

AFRICAN ENGINEERING AND TECHNOLOGY NETWORK (AFRETEC)
CALL FOR PROPOSALS – AFRETEC INCLUSIVE DIGITAL TRANSFORMATION
COLLABORATIVE RESEARCH

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Carnegie Mellon University Africa (CMU-Africa) in support of Afretec is launching a call for collaborative proposals to build research capacity in the fields of engineering and technology to accelerate and support the inclusive digital transformation of Africa. The research grants will support research related to digital technologies such as artificial intelligence (AI), machine learning, information and communication technology, robotics, cyber security and so on. This initiative is aligned to the Afretec goal to drive inclusive digital growth on the African continent.

Dates and Details

Start Date:	June 1, 2024
Award Period:	up to 36 months
Disciplines:	Multi-institution collaborative Engineering and Technology research projects related to the inclusive digital transformation of Africa
Maximum Award:	\$250,000
Estimated Awards:	It is expected that up to 4 grants will be awarded depending on the quality of submissions and availability of funds.

Submission Deadline:	Friday, January 26, 2024 at 17:00 Central African Time
Submission Procedure:	Proposers must fill out an Expression of Interest form by January 16, 2024: https://forms.gle/bXg6zQHknp63qBdz9 Proposals are to be submitted via this submission portal by the above Submission Deadline: https://cmu.infoready4.com/#viewApplicationForm/1924587

Background and Context

The overall objective of the *African Union Digital Transformation Strategy for Africa* is

To harness digital technologies and innovation to transform African societies and economies to promote Africa's integration, generate inclusive economic growth, stimulate job creation, break the digital divide, and eradicate poverty for the continent's socio-economic development and ensure Africa's ownership of modern tools of digital management (African Union, 2020).

To assist in driving the inclusive digital transformation of Africa, Afretec aims to build a digital knowledge creation ecosystem that expands technology development and job-creating technology innovation. This initiative was created to build capacity for African-focused research that responds to research opportunities on the continent. This will be achieved by creating multi-institutional research collaborations to build research capacity while working on uniquely African opportunities and innovations in the fields of engineering and/or technology.

The digital knowledge creation ecosystem aims to provide a platform for researchers to share best practices, enhance research capabilities, and establish multi-institutional research collaborations while pursuing exciting and topical research that contributes towards driving the inclusive digital transformation of Africa. The platform seeks to leverage this intentional focus on growing research excellence in order to attract additional funding from a wide set of sources. To this end, CMU-Africa has a multi-year program to develop Afretec researchers, support research events and workshops, and award multi-institution seed and research grants annually.

Objectives of the Program

The goal of this program is to build research capacity on the African continent through the creation of multi-university research teams who collaborate to advance the digital transformation of the continent. Digital technologies include artificial intelligence, machine learning, robotics, cyber-physical systems, cyber security, and information and communication technologies that advance the AU Digital Transformation Strategy as well as the UN Sustainable Development Goals (SDGs) in Africa. The UN SDGs touch on every aspect of society. Therefore, proposed projects can target the application of digital technologies to problems in a broad range of application areas, including agriculture, education, energy, environment, financial inclusion, health, infrastructure, manufacturing, sustainability, transportation, waste management, water systems, and more. Proposed projects can include both innovative development of digital technologies and application of digital technologies in the African context.

ELIGIBILITY

- Proposals must be submitted before the submission deadline (see page 1)
- Applicant teams must consist of Principal Investigator (PI) researchers from at least two Afretec member universities. The current list of Afretec Members are as follows (listed alphabetically):
 - The American University in Cairo

- Carnegie Mellon University
 - University of Lagos
 - University of Nairobi
 - University of Rwanda
 - University of Witwatersrand
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- Additional PIs from non-Afretec African universities are eligible to be part of the application team and receive funding under this collaborative research grant. African universities include public or private institutions with headquarters in Africa and with a primary mission of education at the Bachelors, Masters, or Ph.D. level. Each applicant university must be accredited and locally recognized by prevailing law as an institution of higher education in the country of origin.
 - Additional institutions that are not African universities can be engaged but cannot receive any resources through the seed grant.
 - Each applicant university must provide a letter of intent signed by the authorized representative, declaring support for participation in the proposed research project and team.
 - Each funded university will have a designated lead PI. The lead PI for each funded University is required to have a Ph.D. in a relevant discipline.
 - A researcher can serve as a lead PI for their university on only one Inclusive Digital Transformation Research Grant proposal. A person can be a PI or co-PI on only one active Afretec-funded research grant or seed grant at a time.

