Apple Scholars in AI/ML

2024 PhD Fellowship Nomination Guidelines

June 2023. For invited universities.

Contents

Introduction

Apple Scholars in AI/ML PhD fellowship program

The Apple Scholars in AI/ML PhD fellowship program recognizes the contributions of emerging leaders in computer science and engineering at the graduate and postgraduate level. The PhD fellowship in AI/ML was created as part of the Apple Scholars program to support the work of outstanding PhD students from around the world, who are pursuing cutting edge research in machine learning and artificial intelligence.

At this time, we are only able to review applications from students enrolled full time at an invited university. While you may share it with relevant departments at your university, **please do not share these guidelines outside of your university.**

Important Dates

A link to the nomination portal will be sent out on Monday, August 29.

Nomination window opens: Tuesday, August 22nd, 2023

Nomination window closes: Wednesday, September 15th, 2023

Decision announced: All nominees and nominating universities will hear back regarding the status of their nominations by January 2024.

Apple Scholars in AI/ML PhD fellowship: Award Details

The fellowship award is comprised of a generous monetary gift, mentorship, and potential internship opportunities.

All monetary gifts are directed towards the nominating university and disbursed annually at the beginning of each academic year, and are conditional upon the Scholar's full time enrollment in their program.

The award of the Apple Scholar in AI/ML PhD fellowship does not represent an employer/ employee relationship between Apple and the receiving university and/or selected student.

Universities receive the following in support of their selected Scholar(s):

North America

The monetary award will be directed to the nominating universities in the form of an unrestricted gift to fully support the nominee(s) selected, disbursed annually.

Please confirm with your university development or corporate relations office that they are willing to accept this gift structure before nominating students.

- Gift amount covering full tuition and fees (enrollment fees, health insurance) for (2) academic years
- $40,000 USD gift each year to help with living expenses and related expenses
- $5,000 USD gift each year to support research-related travel and associated expenses

Europe, Australia

The monetary award will be directed to the nominating universities in the form of an unrestricted gift to fully support the nominee(s) selected, disbursed annually.

Please confirm with your university development or corporate relations office that they are willing to accept this gift structure before nominating students.

Award amounts will vary by country.

- Generous stipend for (2) academic years to help with living expenses and related expenses
- $5,000 USD travel grant each year to support research-related travel and associated expenses

Asia-Pacific (Mainland China, Hong Kong, Japan, Korea, Singapore)

The monetary award will be provided in an annual funding structure determined directly with the university, either as a sponsored research agreement or an unrestricted gift.

- $25,000 USD stipend each year to help with living expenses and related expenses

- $5,000 USD gift each year to support research-related travel and associated expenses

Scholars will also receive:

- Mentorship with an Apple researcher

- Internship opportunities during their fellowship*

* Internship offers are dependent on student status, and contingent upon necessary requirements for employment being met according to relevant employment law.

Nomination Guidelines

We believe that technology for everyone should be made by everyone, and that research is strengthened by a diversity of perspectives and lived experiences. We aim to create an inclusive and equitable nomination process that amplifies underrepresented voices in the research community.

With that in mind, invited schools may nominate students per the following guidelines.

Nomination Rules

Invited institutions may nominate up to (**3**) PhD students pursuing research relevant to the research areas listed in the nomination guidelines.

Each nominated student must be submitted for a unique research area. We will not be accepting nominations for multiple students under a single research area from the same University.

We strongly encourage institutions to use at least (**1**) of the slots to nominate students who identify as a member of a traditionally underrepresented group in the technology industry.

An individual nominee's underrepresented group status will not be collected in the application, and applications will be reviewed based solely on the strength of the submitted materials.

What is an underrepresented group, and how is it defined?

An underrepresented group is typically defined as a group whose representation in a particular context is significantly lower than their group size in the wider population. In the US, the term underrepresented minority (URM) is used, and in the US technology industry it generally refers to those who identify as Black, Hispanic, Native American, Native Hawaiian, or Pacific Islander. Other underrepresented groups in the technology industry include women and non-binary individuals.

Underrepresented groups or communities may be defined differently by other industries and in other locations, and can change over time.

