

# AI SINGAPORE RESEARCH PROGRAMME GRANT CALL 2024

## 1. About the Programme

- 1.1 The AI Singapore (AISG) Research Programme supports research projects on a competitive basis across Singapore-based Institutes of Higher Learning (IHLs)<sup>1</sup> and Research Institutions (RIs)<sup>2</sup>.
- 1.2 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.
- 1.3 The AISG funds must be used on AI research that is emphasised on novel and significant contributions in methodologies and algorithms, rather than domain-specific solutions.
- 1.4 Research ideas at the intersection of multiple disciplines are encouraged. The theme of the proposed research programme must be motivated by an important need or problem to be solved, rather than solely curiosity-driven.

## 2. Grant Call Vision

- 2.1 In the **AI Research Grant Call 2024** for proposals, AI Singapore invites proposals in advanced fundamental AI research towards the following AI vision:

### 2.1.1 Discriminating Information

Advances in technology have enabled the rapid creation and dissemination of information, for instance, via social media. This ability to quickly reach mass audiences has the potential to impact individuals and society as a whole, sometimes adversely, should misinformation or disinformation be spread. For instance, in the recent COVID-19 pandemic, misinformation about the disease, potential treatments and vaccines could have resulted in adverse impact on the health of individuals or even the population in general. As another example, deepfakes could be used for manipulation, or even cause harm, when widely disseminated. AI systems can potentially help in detecting such misinformation/disinformation and assessing its impact on individuals and society, and the focus of this theme is to develop novel methods towards these goals.

The enabling research topics towards these goals are:

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<sup>1</sup> *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).

<sup>2</sup> *Research Institutions (RIs)*: A\*STAR Research Institutes and CREATE entities.

Enabling Research Topic	Description
Information authentication, bias, benchmarks, and evaluation	<p>Defining disinformation: Whether a piece of communication is disinformation or not largely depends on the intention of the creator. How then can disinformation be appropriately defined for developing an AI system to discriminate it?</p> <p>Multimodality/Multilinguality: How can we leverage multimodal features in media for better detection, monitoring and prevention of misinformation? How can we develop systems that can handle multiple languages?</p> <p>Role of external knowledge: What is the role of external knowledge, and how can we best utilise it?</p> <p>Detection vs. prevention: How can AI be used not only for detection of misinformation but also for prevention of misinformation, such as through educating the general public?</p> <p>Use cases: The concrete, real-world use cases and benchmarks are urgently needed to drive the research.</p> <p>Evaluation against dynamically changing information: How can AI methods handle the uncertainty of ground truth that often comes with unverified information, since the ground truth may dynamically change when the event unfolds and new information keeps coming in?</p>
Interpretation and generation	<p>Robustness of detection systems: There are attacks designed to evade misinformation/deepfake detection systems. For example, there are many possible deepfake synthesis systems and it is not feasible to collect data from all of these. So, building in robustness and fast adaptation of systems to new attacks would help mitigate spread of such harmful information.</p> <p>Interpretability/explainability of detection systems: Can these systems identify specific features of the input (e.g., pixels in images or words in news text) that contain artifacts suggesting that the input has been manipulated? For example, for deepfake, this may involve identifying the pipeline of manipulations used to generate the deepfake. This would both aid detection algorithms and facilitate human-AI collaboration to better identify misinformation/deepfakes.</p> <p>Source attribution: How can we design methods to identify which entity has generated the misinformation/deepfake? For misinformation propagated through online social networks, this may involve analysis of the propagation patterns in the social network graphs. Content Provenance and Authenticity.</p>
Assessment	Early detection: To reduce the impact of the spread of misinformation,

Enabling Research Topic	Description
of impact and user profiling	<p>developing early detection methods is critical.</p> <p>Impact quantification: How to quantify the impact of mis/disinformation?</p> <p>Understanding of vulnerability: What makes someone vulnerable to misinformation? This may require an interdisciplinary approach with people from communication and computer science working together.</p> <p>Understanding of behaviours: For some malicious misinformation such as scams, the scammers perform a series of actions to deceive users. Understanding such scammer behaviours is important for detection and prevention.</p>

- 2.2 Each proposal should **address the vision listed above**. Alternative visions **will not be considered for evaluation**. We highly encourage proposals to have a clear research focus of a single vision.

