



AI SINGAPORE RESEARCH PROGRAMME GRANT CALL

About the Programme

1. The AI Singapore Research Programme supports research projects on a competitive basis across Singapore-based Institutes of Higher Learning (IHLs)¹ and/or Research Institutions (RIs)².
2. The objective of the Programme is to seed high-quality research efforts aimed at developing AI and adjacent technologies that will eventually contribute to the other pillars of AI Singapore.
3. In the **AI Research Grant Call 2019** for Proposals, AI Singapore invites applications in advanced research including, but not limited to, the following areas:

i. Explainable AI

There are two main areas of interest:

- a) Designing AI systems and/or solutions that can explain their own decisions/recommendations.
- b) Understanding 'black-box' AI systems: To develop theories and methods for explainable AI.

ii. Robust AI

There are three main areas of interest:

- a) Designing AI systems and/or solutions that are able to address misinformation presented: To detect misinformation and determine the veracity of information. An example is AI able to perform fact checking.
- b) Designing AI systems and/or solutions that are able to learn well with noisy data and infer robustly on unseen scenarios.
- c) Designing AI systems and/or solutions that are resilient to attacks, data-poisoning and unknown threats.

¹ *Institutes of Higher Learning (IHLs)*: National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Management University (SMU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT), Singapore University of Social Sciences (SUSS).

² *Research Institutions (RIs)*: A*STAR Research Institutes, CREATE entities.



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iii. Interactivity between AI and Humans

The main area of interest is:

Designing AI systems and/or solutions that are able to bridge the gap in interactivity between human and AI systems: Current AI systems and solutions lack user-friendliness. This may hinder the deployment of AI in real world contexts. An example is to incorporate human social aspects when designing AI systems. Another example is to guide AI systems with human collective intelligence.

4. Proposals should emphasise novel and significant contributions in methodologies and algorithms, rather than domain-specific solutions.



Funding Support

1. The Programme will support each project for a duration of up to 3 years. Funding is available in two tiers:

Category	Funding Quantum inclusive of 20% IRC
Level 1	Up to S\$ 750,000
Level 2	Up to S\$1.5 million

2. The Programme encourages inter-institutional collaborations. Research teams proposing Level 2 projects must include members from multiple institutions (*please refer to “Application/Contact” section for details*). This requirement is optional for Level 1 applications.
3. The proposal should be based on a realistic budget with appropriate justifications that correspond to the scope of work to be accomplished. The total cost of each project includes all approved direct costs³ and indirect research costs/overheads⁴. All expenditure budgeted should be inclusive of any applicable Goods and Services Taxes (GST) at the prevailing rates.
4. Please refer to **Annex E** for Guidelines for the Management of Competitive R&D Grants under AI Singapore Programme, including the list of “Non-fundable Direct Costs”.
5. For all direct cost items proposed for the project, please note that:
 - i. Host Institutions must strictly comply with their own procurement practices;
 - ii. Host Institutions must ensure that all cost items are reasonable and are incurred under formally established, consistently applied policies and prevailing practices of the host institution; and

³ Direct costs are defined as the incremental cost required to execute the project. This **excludes** in-kind contributions, existing equipment and the cost of existing manpower as well as building cost. Supportable direct costs can be classified into expenditure on manpower (EOM), expenditure on equipment (EQP), other operating expenses (OOE), and overseas travel (OT).

⁴ Indirect costs are expenses incurred by the research activity in the form of space, support personnel, administrative and facilities expenses, depending on the host institution’s prevailing policy. Host institutions will be responsible for administering and managing the support provided by AI Singapore for the indirect costs of research.

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- iii. All items/services/manpower purchased/engaged **must be** necessary for the R&D work.
6. PIs/Co-PIs/host institutions shall use reasonable efforts to employ or otherwise engage Singapore citizens and/or Singapore Permanent Residents to be deployed in the work under the project.
7. Decision on the funding support to be awarded for each project is final and no appeals will be entertained.

Eligibility Criteria

1. At the point of application, **PI** must fulfil the following requirements:
 - i. Hold a full-time appointment⁵ in a Singapore-based Institute of Higher Learning (IHL) or A*STAR Research Institute;
 - ii. Must have the background/qualifications in AI knowledge;
 - iii. Must be an independent researcher with a track record of leadership ability in coordinating research programmes and providing mentorships to research team, as well as having productive research outcomes; and
 - iv. No outstanding report(s) from other national grants.
2. At the point of application, **Co-PIs** must fulfil the following requirements:
 - i. Hold a full-time appointment⁶ in a Singapore-based Institute of Higher Learning (IHL) or Research Institution (RI); and
 - ii. No outstanding report(s) from other national grants.
3. Researchers from Medical Institutions⁷, AI Start-ups in Singapore, private sector and other entities are eligible to apply as Collaborators.
4. Only research conducted in Singapore may be funded under the Programme.