We leave it to the university and nominees to interpret and define "traditionally underrepresented group" within their own regional and cultural context.

Eligibility

Nominees must meet the following criteria to be considered:

- Nominee must be enrolled full time at the nominating university at the start of Fall 2024, and expect to be enrolled through the end of the 2024/2025 academic year

- Nominee should be entering their last 2-3 years of study as of Fall 2023

- Nominee must not hold another industry-sponsored full fellowship while they are an Apple Scholar in AI/ML (Fall 2024 to Summer 2026)

Decision Criteria

Nominations are reviewed and selected based on the strength of the research proposal, the impact the nominee has had on the field thus far (both as a researcher and community citizen), and their demonstrated potential as a leader and collaborator in the field.

When reviewing the research proposal, we consider the following:

Novelty of the proposal, scientific merit of the proposed approach, potential for impact, and alignment with research areas highlighted by Apple.

We also consider, in addition to the aforementioned research acumen, the unique perspective and experience each nominee brings to the field.

Required Materials

Universities should submit the following materials for each student's nomination:

- Student CV and publication list

- Research Abstract (*200 word maximum*)

- Research statement covering past work and proposed direction for next 2 years (*5 page maximum, including citations, in a legible font size*) clearly stating the hypothesis and expected contributions to the chosen research area. Personally identifiable information is redacted for phase one reviewers.

- 2 letter of recommendation, one from current advisor (*1 page maximum per letter*)

- Link to most recent published work (*optional*)

Documents must be submitted as PDF's with the file naming convention:

"Last name, First name: Research Statement"

"Last name, First name: Resume"

"Last name, First name: Letters of recommendation" *(this document should include both letters of recommendation.")*

Please also prepare to submit the nominee's **estimated tuition and fees** (including enrollment, health insurance, and books) for the nominee's 2023-2024 academic year (or PhD student salary / bursary stipend, if regionally appropriate).

The amount entered will be used for planning purposes only, and will not impact final Scholar selection.

Privacy Policy

- Nomination packet materials should not contain confidential or proprietary research.

- Remove or redact birth date and/or photographs of the nominee if they appear on submitted materials.

- All information submitted by your institution will only be used by Apple for the purposes of conducting the PhD Fellowship in AI/ML program, and will at all times be handled in accordance with Apple's Privacy Policy.

Research Areas

Nominees should be pursuing research in one or more of the following research areas. The subtopics listed under each research area are not meant to be exhaustive or prescriptive, but rather highlight areas of particular interest to Apple.

When entering a nomination, the nominator will be asked to select up to (**2**) research areas that the nominee feels are most aligned with their work.

There is no single research area that Apple prioritizes over another. We encourage schools and nominees to select the area(s) most relevant to the research.

Privacy Preserving Machine Learning

Privacy Preserving Machine Learning focuses on developing techniques to analyze data without compromising the privacy of individuals. At Apple, we believe that privacy is a human right. The goal of this area is to enable the sharing of data while ensuring that sensitive information remains protected.

Sub topics: federated learning, differential privacy, cryptographic tools, secure multiparty computation

Human Centered AI

Human Centered AI seeks to design, develop, and deploy AI systems that are aligned with human values and needs. Emphasizing the importance of involving human perspectives, feedback, and insights throughout the AI development process to ensure that the technology is beneficial to society.

Sub topics: social signal processing, ML for multimodal interaction, ML design and human factors, usable ML tools and products, interactive ML, model personalization, human-in-the-loop ML

AI for Ethics and Fairness

AI for Ethics and Fairness focuses on developing AI systems that are unbiased and ethical. Seeking to address issues such as algorithmic bias, discrimination, and transparency, in order to ensure that AI is used in a fair and just manner.

Sub topics: bias and fairness in AI, interpretable AI, introspection, robustness

AI for Accessibility

AI for Accessibility focuses on developing AI systems to help people with disabilities to interact with the world in new ways. Emphasizes the importance of creating inclusive technology that enables equal access and participation for all.