### 3. Funding Support

- 3.1 The Programme will support each proposal for a duration of up to 3 years. Funding of each proposal will be **capped at a maximum of S\$1 million**. The total funding is inclusive of 30% IRC.

Funding (inclusive of 30% IRC)	Duration
Up to \$1,000,000	Up to 3 years

- 3.2 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 costs<sup>3</sup> and indirect research costs/overheads<sup>4</sup>. All expenditure budgeted should be inclusive of any applicable Goods and Services Taxes (GST) at the prevailing rates.
- 3.3 Please refer to **Annex A – Guidelines for the Management of Research Grants (AI Singapore)** (external attachment), including the list of “Non-fundable Direct Costs”.

<sup>3</sup> 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).

<sup>4</sup> 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. This will not be applicable to research scholarship.

3.4 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
- iii. All items/services/manpower purchased/engaged must be necessary for the R&D work.

3.5 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.

## 4. Eligibility Criteria

4.1 At the point of application, PI must fulfil the following requirements:

- i. Hold a full-time appointment<sup>5</sup> in a Singapore-based Institute of Higher Learning (IHL), or Research Institute (RI);
- ii. Must be an expert in AI domain; an AI expert is defined as a person with strong track record of publications from AI conferences and journals; and
- 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.

4.2 At the point of application, **Co-PIs** must fulfil the following requirements:

- i. Hold a full-time appointment in a Singapore-based Institute of Higher Learning (IHL) or Research Institution (RI).

4.3 Researchers from Medical Institutions<sup>6</sup>, AI Start-ups in Singapore, private sector and other entities are eligible to apply as Collaborators.

4.4 Only research conducted in Singapore may be funded under the Programme. Please refer to **Annex C – AI Singapore Research Programme Terms and Conditions** (external attachment).

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<sup>5</sup> Defined as at least 9 months of service a year based in Singapore or 75% appointment.

<sup>6</sup> 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 PI or Co-PI. If awarded, the grant will be hosted in the IHL/RI.

## 5. Selection Process and Evaluation Criteria

5.1 Proposals are selected and evaluated based on:

- i. **Scientific Quality** as conveyed through the proposal's framing of the challenge to be addressed, current state-of-the-art methods, and the new technical approach proposed etc.
- ii. **Novelty of research directions** that challenge current understanding or provides pathways to new frontiers.
- iii. **Feasibility / Viability / Appropriateness.** Can the proposal's objectives be reasonably achieved through the plan described? Pilot results to substantiate the approach claims would be favourably considered.
- iv. **Suitability and track record of PI and research team.**
- v. **Impact to the field of AI.** This could be demonstrated in terms of the conferences and journals the research team intends to publish, intellectual property produced, technologies deployed, manpower trained/spun off to industry and overall value-add to target groups.
- vi. **Resources Requested** and their suitability/appropriateness for the planned research.

5.2 Proposals will be assessed by the International Reviewers, AI Research Pillar Scientific Committee, and AI Singapore.

5.3 AI Singapore reserves the right to disqualify, retract, or terminate the award if

- i. the application is found to be untruthful or
- ii. if required documents are missing or
- iii. a significant change in the research team composition (specifically PI and Co-PI) or
- iv. a significant modification of topics and research directions

5.4 All decisions are **final** and no appeals will be entertained.

## 6. Grant Call Timeline

6.1 The schedule for the **AI Research Grant Call 2024** is as follows:

Event	Dates
Announcement of Grant Call	6 June 2024
Opening date for <u>softcopy</u> submission (via portal)	15 July 2024

Event	Dates
Closing date for <u>endorsed</u> softcopy submission (via portal)	28 August 2024
Evaluation and Selection of Proposals	August to November 2024
Release of Outcome and Award	End November 2024
Project Commencement	6 January 2025