⁵ Defined as at least 9 months of service a year or 75% appointment.

⁶ Defined as at least 9 months of service a year or 75% appointment.

⁷ Researchers from Medical Institutions in Singapore who hold at least 25% joint appointment in a Singapore-based Institute of Higher Learning (IHLs) and/or Research Institution (RI) may apply as Collaborator. If awarded, the grant will be hosted in the IHL/RI.



Evaluation Criteria

1. AI Singapore supports research that has academic significance and demonstrates good potential for achieving the desired outcomes of creating and/or developing AI and adjacent technologies towards more human-like learning machines.
2. The research outcomes should advance high-quality research of international excellence that challenges current understanding or provides pathways to new frontiers.
3. Further, the Programme supports research that has or will have direct implications on the economy and/or society. This is often demonstrated in terms of intellectual property produced, technologies deployed, manpower trained/spun off to industry and overall value-add to target groups.
4. Proposals will be assessed by a Scientific Evaluation Committee and AI Singapore.
5. All decisions are **final** and no appeals will be entertained.

Grant Call Timeline

1. The schedule for the **AI Research Grant Call 2019** for Proposals is as follows:

Event	Call 2 / Dates
Announcement of Grant Call	22 Jan 2019
Opening date for <u>softcopy</u> submission	27 Feb 2019
Closing date for <u>softcopy</u> submission	15 Apr 2019
Closing date for <u>hardcopy</u> submission	22 Apr 2019
Peer Review & Evaluation Process	Apr - Jun 2019
Release of Outcome and Award	Jul 2019



Project Commencement

1 Oct 2019

Application / Contact

1. The AI Singapore Research Programme Application Portal (to be made available on <https://www.aisingapore.org/research/>) will be open to receive applications on **27 February 2019, 12pm.**
2. All applications are required to be submitted through the Application Portal. Email submissions will not be accepted unless exception granted by AI Singapore.
3. Only complete applications with the endorsement of the relevant institutional authority / director of research (or equivalent), will be accepted by AI Singapore.
4. Each eligible institution must follow the quota below:
 - i. For Research Teams with PI and all Co-PIs from the same institution,
 - no more than four (4) applications each for NUS, NTU, and A*STAR;
 - no more than two (2) applications each for SMU, SUTD, SUSS, and SIT.
 - ii. For Research Teams with PI and Co-PIs from multiple institutions (2 or more institutions⁸),
 - up to three (3) applications per institution, based on Host Institution.
5. Subject to the above criteria, for a combination of single and multiple-Institution proposals, each Institution may only submit:
 - no more than five (5) applications each for NUS, NTU, and A*STAR;
 - no more than four (4) applications each for SMU, SUTD, SUSS, and SIT.

⁸ Applicable to Institutes of Higher Learning (IHLs): National University of Singapore (NUS), Nanyang Technological University (NTU), Singapore Management University (SMU), Singapore University of Technology and Design (SUTD), Singapore Institute of Technology (SIT), Singapore University of Social Sciences (SUSS) and Research Institutions (RIs): A*STAR Research Institutes, CREATE entities.



6. The table below summarizes the submission limit:

Submission Quota	No. of proposals per institution		
	Single Institutions	Multiple Institutions	Maximum Submission (Combination)
NUS/ NTU/ ASTAR	4	3	5
SMU/ SUTD/ SUSS/ SIT	2	3	4

Interested applicants should submit the AI Singapore Research Programme application form with all the sections duly filled by the stipulated deadline in softcopy and hardcopy to the following:

Softcopy: research@aisingapore.org

Hardcopy: RE: AI SINGAPORE RESEARCH PROGRAMME
(Attn: Ms Li Xiaolei)
AI Singapore Office
innovation4.0
#05-05, 3 Research Link
Singapore 117602

Late submissions or submissions from individual applicants without endorsement from the relevant institutional authority / director of research (or equivalent) (by the deadline stipulated above) will not be entertained.

For more information, please contact Ms Li Xiaolei at research@aisingapore.org.

Instructions to Applicants & Host Institution

1. Please note that respective institution's application deadline may differ from AI Singapore's portal deadline.
2. PI and Co-PIs are required to provide their Google Scholar and/or DBLP in the application form (not mandatory for Collaborators) and are expected to commit a

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proportionate amount of their time in ensuring the success of the project (at least 20% of the total time for PI and at least 10% for Co-PIs).