Sub topics: accessible user experiences, automatic personalization/adaptation, interactions via new or combined modalities, participatory design with people with disabilities

AI for Health and Wellness

AI for Health and Wellness on developing AI systems to improve healthcare outcomes and promote personal wellness. This involves the use of machine learning, statistics, and signal processing to analyze health data, support decision-making, and recommend personalized care.

Sub topics: ML and RL for mobile health, time series representation learning, physiology-informed machine learning, modeling multi-modal sensor data, causal modeling, human behavior

ML Theory

ML Theory focusses on understanding the mathematical foundations and theoretical properties of machine learning algorithms. ML Theory seeks to explain how and why different algorithms work, and to identify the limits of what can be learned from data.

Sub topics: understanding ML, generalization, physics-based ML, generative models, imbalanced data theory, out-of-distribution setting

ML Algorithms and Architectures

ML Algorithms and Architectures focuses on developing new algorithms, models, and architectures to improve the performance and efficiency of machine learning.

Sub topics: auto ML, model compression, architecture / search, optimization, model representation, interpretability, large-scale ML, foundation models, imbalanced data, unsupervised and self supervised representation learning, diffusion models

Embodied ML

Embodied ML focuses on developing intelligent agents that can learn to interact with the physical world through trial-and-error learning. Involving the integration of reinforcement learning with robotics, computer vision, and natural language processing to create agents that can perceive, reason, and act in the real world.

Sub topics: imitation learning, multi-output models, reinforcement learning for embodied ML, hardware/software integration, hardware aware ML training, inference and resource constrained ML

Speech and Natural Language

Speech and Natural Language focuses on developing algorithms and models to understand or generate spoken or written human language. This involve the use of statistical modeling and machine learning techniques such as deep learning to build systems that can interpret and respond naturally to human language.

Sub topics: speech recognition, text to speech, conversational and multi-modal interactions, machine translation, language modeling and generation, large language models

Computer Vision

Computer Vision is a field that focuses on developing algorithms and models to analyze and interpret visual information captured through digital interfaces. Techniques such as deep learning using convolutional neural networks and transformers enable the development of powerful systems that can recognize, classify, and semantically interpret visual data.

Sub topics: semantic scene understanding, video understanding , 3D scene understanding , efficient deep learning for computer vision, AI for content creation, continual learning, computer vision for AR/VR, computer vision with synthetic data, language and vision, computational photography, vision for robotics, foundation model for industrial machine vision, vision for industrial robotics

Information Retrieval, Ranking and Knowledge

Information Retrieval and Knowledge focuses on developing algorithms and models to extract, organize and infer meaningful information from large amounts of data and serve such information to satisfy user needs.

Sub topics: knowledge extraction and information retrieval, knowledge inference, large-scale graph data management, machine learning and data systems integration, search and ranking

Data-Centric AI

Data-Centric AI focuses on developing machine learning techniques to effectively manage, process, and analyze large volumes of data, while also ensuring data efficacy, efficiency, and fairness. This includes the creation and generation of high-quality datasets, through techniques such as synthetic data generation, data augmentation, and active learning, as well as the annotation and curation of data for machine learning models.

Sub topics: data efficacy, data efficiency, data generation, data fairness, synthetic data generation, dataset creation, data and annotation, active learning, ML-enabled data annotation, augmentation and curation, transfer learning with limited data, multi modal language models, unsupervised and weakly-supervised anomaly detection, Synthetic defect generation and simulation, sim2real transfer learning

Internships

Students selected to be Apple Scholars will be notified in late December / early January. Mentor introductions will be made leading up to the start of the 2024 academic year, to align with the start of the fellowship funding. Mentors and Scholars may start discussions for an internship the following summer (Summer of 2025) at this time, if desired.

However, Apple recognizes that all nominees are potentially outstanding candidates for internships, and we welcome the opportunity to explore ways to work with each of them beyond the fellowship program.

With this in mind, all of our nominees will be invited to apply for a summer internship at Apple once their nomination is submitted, so that they can immediately enter consideration for a summer 2024 internship with Apple.