## 7. Application / Contact

- 7.1 The AI Singapore Research Grant Call Application Portal for proposal submission is available from **15 July 2024** on <https://researchgms.aisingapore.org/>, alternatively, it is also accessible through <https://aisingapore.org/research/grant-call/>.
- 7.2 All applications are required to be submitted through the Application Portal. Email submissions will not be accepted unless exception is granted by AI Singapore.
- 7.3 Interested applicants should submit the Grant Call application form with all the sections duly filled by the stipulated deadline in two formats:
- i. Input values through the portal fields, and;
  - ii. AI Singapore Application Form Sections and Annexes (PDF), and;
  - iii. AI Singapore Proposal Budget (Excel).
- 7.4 Only complete applications with the endorsement of the relevant institutional authority / director of research (or equivalent), will be accepted by AI Singapore.
- 7.5 Each eligible institution<sup>7</sup> must follow the quota below:
- i. For Research Teams with PI and all Co-PIs from the same institution,
    - no more than two (2) applications each for NUS, NTU, and A\*STAR;
    - no more than one (1) application each for SMU, SUTD, SUSS, SIT, and CREATE entities.
  - ii. For Research Teams with PI and Co-PIs from multiple institutions (2 or more institutions),
    - no more than three (3) applications each for NUS, NTU, and A\*STAR;

<sup>7</sup> 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.

- no more than two (2) applications each for SMU, SUTD, SUSS, SIT, and CREATE entities.
- iii. **To qualify for the multi-institution classification, the difference in budget allocation between any two institutions cannot exceed 20% of the total budget requested to qualify as a multi-institution proposal.**
- If the difference exceeds 20%, the proposal submission will be classified as a single-institution proposal. This ensures fair contribution across all participating institutions' research teams (PI and Co-PIs).
  - The table below illustrates the breakdown between the host institution and each partner institution(s):

Multi-Institution Qualifying Criteria	Grant Budget Value (inclusive of IRC)			Classification towards Host Institution Submission Quota
	Host Institution	Partner Institution(s)	Total %	
<b>Scenario 1:</b> One Partner Institution	<b><u>60%</u></b>	<b><u>40% (within 20% difference)</u></b>	100%	Multi-Institution
<b>Scenario 2a:</b> Two Partner Institutions	<b><u>45%</u></b>	Institution A: 30% Institution B: <b><u>25% (within 20% difference)</u></b>	100%	Multi-Institution
<b>Scenario 2b:</b> Two Partner Institutions	30%	Institution A: <b><u>50%</u></b> Institution B: <b><u>20% (exceed 20% difference)</u></b>	100%	Single-Institution
<b>Scenario 3a:</b> Three Partner Institutions	<b><u>35%</u></b>	Institution A: 25% Institution B: <b><u>20% (within 20% difference)</u></b> Institution C: 20%	100%	Multi-Institution
<b>Scenario 3b:</b> Three Partner Institutions	<b><u>40%</u></b>	Institution A: 25% Institution B: 25% Institution C: <b><u>10% (exceed 20% difference)</u></b>	100%	Single-Institution
<b>Scenario 3c:</b> Three Partner Institutions	30%	Institution A: <b><u>35%</u></b> Institution B: <b><u>5% (exceed 20% difference)</u></b> Institution C: 30%	100%	Single-Institution

- 7.6 Subject to the above criteria, for a combination of single and multiple-institution proposals, each Institution may only submit:
- i. no more than three (3) applications each for NUS, NTU, and A\*STAR;
  - ii. no more than two (2) applications each for SMU, SUTD, SUSS, SIT, and CREATE entities.

7.7 The table below summarises the submission limit:

Submission Quota	No. of proposals per institution		
	Single-Institution	Multi-Institution <sup>8</sup>	Maximum Submission (Combination)
NUS/ NTU/ ASTAR	2	3	3
SMU/ SUTD/ SUSS/ SIT/ CREATE entities	1	2	2

7.8 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.

7.9 For more information, please contact [research@aisingapore.org](mailto:research@aisingapore.org).

## 8. Instructions to Applicants & Host Institution

8.1 Please note that **respective institution's application deadline may differ** from AI Singapore's deadline.

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

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

### 8.3.1 Section 1 - Cover Sheet

Contents are to be input via the portal fields and a PDF version will be generated.