- Please note the following instructions on specific information to be provided in the relevant sections of the application form:-

Section 2 – Details of Research Proposal

A full proposal with a limit of 15 pages in size 11-point Arial font with full justified margins, single-line spacing. The case for support should include the following sections and information specified in the following table:-

Sections Required	Information to be Provided
Cover Sheet for Full Proposal	This section should state clearly the time commitment of each team member (PI/Co-PIs and Collaborators). All PIs and Co-PIs must provide their Google Scholar and/or DBLP identifiers (refer to https://dblp.uni-trier.de/) directly under their names at the cover sheet of the Full Proposal. Please refer to Annex A for reference.
Executive Summary	400 to 500 words (approximately one page will be excluded from the page limit) summary of the project proposed written in layman terms and avoiding scientific jargons, where practicable. The headers and descriptions in executive summary should be aligned with Research Proposal, where practicable.
Objectives of the Research Project	This section should articulate clearly the use-inspired objectives and expected outcomes of the project and how it would contribute towards achieving the objectives of the AI Singapore Research Programme.
Description of Project and Proposed Approach	<ul style="list-style-type: none"> Details should be provided on the project objectives, the scientific challenges to be addressed and the proposed methodology/approach to solving these challenges. PI/Co-PIs should highlight in this section the importance of the problems being addressed, how their work would create new knowledge or advance existing understanding, the novelty of their proposed approach and the potential for this to produce breakthrough work. The PI, Co-PIs and other team members should also be identified in this section, highlighting any competitive advantages of individual members in terms of unique capabilities and/or experience relevant to the project's focus. This section should also be used to highlight the international competitiveness of the work being carried out in terms of merit with mentions of existing work being carried out by other teams around the world.



Sections Required	Information to be Provided
Economic Potential and Other Contributions of Project	<ul style="list-style-type: none"> This section should be used to describe the contributions of the programme in terms of potential economic and other benefits to Singapore. Details of any industry collaborations and/or co-funding should be included in this section, with details on the extent and role of industry participation in the programme and plans for commercialisation if any. Letters of commitment stating the level of contribution from the industry Collaborators would be favourably considered. PIs should highlight how the programme would generate economic payoffs for Singapore, e.g., through the potential to create new industry or advance existing industry, create spin-offs/IP/licensing, produce innovations that would disrupt existing industries if successful, etc. PIs should also highlight other contributions of the project, e.g., towards building up research infrastructure, manpower and capabilities in Singapore, etc.
Project Budget	<ul style="list-style-type: none"> A summary of the project budget should be provided in this section, broken down into broad categories of EOM, Equipment, OOE and OT. Justification for the proposed budget in each category should be clearly articulated here. PIs are asked to provide accurate and reasonable budgets in their submissions. Please note that over-budgeting is strongly discouraged and PIs may be asked to revise the requested budget before award if this is found to be the case.
Deliverables of Programme	<ul style="list-style-type: none"> A summary of the deliverables and outcomes for the project should be provided in this section. KPIs proposed should be linked to the objectives of the project and should be as quantitative as possible (e.g. learning from 5 times fewer labelled samples, etc.) – as a means to track/measure the success of the project at mid-term and at completion. PIs should also use this section to highlight important potential/possible future outcomes from the successful execution of the project. The detailed listing of activities and KPIs should be provided in Section 5 of the application form.

Section 3 – Declaration of Other Funding Support

Details of all grants currently held or being applied for by the PI and Co-PIs listed on the cover page, in related areas of work, must be declared in this section. Failure



to do so will be considered a breach of the undertaking required by all PI and Co-PIs in Section 8 of the application form and may render the application invalid. Please refer to **Annex B** for reference.

Section 4 – Proposed Budget

PIs should fill in the detailed budget breakdown in this section of the form, broken down into the categories and sub-categories, mainly: (a) EOM; (b) Equipment; (c) OOE, with sub-categories for local conferences/ working visits/ meetings, materials and consumables (including animal costs if any) and miscellaneous costs or others; and (d) Overseas Travel (OT), including overseas conferences/ working visits/ meetings. Any additional information (e.g., equipment quotations, OOE details, etc.) should be provided as separate attachments. Further line item breakdown is required in sub-section (B). Only details for the amount of funding sought under AI Singapore should be provided in this section; other sources of funding for the project should be indicated separately and clearly in the “Other Funding Support” section for AI Singapore’s information. Please refer to **Annex E** for the list of direct cost items (non-exhaustive) that are **non-fundable** under AI Singapore.

Section 5 – Activities and Performance Indicators

PIs should provide full details of the Project Implementation Schedule and any relevant KPIs for their project.