Nominees interested in applying for an internship should do so ideally *after* their nomination and *before* **Friday, October 7.** *(If they apply before they are nominated, we encourage them to let us know at aiml_scholars@apple.com.)*

This is optional**.** Nominees may choose to **not** apply for an internship at the time of nomination. This will not impact their chance at the fellowship.

Once a nominee applies for an internship, the internship application review process will begin as usual while fellowship nominations are still being reviewed. These processes will happen separately.

Participation in the internship interview process, which may begin before fellowship awards are announced, does not preclude a nominee from accepting a fellowship offer if extended, and should not be considered an indication of whether a nominee will or will not be selected for a fellowship.

Apple's University Relations team connects students to Apple through internships and co-ops year round. Learn more here: https://www.apple.com/jobs/us/students.html

FAQ

How will the award be disbursed?

For all schools in North America, the fellowship award is given to the nominating university as an unrestricted gift.

For schools outside of North America, the fellowship award is given to the nominating university (or the US-based foundation that accepts gifts on behalf of the university) as an unrestricted gift.

For Schools in mainland China, funds will be distributed to the school as a sponsored research agreement unless otherwise discussed with the school..

Can students submit their own nominations?

No. Students should be nominated by their institutions, and have a member of the faculty or staff upload their application materials. Students will receive a consent email after their application is submitted, confirming that they agree to be nominated for the fellowship.

What if a student graduates before the two year fellowship is over?

The fellowship award is disbursed on an annual basis at the beginning of each academic year, conditional upon the Scholar's full time enrollment in their program. If a student is not enrolled full time for the second academic year, the award amount may be reduced or omitted from the second year at Apple's discretion.

Can first year students be nominated for the fellowship?

Students attending universities in the United States who are starting the first year of their PhD at the time of nomination (i.e. starting their PhD in in the 2022 / 2023 academic year) may not be nominated, but we encourage them to apply for an internship.

First year students (at the time of nomination) in programs outside of the United States may be nominated.

The program is targeted towards mid-to-late career PhD students with an established research and publication record.

Can students from departments other than Computer Science and Computer Engineering be nominated?

Yes. Nominees can be working towards their PhD in computer science or adjacent fields. Nominees from engineering fields, statistics, informatics and related disciplines who are conducting research in one of the categories listed above are welcome.

Schools will still be limited to 3 nominations *per institution*, not per department. We recommend schools designate (1) individual to submit all nominations, to ensure you do not exceed the limit.

Can the student accept other fellowships if selected for the Apple PhD Fellowship in AI/ML?

The Apple PhD Fellowship in AI/ML is intended to be a fully funded fellowship, so that selected Scholars would not require any additional funding for the duration of the program. Selected nominees may not hold other industry-funded fellowships during their their time as an Apple Scholar. Once a student has accepted the Apple PhD Fellowship in AI/ML in writing, we would ask them to withdraw any remaining nominations they have to other industry-funded fellowships.

Can the nominator list multiple advisors in the application?

Yes, you may list as many academic advisors as the nominee has. A letter of recommendation from any of the listed advisors can fulfill the "letter from current advisor" requirement.

Can the nominator submit more than two letters of recommendation?

No. Please limit letters of recommendation to two. If more than two are submitted, we will remove any letters that appear after the first two before reviewing the packet.

Can the nominator save an unfinished application and finish it later?

No. The application tool does not allow you to save work in progress. Once you click "Submit" you cannot make any changes to your application. We strongly recommend crafting your responses in another document and returning to the application page when you're ready to input & submit. Upon clicking "Submit", you will receive an automated "Thank you" email acknowledging your submission.

Can the nominator edit or change the nomination application after I submit?

Applications cannot be edited after you click "Submit". We strongly recommend crafting your responses in another document and returning to the application page when you're ready to input and submit.

Upon clicking "Submit", the nominee will receive an email asking for their consent to be nominated. **They must complete this step before the nomination is complete.**

Once they have completed this step, the nominator will receive an email confirming the nomination is fully submitted. This final email may be set up to 3 business days after the nominee consents to their nomination.

If you are concerned that you made an error in your application packet, please email: aiml_scholars@apple.com before the application deadline to determine if edits can be made