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/>).

### 8.3.2 Section 2 - Details of Research Proposal

Contents are to be uploaded as a separate PDF to the portal.

A paper proposal with **a limit of 12 pages** (including Executive Summary) in size 11-point Arial font with full justified margins, single-line spacing. All diagrams, tables and figures that illustrate the explanation of the proposal approach should be within the 12-pages limit. **Applications failing to follow the prescribed format may be rejected without a review.**

<sup>8</sup> To qualify the multi-institution classification, the partner institution(s) must display a fair contribution through the requested budget. The details are outlined in paragraph 7.5.iii



The case for support should include the following sections and information specified in the following table:

Sections Required	Information to be Provided
Executive Summary	Maximum of 500 words summarizing the project proposed, written for the understanding of individuals not trained in the scientific field. This summary should be written in relatively simple and non-technical language.
Research Objectives	This section should articulate clearly the use-inspired objectives, expected outcomes of the project, and a striking vision of major downstream benefits to society.
State of Current Research	How is it done today, who are the leading researchers studying the targeted problem/objectives, and what are the limitations of their current approaches?
Proposed Approach, Project Plan, Role of Team Members	<ul style="list-style-type: none"> <li>• Details should be provided on the scientific challenges to be addressed and the proposed methodology/approach to solving these challenges.</li> <li>• Detailed technical description is expected and, include any preliminary results from pilot studies to demonstrate the feasibility of the research approach.</li> <li>• 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.</li> <li>• Explanation on the financial and human resources required to accomplish the objectives, the project schedule and the mitigation of risks should be included.</li> <li>• 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.</li> <li>• 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.</li> <li>• A collaboration and integration plan, detailing how various PI, Co-PIs and other team members work plans will interact in achieving the research objectives.</li> </ul>

Sections Required	Information to be Provided
Outcomes and Deliverables	<ul style="list-style-type: none"> <li>Define the success criteria (quantitative or qualitative) for the suggested research approach.</li> <li>PIs should also use this section to highlight important potential/possible future outcomes from the successful execution of the project.</li> <li>The detailed listing of KPIs should be provided in Section 5 of the application form.</li> </ul>
Ethics Statement	<p><i>(Maximum 1 page, excluded from the 12-page limit. The description should not contain information that should otherwise be in the main proposal)</i></p> <ul style="list-style-type: none"> <li>This section should include statement of the potential negative ethical/societal impacts of the proposed research. Submissions should also provide description on how these risks can be mitigated, if identified.</li> </ul>

### 8.3.3 Section 3 – Proposed Budget

A breakdown of the institutions' requested budget to be input via the portal fields and a PDF version will be generated.

Detailed budget contents are to be uploaded as a separate Excel.

PIs should fill in the detailed budget breakdown in this section of the Excel form, broken down into the categories and sub-categories, mainly:

- i. Expenditure of Manpower (EOM);
- ii. Expenditure on New Equipment (EQP);
- iii. Other Operating Expenses (OOE), with sub-categories for local conferences/ working visits/ meetings, materials and consumables (including animal costs if any), virtual conferences and miscellaneous costs or others; and
- iv. Overseas Travel (OT), including overseas physical conferences/ working visits/ meetings.

Any additional information (e.g., equipment quotations, OOE details, etc.) should be provided within the Excel tab. Further line item breakdown is required in sub-section of the application Excel form. **Specifically, a detailed justification for the compute resources is expected to articulate the needs for the proposed research directions.**

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 A – Guidelines for the Management of Research Grants (AI Singapore)** (external attachment) or the tab within the Excel form for the list of

direct cost items (non-exhaustive) that are non-fundable under AI Singapore.

If the research project team includes multiple Co-PIs from various institutions, use the tabs within the Excel form to detail the budget split between the institutions before combining them into an overall budget within the same Excel form.

#### 8.3.4 Section 4 – Declaration of Other Funding Support

Contents are to be uploaded as a separate PDF to the portal.

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 7 of the application form and may render the application invalid. Please refer to **Annex C – Declaration of Other Funding Support Supplementary in the application form** for reference.

