

Preface

The ability of Africa to sustain a stronger development in the twenty-first century certainly depends in part on its adequate adoption of information and communication technology (ICT) for defining innovative solutions to crucial challenges it recurrently faces with regard to disease, hunger, education, unemployment, and transportation. While some existing initiatives already exist in that direction, there are still many opportunities for Africa in exploiting the power of computing and mobile communication to deal with such challenges so as to reach a competitive level comparable to developed countries. The rapid spread of ICT currently observed in all parts of Africa is one major reason to be optimistic in its high capacity to embrace modern technology. This is in my opinion an unprecedented opportunity to set up a continent-level synergy for exploring common solutions to the crucial problems.

The main motivation of this book is to contribute to this synergy by:

- promoting a continent-level vision on the use of computing and its benefits to deal with crucial problems in developing countries, and particularly in Africa. This is a unique attempt to provide such a global vision;
- identifying the most important trends, challenges, and solutions under consideration by very active and relevant scientific researchers on these topics;
- stimulating a better structuration of research and interaction between scientific researchers on the problems faced by developing countries, and in Africa particularly;
- presenting the current gained insights related to all addressed relevant topics so that both governments and international funding organizations can more efficiently orientate their strategic decisions towards the most important development sectors.

While stressing the benefits of computing for several important domains in Africa, the book presents many important initiatives currently conducted on the continent regarding scientific research and development. In particular, a thorough

and original coverage is given on the trends, challenges, and solutions regarding computing usage within a number of areas. The book is mainly composed of four parts as follows: (1) natural resources and health management, (2) social networks and economy, (3) innovative technologies with focus on embedded systems, and (4) new governance models.

The contributed chapters present continent-level representative works proposing solutions to the identified issues by considering computing as key ingredient. They come from recognized and active field experts in research and its application with regard to the aforementioned domains in Africa. This makes the book well suited for learning and understanding the numerous development stakes and attractive opportunities in developing countries more generally speaking, beyond Africa.

More precisely, the book targets a wide audience comprising:

- Academic actors: it provides an excellent state of the art on the usage of computing to address typical problems in developing countries, pertaining most important domains. It will certainly help interested researchers as well as graduate students to better understand the current hot issues, and how the scientific research is currently structured around the African continent in order to cope with the issues. This is very important to know for setting up adequate inter-African (and beyond) research collaborations for more efficient results.
- Industry actors: the contributing authors bring a number of insights and interesting suggestions that will be useful to future investors in Africa regarding the use of modern numerical technologies in addressed domains. Indeed, with the notable progress margin still observed in the establishment of such technologies in Africa, the book draws many indications on promising sectors for investment.
- Governments, international funding organizations, and other decision makers: it is now unquestionable that information technology is essential to the development of developing countries. Government officials, international funding organizations and other decision makers will find here very relevant information for a better steering of their strategic decisions. This will result in a more efficient impact on populations, environment, and economy on the African continent, and in other developing countries beyond Africa.

My closing words concern acknowledgements. First, I would like to warmly thank all authors who kindly accepted to contribute¹ to this book upon my invitation. Via these contributions, the readers of this book will get a unique up-to-date and representative coverage of addressed topics from most parts of Africa, especially from the following countries: Algeria, Cameroon, Egypt, Ghana, Kenya, Namibia, Nigeria, Senegal, South-Africa, Tunisia, and Uganda. Many thanks to Vianney

¹Unfortunately, it was not possible to include a few expected chapters on education, renewable energy, and high-performance computing due to very tight delivery deadlines for their authors.

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