EVALUATION CRITERIA

Proposed projects will be evaluated against the following criteria:

1. Technical Merit (30%):
 - The potential for the proposed activity to advance innovative digital technologies (as defined above) that will accelerate the digital transformation of Africa and lead to positive socio-economic impact on the African continent. This should be demonstrated by clearly articulating the gaps and challenges that your project will address; the intellectual merit of the proposed research; and the potential benefits that the proposed project will present for communities, societies, countries, or the continent.
 - The potential for proposed research to address specific SDG targets and indicators¹ and goals of the AU Digital Transformation Strategy (2020 – 2030) as well as producing outcomes that are inclusive for a broad set of populations.
2. Capacity Building (30%):
 - The proposed project enhances university capacity for engineering and technology research on the continent. This could include supporting activities such as researcher exchanges; sharing of research tools, methods, and datasets; acquisition of equipment; creating opportunities for sustainable funding, etc.

¹ https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%20refinement_Eng.pdf

- The proposed activity explicitly seeks a path to sustainable research and future funding opportunities. This can include creating connections to NGOs, foundations, international research funders, and industry to raise awareness of growing research capabilities.
 - The potential of the proposed project to advance knowledge transfer between team members and between universities, and to enhance curriculum taught at graduate or undergraduate levels.
 - The potential of the proposed research to lead to direct or indirect job creation in Africa.
3. Research Team (20%):
- The individual, collective and complementary strengths of the research team in the context of the proposed project and Afretec goals.
 - Gender diversity, inclusion of people with disabilities, and teams with both senior and early career researchers are encouraged.
 - Potential for the team to conduct collaborative research on the African continent.
4. Project Plan (20%):
- The plan for carrying out the proposed activities is well-reasoned, well-organized, and based on a sound rationale.
 - The plan describes how the team will collaborate and work together to facilitate knowledge transfer and capacity building.
 - The budget is appropriate for the proposed activities.
 - The plan incorporates a mechanism to measure and assess success of the Technical Merit, Capacity Building, Research Team, and Project Plan components.

Application Process – Proposal Submission and Format

Applications should describe the intended activities and outcomes for the project. They must describe the expertise and qualifications of participating investigators and discuss the complementary support provided by each partner and collaborating organization. They should explicitly describe how the proposed project addresses the key evaluation criteria. Proposals should be prepared in 11pt minimum font on A4 or US Letter paper with at least 1 inch margins. It should be comprised of the following:

1. **Project Summary** (1 page) – Must contain the following information: (i) project title, (ii) research team (names and institutions of PI, co-PI, and senior personnel), (iii) period of performance, and (iv) project abstract up to 400 words.
2. **Project Description** (10 pages) –
 - **Background and Objectives.** List of the proposed objectives of the project and briefly state why the intended research is important and how it fulfills the technical merits and capacity building criteria of the solicitation. This section should also include any background or introductory information with support from the existing literature that provides the rationale for the proposed project.

- **Approach and Activities.** Describe the project design, methods, and techniques that you intend to use in meeting the objectives stated above. Enumerate the specific activities that you intend to carry out over the project.
 - **Expected Outcomes.** Describe the measurable outcomes you expect to achieve during the project and the potential benefits of the outcomes. How do the outcomes build research capacity on the continent? How do the outcomes advance the digital transformation in Africa? How do the outcomes align to the Inclusive Digital Transformation of Africa, AU Digital Transformation Strategy, or the United Nations Sustainable Development Goals. How do the outcomes have the potential to lead to direct or indirect job creation on the continent?
 - **Research Team.** Describe expertise/experience of all senior personnel, roles and responsibilities of each team member, and how the complementary strengths of each member create a team that can achieve the overall purpose and objectives of the project.
 - **General Project Information.** Discuss other information relevant to the potential success of the project. Describe the project management plan, including how the team will communicate, exchange knowledge, share data and other resources, etc. Describe facilities that will be used for the research. Describe dissemination (publications, presentations, inventions/disclosures, outreach, workshops, activities, etc.) and data storage and data sharing plans. A high-level description of annual project goals and anticipated outcomes (a detailed statement of work will be submitted in a separate document). Highlight project risks and how you will manage each risk.
 - **References.** Citations to the literature and other material (does not count against the 10-page limit).
3. **Researcher biosketches:** Biosketches for each individual identified as senior personnel on the project. Maximum of two pages per researcher (i) listing relevant education and professional appointments; (ii) describing teaching interests and research interests; (iii) including references for up to 5 of the most relevant publications to the proposal and up to 5 of the most significant publications; (iv) including up to 5 significant accomplishments or professional activities; and (v) a list of PhD and postdoctoral students supervised.
 4. **Letters of commitment.** Each university or institution participating in an application must provide a letter of intent signed by the authorized representative, declaring support for participation in the proposed research project and team.
 5. **Project Budget and Budget Justification**– Project budgets are entered into the Afretec Excel budget template. The budget provides a space for justifying each budget line. Each funded partner should submit one budget file in the original Excel format.
 6. **Statement of Work** – The Project will include a statement of work entered into a SoW Excel template. One statement of work is submitted for the project in the original Excel format.