#### 8.3.5 Section 5 – Performance Indicators

Contents are to be uploaded as a separate PDF to the portal.

PIs should provide full details of the KPIs for their project.

#### 8.3.6 Section 6 – Names of Suggested International Reviewers

Contents are to be input via the portal fields and a PDF version will be generated.

#### 8.3.7 Section 7 – Declaration by Grant Applicants

Contents are to be uploaded as a separate PDF to the portal.

#### 8.3.8 Section 8 – Endorsement by the Host Institution

Contents are to be uploaded as a separate PDF to the portal.

#### 8.3.9 Annex A – Project Implementation Schedule

Contents are to be uploaded as a separate PDF to the portal.

PIs should provide full details of the project implementation schedule.

#### 8.3.10 Annex B – Curriculum Vitae

Contents are to be uploaded as a separate PDF to the portal.

The 2-page CVs of all PI, all Co-PIs and Collaborators listed on the cover page must be provided according to the format provided.

#### 8.3.11 Annex C – Declaration of Other Funding Support Supplementary

Contents are to be uploaded as a separate PDF to the portal.

PIs should provide details of other funding support.

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- 8.4 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.
- 8.5 Appendices should contain only citation references and Gantt chart to illustrate the points mentioned in Section 2. However, **elaboration of proposals' contents within appendices will not be reviewed.**
- 8.6 A complete set of signatures may be provided using multiple copies of Section 7 (the undertaking section) of the application form. The softcopy submission will be taken as the final and complete version of the proposal.
- 8.7 Submissions which are incomplete (e.g., missing Google Scholar and/or DBLP identifiers, missing host institution endorsement) or not received by the close of the relevant call will not be considered.
- 8.8 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**:
- i. Missing or wrong version of application form.
  - ii. Inappropriate format (e.g. small font size and tight para spacing) or incomplete applications (e.g. sections left blank, missing CVs, etc.).
  - iii. Late submission.
  - iv. Revisions, made after closing date.
  - v. Proposal not within vision/scope.
  - vi. Duplicates of proposal submitted to any other public funding agencies for simultaneous consideration.
  - vii. Ineligibility of PI and/or Co-PIs.
- 8.9 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).
- 8.10 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.
- 8.11 **General Ethical Conduct.** Researchers and research institutions should recognise that they have an ethical obligation to weigh societal benefits against risks inherent in their work. All research must be conducted responsibly and honestly. Please refer to own institution's guidelines on ethical conduct/research integrity.

## 9. Terms & Conditions of Award

- 9.1 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).
- 9.2 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.
- 9.3 No funds shall be disbursed for approved projects unless:
- The relevant research collaboration agreements (where applicable) have been signed.
  - The respective research compliance approvals (where applicable) have been obtained from the appropriate board/office.
- 9.4 The Host Institution is required to submit to AI Singapore a **Yearly Progress Report** within (1) month from the end of each relevant Financial Year (by 30 April). The Host Institution is also required to provide details on **Top 5 works of impact** from the individual projects (Top 3 for first year of project funding) – **including supplementary presentation slides** – as part of the yearly progress reporting. For each work, give (a) title, (b) full citation details, (c) description of significance/impact.
- 9.5 AI Singapore shall, as the grantor, **have the right to request for additional project review materials** from the Host Institution. The Host Institution shall submit further information as requested by AI Singapore, if the project review materials are deemed inadequate or unsatisfactory. AI Singapore shall also **have the right to request for the PI and/or Co-PI to present on their project's progress and impact** at respective meetings as specified by AI Singapore or its grantors.
- 9.6 The detailed terms and conditions applicable to the grant will be attached during the award.

### **ANNEX A: GUIDELINES FOR THE MANAGEMENT OF RESEARCH GRANTS (AI SINGAPORE)**

### **ANNEX B: INSTRUCTIONS TO INSTITUTION'S APPOINTED AUDITOR ON FINANCIAL AUDIT (RESEARCH)**

### **ANNEX C: AI SINGAPORE RESEARCH PROGRAMME TERMS AND CONDITIONS**