Section 6 – Names of Suggested International Reviewers

Each submission must include at least 3 recommendations of international peer reviewers (local reviewers should not be listed), who are **active** experts in the subject matter and capable of offering unbiased expert opinions on the merits of the proposed project. It is important to suggest the names of people whom are likely to serve as reviewers. Nominees, who have moved to other research fields or have moved into administration and left research altogether are not good candidates. Additionally, very senior figures in the field are not good candidates due to high volume of duties and obligations.

In submitting recommendations for international peer reviewers, PIs must ensure that the recommended reviewers:-

- a. Have broad knowledge of the field that will enable them to evaluate the broader multidisciplinary, educational and societal impact (including economic and other benefits) of the proposed project;
- b. Have good knowledge of global developments in the field to be able to



- evaluate the international competitiveness of the proposed project, team members and proposed budget; and
- c. Have no relationship, direct or otherwise, with the PI, Co-PIs and/or Collaborators that would create a real or apparent conflict of interest should they be requested to evaluate the proposal.

Proposals submitted should contain all relevant information required for a proper and complete evaluation of their merits without the need to go back to applicants for additional information. Relevant privileged or confidential information should be disclosed if necessary to help convey a better understanding of the proposed project. However, such information should be clearly marked in the proposal.

A complete set of signatures may be provided using multiple copies of Section 8 (the undertaking section) of the application form. The hardcopy provided will be assumed to be identical to the softcopy submission and, in the event of any discrepancy, the softcopy submission will be taken as the final and complete version of the proposal. Please refer to **Annex C** for reference.

Submissions which are incomplete (e.g., missing Google Scholar and/or DBLP identifiers) or not received by the close of the relevant call will not be considered.

4. The curriculum vitae of PI, Co-PIs and Collaborators must include references and selected publications which are relevant to the application. They should also state the number of staff (e.g. post-doctorates, research assistants, etc.) and PhD students currently in their lab, as well as indicate their source and duration/period of funding. Please refer to **Section 7** of the application form for the information required.
5. Research support office from the IHLs and/or Research Institutions are required to ensure that information submitted by their researchers complies with the requirements outlined in the application guideline. The following will be rejected without review:
 - a. Missing or wrong version of application form.
 - b. Inappropriate format (e.g. small font size and tight para spacing) or incomplete applications (e.g. sections left blank, missing CVs, etc.)
 - c. Late submission.



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- d. Revisions, made after closing date.
 - e. Proposal not within scope of AI Singapore Research Programme.
 - f. Duplicates of proposal submitted to any other public funding agencies for simultaneous consideration.
 - g. Ineligibility of PI and/or Co-PIs.
6. PI and Co-PIs should note that parallel submissions are not allowed – i.e. applicants **must** never send similar versions or part(s) of the current proposal application to other agencies or grants for funding (or vice versa).
7. The budget for the research proposal should be prepared according to the guidelines stipulated by the AI Singapore Research Programme and the applicant's host institution/research institute.



Terms & Conditions of Award

1. Funding from AI Singapore will be awarded to and managed by the host institution of the PI and/or Co-PI. No part of AI Singapore funding will be awarded to Collaborator(s).
2. The detailed terms and conditions applicable to the grant are specified in the document, entitled “Terms and Conditions of the AI Singapore Research Programme”, attached as **Annex D**.
3. AI Singapore will disburse funds on a reimbursement basis. Host institutions shall submit requisitions for direct and/or indirect costs for which the funding is permitted to be used **to AI Singapore on a half-yearly basis** using the forms provided. Requisitions shall include detailed schedules of expenditure incurred for the previous period, as certified by its chief financial officer or an authorised nominee.
4. No funds shall be disbursed for approved projects unless:
 - a. The relevant research collaboration agreements (where applicable) have been signed.
 - b. The respective research compliance approvals (where applicable) have been obtained from the appropriate board/office.



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ANNEX A: COVER SHEET FOR PROPOSAL APPLICATION FORM (SAMPLE)

ANNEX B: DECLARATION OF OTHER FUNDING SUPPORT (SAMPLE)

ANNEX C: DECLARATION BY GRANT APPLICANTS (SAMPLE)

ANNEX D: TERMS AND CONDITIONS OF THE AI SINGAPORE RESEARCH PROGRAMME

ANNEX E: GUIDELINES FOR MANAGEMENT OF COMPETITIVE R&D GRANTS (AI SINGAPORE)

ANNEX F: INSTRUCTIONS TO INSTITUTION'S APPOINTED AUDITOR ON FINANCIAL AUDIT (RESEARCH)

ANNEX G: INSTRUCTIONS TO INSTITUTION'S APPOINTED AUDITOR ON KPIS AUDIT (RESEARCH)