretical neuroscience, computational physics, computer science). External collaborators are welcome, but the PIs and the students funded must be affiliated with a research institution on JGU campus. Teams that do not yet receive funding from the center will be preferred. Proposals can request a PhD position (75% E13) for up to three years plus expenses.

Submission deadline: August 31, 2019

Subm. & contact: emergent-ai@uni-mainz.de

Details: <https://emergent-ai.uni-mainz.de/cfp>



**Emergent
Algorithmic
Intelligence**

STEERING COMMITTEE

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Details and Background Information

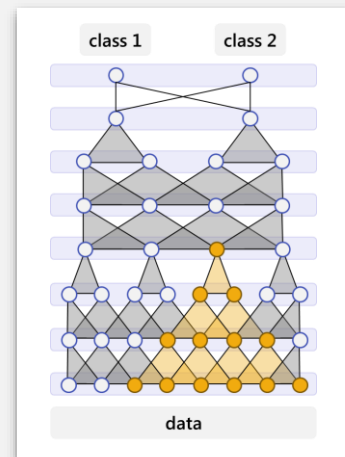


Call for Proposals for Research Projects

The emergent AI Center is seeking proposals for new research projects. The center is funding research projects that aim at a better understanding of intelligent systems, methods and algorithms, including both artificial and biological cognitive systems.

Project proposals must explain clearly that the proposed research has potential impact on either the understanding of intelligent systems and/or the design of new systems and methods.

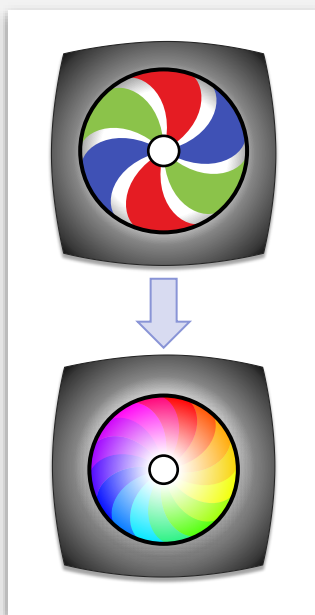
Addressing fundamental problems and attempting high-risk research is encouraged (proposals should still make sure that there is a reasonable likelihood to obtain concrete results in the funding period; a good mix of aspects of different risks is encouraged).



Interdisciplinary Perspective

Research teams must be composed interdisciplinary, with PIs from at least two different disciplines, and take an interdisciplinary research perspective. The goal of the research center is to link methods (for example, machine learning architectures and algorithms or biological architectures and mechanisms) to structural properties of the universe the learning system operates in. Important aspects could be adaptation and self-organization, statistical priors arising from natural dynamics, statistical coarse-graining and non-equilibrium statistics, biological mechanisms for adaptation and learning, non-standard/neuromorphic computing, or social and psychological mechanisms of learning and adaptation.

As the goal is to build models of how learning systems work, or devise new algorithms or physical systems for machine learning, it is encouraged to include an expert in formal and/or algorithmic modeling (for example, mathematics/statistics, theoretical neuroscience, computational or statistical physics, computer science, or machine learning) in each research team.



Seed Funding

The EAI center is funded for 5 years by the Carl-Zeiss-Foundation. Afterwards, we need to acquire funding from external sources. Accordingly, each project is required to outline a concrete plan on how follow-up funding can be secured if the project is successful (for example, via a "DFG-Sachbeihilfe" or an integration into a planned or existing collaborative research center).

Available Funds & Integration into the Center

Each research project can apply for 1 PhD position (max. 75% E13 position, max. 3 years) and additional costs (such as: travel costs, student research assistants, instrumentation, investment; investments must be made in the first year).

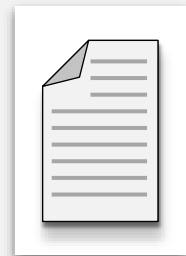
Each project is expected to present a talk at the yearly meeting of the center (with members of the advisory board), and must contribute to the reports to the Carl-Zeiss foundation.

Submission Format and Time-Line

Proposals should be written in English and outline the proposed research project in at most 5 pages (A4, 11pt text), excluding references. Please include a discussion of the research project, including its interdisciplinary approach and how the results will have impact on the understanding or improvement of intelligent systems, and a plan with requested funding, costs and a rough time-line detailing the financial requirements for a time period up to three years. In addition, please provide background information on the principal investigators and their track record (up to 2 additional pages per PI).

Submission: Proposals should be submitted as single-file PDF documents to the center office at emergent-ai@uni-mainz.de.

Deadline: Proposals must have been received by August 31 2019 for full consideration. Submitters will be informed about the outcome of the evaluation within 3 month after the deadline.



Start of funding: Funding is expected to start at the end of 2019.

Evaluation and Notification

Each proposal will be evaluated by independent reviewers and rated on a continuous scale from 1 to 5 (1 = *excellent*, 2 = *very good*, 3 = *good*, 4 = *fair*, 5 = *no funding recommended*). Projects with new PIs (new groups, new teams) will be preferred.

Questions and Advice

In case of further questions, all current members of the research center and, in particular, the members of the steering committee are available for advice and discussions:

Contact

emergent-ai@uni-mainz.de

WWW

<https://emergent-ai.uni-mainz.de>