

Chapter 1

Introduction

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Artificial intelligence is increasingly pervasive in a broad variety of applications and in our daily life, from scientific applications to industrial manufacturing, from medical applications to biomedical systems, from ambient intelligence to consumer electronics, from entertainment to games, from communications to social networks, from finance to marketing, and many more. Addressing the growing needs of smart applications and expanding our knowledge on the foundations and the opportunities offered by artificial intelligence are essential to support for advancing science and technology as well as to provide the critical support for social and economic development.

The AU4+ group of research and education experts on Transforming Science and Society: Advancing Information, Computation and Communication (Flagship 3 of the Alliance) organizes several activities for promoting research collaboration and education initiatives in a variety of topics related to information and communication technologies and their multi/inter-disciplinary foundations, including artificial intelligence.

The 4EU+ Summer School on Artificial Intelligence has been organized in Gargnano del Garda, Italy, to stimulate the interest of PhD students and young researchers in various fields of artificial intelligence, specifically in the scientific and technological foundations and the related emerging applications.

Sharing and discussing advanced knowledge on the theory, techniques, methodologies, and applications of artificial intelligence has been a stimulating experience, contributing to dive in advanced concepts, showcasing achievements, discoveries, and innovations, and opening new opportunities.

This book includes the following contributions:

- S. Monji Azad, M. Kinz, M. Fotouhi, J. Hesser, “A Rigid Point Cloud Registration Method Based on Global Feature Learning and Graph Representation”;
- E. Chitti, “Deep Learning for PCG of 2D video game levels”;
- S. Mukherjee, Dušek, “Text Style Transfer: An Introductory Overview”;
- T. Meißner, W. Nahm, J. Hesser, M. Löw, “Simulation Study on Super-Resolution for Coded Aperture Gamma Imaging”;
- M. Rossi, “Deep Learning Applications to Particle Physics: A Review”.