In summary, each project should submit:

- A. One file for the project with the Project Summary and Project Description
- B. One file for the project with all the Biosketches

- C. One file for the project with all the Letters of Commitment
- D. One Excel Budget file *per partner*
- E. One Excel file for the project with the Statement of Work

All items must be submitted before the deadline as instructed on page 1.

FUNDING DETAILS AND GUIDELINES

The maximum total funds that may be requested per project proposal and the maximum duration of the project are listed on page 1.

Project funds may be used for the following purposes

- Employee Salaries: Salary support for PI, post-doctoral fellows, graduate students, undergraduate students, and technicians. Salary amounts are commensurate with the proposed effort and according to each university's compensation policies. The positions and individuals holding them should be identified when possible.
- Employee Fringe Benefits: Personnel benefit rates may not exceed 25% of the salary for full and part-time employees. Each university must provide justification of their fringe benefit rates based on institutional accounting.
- Professional Fees: Professional and contractor services to carry out the project.
- Travel Costs: Transport and accommodation to carry out the project including fieldwork, student and faculty exchanges, and project meetings. These are actual costs and not per diems. Cost estimates should be detailed in the justification (e.g. "\$400 airfare, 3 days at \$100/day lodging, \$50 ground transportations, meals covered by the conference, total = \$750 per person").
- Project Specific Expenses: These include
 - Tuition: Student tuition support is capped at actual tuition or \$20K/student/year whichever is lower.
 - Organization of meetings, workshops, symposium.
 - Materials and supplies costs that are specifically required for this particular project and are required in the direct performance of the research. These expenses include applicable laboratory supplies and computers costing less than \$1000/unit.
 - Publication Costs/Documentation/Dissemination. Publication costs to Scopus categorized Q1 and Q2 journals can be charged to the project.
- Capital Assets over \$1000/unit: Capital equipment that must be acquired to conduct the proposed project. Capital equipment is defined as all nonexpendable, tangible property with a useful life of more than one year, and an acquisition cost of \$1,000 or more per unit. Such equipment must remain at the institution for the period of the award.
- Subawards: The PI organization (only) should list the cost of other institutions participating in the project.
- Other Costs: Include here any costs that do not fit in the above categories.

- Indirect costs. Indirect costs (also known as overhead) are limited to no more than 10% of total direct costs (exclusive of capital equipment and subawards). For CMU the indirect cost rate is 0%.

Direct costs may not be used for any of the following:

- Construction projects or laboratory renovations.
- Furniture, office equipment, and office supplies.
- Administrative support.

During the period of the grant, budget variations of more than 10% of the total budget in any budget category must be approved in advance. For proposals with Carnegie Mellon University as a partner, at least 70% of the project funds must be spent at African-based Universities. For the purposes of this call, Carnegie Mellon University-Africa is considered Africa based, but not other campuses of Carnegie Mellon University.

REPORTING AND PARTICIPATION

Reporting requirements for the project include:

- Semi-annual progress reports plus a final project report. These are due within 30 days of the end of the reporting period.
- Participation in the annual Afretec research symposium
- Participation in digital transformation topical workshops as appropriate.

In addition, projects are expected to disseminate their projects widely in peer-reviewed archival journals and conferences as well as other appropriate venues. Note that travel costs for Afretec members to participate in the Afretec annual research symposiums and Afretec topical workshops will be covered directly and do not need to be included in project budgets.

Afretec intends for any measurements, model predictions, statistical code, and new approaches generated under this RFA to be made publicly available. Applicants should describe their plan for data sharing in a publicly accessible forum at submission or publication of the final report.

Review Process

Applications will undergo a three-step review process. In the first stage, a screening process will check proposals against eligibility criteria and consistency with the Afretec mission. In the second stage, a panel of external reviewers selected for their expertise in relevant areas will evaluate the proposals according to the key evaluation criteria. In the third stage, the qualified applications ranked highly by the external reviewers will then undergo additional programmatic review by an appointed Research Committee to ensure that studies funded constitute a coherent program and address the objectives of Afretec. The Director of Afretec will make the final award decision in consultation with other key stakeholders. Successful Research Grant proposals will be awarded on the date noted on page 1.

Conflicts of Interest

Afretec will invite external reviews who are unlikely to have a conflict of interest with the proposal(s) they are asked to review. They will be drawn from Afretec partners and other institutions. A conflict occurs when the reviewer is named on the application in a major professional role; the reviewer (or close family member) would receive a direct financial benefit if the application is funded; the PI or others on the application with a major role are from the reviewer's institutional component (e.g., department); during the past three years the reviewer has been a collaborator or has had other professional relationships (e.g., served as a mentor) with any person on the application who has a major role; the application includes a letter of support or reference letter from the reviewer; or the reviewer is identified as having an advisory role for the project under review. In addition, Afretec staff screen external reviewers for potential conflicts of interest with other applicants who have submitted a proposal under the same request for proposals.

Additional Information

For any additional questions, please contact the Director of Afretec – Prof. Tim Brown, director-afretec@andrew.cmu.edu