# ACENET Embedded Technical Support Call

## Introduction

The Embedded Technical Support program is designed to assist researchers in any discipline at Atlantic Canadian post-secondary institutions to adopt or improve their use of advanced computing techniques and resources in their research.

Call opens:               30 November, 2023
Application deadline:      12 January, 2024

Resources available: dedicated technical research consulting time on a research project for a period of two to four months, based on researcher needs and available ACENET resources.

## The Challenge

Advanced research computing (ARC) refers to the use of high-performance computing (HPC), cloud, data management, and other leading-edge digital technologies to accelerate research and innovation. Combining the power of these resources with the analytical capabilities of data science helps to solve complex problems more quickly and enables the discovery of previously unseen patterns, the handling and processing of vast amounts of data, and the deployment of modern tools and techniques such as machine learning.

These tools have the potential to accelerate discovery in almost any discipline. However, the necessary expertise to optimize code, successfully migrate workflows from the desktop to an HPC cluster, build a cloud platform, or simply explore the capabilities and benefits of ARC, especially in a smaller project may not be readily available.

## How this Program Can Help

ACENET provides ARC infrastructure, support and training to Atlantic Canadian researchers. We connect users in our region to CPU, GPU, cloud and storage resources from across the country through the Digital Research Alliance of Canada (Alliance) - the national organization responsible for digital research infrastructure.

While we strive to provide the level of technical service needed by each of our clients, we recognize that some projects could benefit from more in-depth consulting. We have therefore launched the Embedded Technical Support program to enable a planned approach to providing

additional help where it's needed most and will have the greatest impact.

Our team of experts have backgrounds in a wide range of research areas, including molecular dynamics, chemistry, bioinformatics, machine learning, digital humanities, and research data management. In addition to a comprehensive understanding of ARC, coding and workflow optimization, they share a passion for novel research, solving challenging problems, and helping to bring research and innovation to fruition.

The following Research Consultants are participating in the winter 2023/2024 program:

- Adnane Ait Nasser. Expertise includes: machine learning, deep learning, computer vision, data engineering
- Kaitlin Newson. Expertise includes: data management, repositories, scholarly publishing, website creation
- Gurpreet Matharoo. Expertise includes: Fortran, C++, C, GROMACS applied to condensed matter physics, climate change, and brain networks.
- Ross Dickson. Expertise includes: computational chemistry, job scheduling and code optimization

For more information on our technical support staff, their backgrounds and expertise, please visit: ace-net.ca/team

The program pairs our technical experts with innovative projects that have high potential for success and impact, and that require advanced computing resources, programming support and/or in-depth technical expertise. Some examples of areas we can help are:

- Code parallelization and optimization for HPC systems
- Scientific or data visualization
- Data analytics
- Workflow migration from the desktop to a cluster
- Applying research data management best practices

Successful projects are able to access focused and dedicated support from one or two of ACENET's research consultants for a period of two to four months. During this period, the ACENET consultant(s) will spend *up to* 50% of their time working on your project. Successful projects are able to make use of our regional compute cluster Siku, or any of the national systems. To ensure technical sustainability, tailored training is provided that reflects the project team's needs and level of computational expertise.

# Eligibility

Applicants must be eligible to hold an Alliance <u>Principal Investigator</u> (PI) account and be employed at an Atlantic Canadian post-secondary institution.

# Applying

The deadline to apply is 12 January, 2024. Proposals must be submitted using this **FORM**.

**Important**: Prior to submission, PI's must consult with one of the participating research consultants to discuss project feasibility and ensure that the required resources and skills are available. To do so, select a participating consultant with relevant skills and contact them directly, or reach the team at <u>applications@ace-net.ca</u>.

## *Terms and Conditions*

1. Only one submission per PI will be accepted per call.
2. ACENET is able to provide successful projects with access to our regional system, Siku. However, we are unable to allocate resources on Alliance Federation systems beyond established default levels.
3. We require a brief progress report halfway through the project.
4. PIs will be required to have an active or apply for an Alliance account.
5. All PIs are required to submit a final report that:
   a. Details the technical and/or consulting work carried out;
   b. Outlines the progress in meeting the project's objectives; and
   c. Lists the outcomes from the project, as well as the impact on their research and research group.
6. Unless otherwise agreed, ACENET can use completed projects as case studies in its outreach materials and activities.

# Evaluation and Decisions

Submission reviews will be conducted by ACENET's technical team. Submissions will then be forwarded to ACENET's executive team for evaluation and approval.

The number of proposals selected in each call depends on the volume and scope of proposed projects. We anticipate selecting 1 to 3 projects per call.

Approval of projects is based on:
- Overall fit with the technical team's areas of expertise;

- The scale, scope and likelihood that the project can be completed in two to four months;
- Availability of the requested technical support and resources;
- Novelty, likelihood of success, and potential impact (including impact on the research group); and
- Expected outcomes, including the research group's future use of advanced computing.

PI's will be notified regarding the success of their submission between February 1, 2024 and February 7, 2024.

Please contact applications@ace-net.ca if you have any questions.