PROCEEDING BOOK OF

International Seminar on Information and Communication Technologies (ISICT) 2019

Recent Trend of Information and Communication Technology (ICT) Applications ad Implementations in The Era of Industry 4.0

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Preface

The International Seminar on Information and Communication Technologies (ISICT) aims to explore the recent trend of ICT application and implementations in the Era of Industry 4.0. ICT has become an increasingly important role in our daily life and going forward as the engine of our growth. With its rapid changes and progress, Institut Teknologi Telkom Surabaya in collaborating with Universiti Teknologi Malaysia held the conference on 2 March 2020 in Surabaya, Indonesia.

The papers in the proceedings comprise both ICT application and implementation in the following area: a) education; b) healthcare; c) aquaculture; d) transportation & logistics; e) security & image processing. This event, particularly, invites prominent keynote speakers from the reputable institution. High quality selected papers were as well as invited to be presented in the seminar. The papers were peer-reviewed by at least two experts of Program Committee members. Thereafter, we have finally edited about 13 papers to be included in this proceeding.

As ISICT 2019 was the first international event organized by Institut Teknologi Telkom Surabaya, there are still many rooms to be improved in the future. We would like to express sincere gratitude to the Program Committee, Technical Committee, and all reviewers for their hard work and support. We also wish to thank all sponsors who provide sufficiently a lot of support to the event. There are many other participants, as well as all the authors, who were critically important in the organization of this conference. The conference would not have been possible without their valuable support.

April 2020

Editors

Remark from the Vice Rector of Institut Teknologi Telkom Surabaya

Assalamualaikum warahamatullahi wabarakatuh.

Dear All,

It is our pleasure to finally publish the proceedings of International Seminar on Information and Communication Technologies (ISICT) 2019. The program was initially held by Institut Teknologi Telkom Surabaya to broaden our network as well as to enhancing the quality of academic skills of the faculty's member and the students.

The theme of the seminar was "Recent Trend of Information and Communication Technology (ICT) Applications and Implementations in The Era of Industry 4.0" as we realized that digital innovation is the key of Indonesia to face the global competition in the future. We appreciate everyone who supports as well as participate in the conference, such as the keynote speakers, and the Deans of Institut Teknologi Telkom Surabaya for the valuable support in this event. We also express our gratitude to all authors, session chairs, and all participant for their contribution to ISICT 2019.

To the Program Committee and Organizing Committee members, you have put the best effort to hold such a splendid event. We hope the proceedings could provide a new notion and literature to the corresponding fields. We look forward to holding upcoming conference next year.

Wassalamulaikum warohmatullahi wabarokatuh

Dr. Bambang Lelono Widjiantoro, S.T., M.T.

Remark from the Conference General Chair

Assalamualaikum warahamatullahi wabarakatuh.

To our distinguished guest; The keynote speakers, The Rector of Institut Teknologi Telkom Surabaya, The Deans of Institut Teknologi Telkom Surabaya, The presenter, and all of the participant of International Seminar on Information and Communication Technologies (ISICT) 2019. On behalf of the Committee of the ISICT 2019, we would like to express our gratitude and appreciation for supporting the event.

We have received many paper submissions from many different fields of ICT application including education, healthcare, aquaculture, transportation, and social logistics. The seminar was successfully held on 2 March 2019 in Surabaya having around 100 participants. From 28 accepted papers, finally 13 papers were presented and compiled into this proceeding. We also would like to apologize to the authors as the proceeding publication takes quite a long time and we could not conform our commitment to publish the paper into book chapter. Nevertheless, we hope that this proceeding could provide significant contribution as a literature resources to the readers.

We owe to many parties regarding the succeed of the seminar. Therefore, we would like to express the gratefulness to the Program Committee, Technical Committee, Organizing Committee members and all participants of ISICT 2019. Towards the patrons of this seminar: Telkom Foundation, Telkom Indonesia, Universiti Teknologi Malaysia, Mandiri, Telkomsel, Sypuma, Trengginas jaya, and Bhakti Unggul Teknovasi, thank you for your support to ISICT 2019.

In the end, we realize that there could be some shortcomings while we organize this conference. Hence, we apologize and promise to conduct a better conference in the future.

Wassalamulaikum warohmatullahi wabarokatuh

Arliyanti Nurdin, S.T., M.T.