Guidelines for ETH AI Center Doctoral Fellowships

October 2024

Overview

The ETH AI Center is ETH Zurich's central hub for artificial intelligence. It will lead the way towards trustworthy, accessible, and inclusive AI systems for the benefit of society.

The ETH AI Center brings together researchers of AI foundations, applications, and implications across all departments and disciplines. Starting with the involvement of more than 110 professorships, its own premises and fellowship programs, the center reinforces ETH's strong position in researching this key technology. The Center teams up with the best AI research institutions across Europe and beyond to accelerate progress, to support start-ups and industry collaborations, and to foster the next generation of AI researchers, transformational leaders, and entrepreneurs.

ETH AI Center Doctoral Fellows are expected to take advantage of the opportunities offered by the center. All Doctoral Fellows across various disciplines will be co-located at the premises of the ETH AI Center and collaboration with other disciplines is highly encouraged. The center also offers to strengthen their career path through an optional entrepreneurial or industry track that provides them with valuable hands-on experience to turn their research into practical impact.

Submission

Eligibility criteria

Candidates are expected to have completed a Master's degree in computer science, physics, engineering, applied mathematics, or other relevant fields. They must have an excellent track record and must meet the general admission requirements for a doctorate at ETH Zurich (available at https://www.ethz.ch/en/doctorate.html).

Application

Applications are encouraged from candidates with a keen interest in doing research on interdisciplinary AI topics. Each recipient of an ETH AI Center Fellowship will have the opportunity from two mentors from different fields and often different departments that are envisaged to carry equal weights in supervision.

In the application form, candidates can provide preferences for specific mentors and also have to select interest areas in AI foundations and application areas to get a better understanding of a potential research direction.

Candidates can select interest areas in **AI foundations** (AI theory, foundations, methods, and systems) including but not limited to:

- AI Edge and Networked Computing
- AI System Design, Engineering & Hardware
- Computer Vision & Machine Perception
- Fairness & Bias of AI Systems
- Human Computer Interaction
- Interpretability and Explainability
- Mathematical or statistical foundations of ML, AI, and Data Science
- Natural Language Understanding
- Neuroscientific Foundations
- Privacy-Preserving AI Systems
- Reinforcement Learning and Data-driven Control
- Safety, Reliability, and Robustness

In addition they select interest areas from **AI application areas** including but not limited to:

- AI for Healthcare & Medical
- AI for Social Good
- AI in Architecture and Construction
- AI in Education
- AI in Environment & Sustainability
- AI in Finance & Economics
- AI in Industrial & Manufacturing
- AI in Science & Engineering
- Augmented Reality & Human-Centered AI
- Computational Biology
- Computational Social Science
- Future of Work & Ethics, Social, and Policy Implications
- Interdisciplinary collaboration on foundations of data science
- Robotics & Autonomous Systems
- Smart Cities & Mobility
- Space Research and Exploration

Applications must be submitted through https://ai.ethz.ch/apply and need to include:

- a detailed CV including a list of publications and awards (if applicable)
- a short motivational letter (1-2 pages) outlining the research area of interest of the candidate
- scanned transcripts of certificates (Bachelor's degree, Master's degree, other degrees)

- a short video of yourself (2-5 minutes) in which you describe your research interests for the fellowship
- 2-3 reference letters to be submitted by the application deadline through the online application form
- (names and email addresses for 2-3 individuals who can provide reference letters. Please ask your referees to submit their reference letters within the application deadline.)

Calls for applications are published approx. once per year. and application is communicated on the ETH AI Center web page (https://ai.ethz.ch/).

Evaluation

Timeline of the evaluation procedure

Week	Task
0-7	Submission of applications
8-12	Assessment of applications by the ETH AI Center faculty members according to pre-defined criteria (see below)
14	Decision on short-listing of candidates by the ETH AI Center Doctoral Selection Committee
15	Invitation of short-listed candidates for an interview
17	Virtual symposium and interviews
20-21	Decision on selected fellows by the ETH AI Center Doctoral Selection Committee
22-24	Information of the applicants and the corresponding doctoral supervisors about the final decision via email.

The evaluation consists of two steps. First, the written applications will be evaluated by the Doctoral Selection Committee, the results of which will be communicated to the applicants within two months after the submission deadline. Candidates whose applications pass the first step will be invited to an interview (virtual or on-site).

In the interview, applicants will give a short presentation about a research project they have conducted (Master, Bachelor, internship, start-up, or otherwise). Subsequently, they will be asked questions about their scientific development to date, the proposed research area as described in the motivational letter, the particular strengths and skills they would add to the ETH AI Center, as well as about their future career plans. In some cases, candidates may be asked to solve problems or write a few lines of code during the interview.

In case of a positive decision, the candidates will be informed about their prospective doctoral supervisor, who will contact them regarding the matching with a second advisor for the interdisciplinary impact area, the start of the fellowship and the formulation of a detailed research plan.

In case of a negative decision, a resubmission for an ETH AI Center Doctoral Fellowship application is possible.

Evaluation criteria

The decision on receiving an ETH AI Center Doctoral Fellowship is based on a strict, quality-based evaluation process. Applications will be assessed against criteria mainly addressing the candidate's scientific aptitude. In addition, the synergy with an interdisciplinary impact area will be taken into consideration.

The criteria pertaining to the candidate's scientific aptitude are based on the CV, the letters of reference and the motivational letter and include:

- previous performance and potential
- track record relative to opportunities and career stage
- competence for the selected AI core area
- compatibility of the ETH AI Center Doctoral Fellowship with the career goals of the applicant
- the compliance of the research area of interest with the vision of the ETH AI Center

The criteria referring to the interdisciplinary impact area are based on the CV, the letters of reference, and the online application form and include strengths and skills relevant to:

- the selected interdisciplinary impact area
- working in an interdisciplinary team
- entrepreneurial or other technology transfer-related interests
- contributions to the center's community & culture

Funding

The duration of the ETH AI Center Doctoral Fellowship is initially three years. For Fellows with good progress it can be extended for a maximum of one year to complete the doctoral thesis (decision to be taken by the ETH AI Center Doctoral Selection Committee, without additional interviews).

ETH AI Center Doctoral Fellows will be employed according to the regulations of ETH Zurich. Salaries are paid according to the ETH standard (100%). The corresponding guidelines for doctoral education apply.

In order to be accepted as an ETH AI Center Doctoral Fellow, all requirements set out by the ETH Zurich Doctoral Administration have to be fulfilled (see https://www.ethz.ch/en/doctorate.html). ETH AI Center Doctoral Fellows will need to register as graduate students at ETH Zurich and - upon successful completion of their doctoral thesis – will be granted a doctoral degree by ETH Zurich. Details regarding the doctorate are governed by ETH regulations and committees.

Obligations

Selected ETH AI Center Doctoral Fellows are expected to start their fellowship by or before September 2025. Any amendments require approval from the ETH AI Center Executive Office.

ETH AI Center Doctoral Fellows need to obtain course credits and take part in the teaching activities of the ETH AI Center faculty.

To monitor progress and improve the program, ETH AI Center Doctoral Fellows are expected to provide documentation of the progress of their research project as required by the corresponding doctoral program at ETH Zurich as well as by the Center.

ETH AI Center Doctoral Fellows are expected to contribute to the ETH AI Center community and actively participate in workshops, summer schools and other events of the Center.

Other

The ETH AI Center seeks to increase the number of women in areas where they are underrepresented and therefore explicitly encourages women to apply. Furthermore, the ETH AI Center is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages respective applications.