Sub-theme 3.1. Information Technology and Computing

Rationale

Information is an imperative and abstract material that is considered as a source of wealth and development in the modern society. Creating knowledge and information using information technological findings and statistical and computational studies will empower decision makers to make up-to-date solutions and improve the day to day life of the society at large.

The community could benefit from both action and scientific research conducted within the sub-theme. In addition, research findings would benefit the infant hardware and software industries of Ethiopia by competing and cooperating with companies, institutions, and agencies worldwide.

Aim

The aim of this sub-theme is to analyse, design and/or develop ICT solutions and conduct computational and statistical analyses to solve problems of the community.

Description

This sub-theme focuses on three areas, computer and information technology development and advancement, statistical modelling, and scientific computing. This sub-theme focuses on providing computational, statistical, and technological outcomes to the community. It also involves need and impact assessment of computational and information technological outputs.

Potential Collaborators

National and overseas universities, Ministry of Science and Technology, ICT industries, Non-governmental organisations, international agencies, funding institutions, the community, policy makers, and other stakeholders.

Expected Output

- Software solutions, packages, network designs, improved algorithms and intelligent systems

- Identified and addressed knowledge gaps in the area of computers and information technology and systems

- Promoted ICT roles in interdisciplinary perspectives

- New and enhanced/localized software development methodologies

- Statistical models for various socio-economic features of the community

- Developed computer models and simulated environments

Research Areas

3.1.1. Formulating, developing, and enhancing information technologies

The research area focuses on new and localized software and hardware technologies that can bolster the development endeavours in the country and pave the way towards new theories and applications. It also focuses on formulating, developing and enhancing information technologies that can solve various problems. It includes research on cloud computing, mobile ad-hoc networks, intelligent system, and artificial intelligence.

3.1.2. Development and application of statistical methods

Research in this area focuses on development and applications of statistical methods, which are useful in monitoring various conditions as well as assisting the development of optimum policies.

3.1.3. Developing mathematical and computational theories

This research area deals with formulating mathematical theories and equations that need semi-high performance computing facilities. It encompasses modelling, simulation, image

processing, optimization, data mining, classification, etc. Modelling in particular is focussed on models that are used to support the implementation of executable versions on computers while the execution of a model over time is understood as a simulation. In the process, tailor-made algorithms based on needs or identified problems will be developed.

Beneficiary

Industries, public institutions, scientific community, policy makers, and the wider community