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Speech and Computer

23rd International Conference, SPECOM 2021 St. Petersburg, Russia, September 27–30, 2021 Proceedings

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SPECOM 2021 Preface

The International Conference on Speech and Computer (SPECOM) has become a regular event since the first SPECOM held in St. Petersburg, Russia, in October 1996. SPECOM was established 25 years ago (a of a quarter century!), by the St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS) and the Herzen State Pedagogical University of Russia, thanks to the efforts of Yuri Kosarev and Rajmund Piotrowski.

SPECOM is a conference with a long tradition that attracts researchers in the area of speech technology, including automatic speech recognition and understanding, text-to-speech synthesis, and speaker and language recognition, as well as related domains like digital speech processing, natural language processing, text analysis, computational paralinguistics, multi–modal speech, and data processing or human–computer interaction. The SPECOM conference is an ideal platform for know-how exchange – especially for experts working on Slavic or other highly inflectional languages – including both under-resourced and regular well–resourced languages.

In its long history, the SPECOM conference was organized alternately by the St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences and by the Moscow State Linguistic University (MSLU) in their home towns. Furthermore, in 1997 it was organized by the Cluj–Napoca Subsidiary of the Research Institute for Computer Technique (Romania), in 2005 by the University of Patras (in Patras, Greece), in 2011 by the Kazan Federal University (in Kazan, Russia), in 2013 by the University of West Bohemia (in Pilsen, Czech Republic), in 2014 by the University of Novi Sad (in Novi Sad, Serbia), in 2015 by the University of Patras (in Athens, Greece), in 2016 by the Budapest University of Technology and Economics (in Budapest, Hungary), in 2017 by the University of Hertfordshire (in Hatfield, UK), in 2018 by the Leipzig University of Telecommunications (in Leipzig, Germany), in 2019 by the Boğaziçi University (in Istanbul, Turkey), and in 2020 by SPIIRAS/SPC RAS (fully online).

SPECOM 2021 was the 23rd event in the series, and this time it was organized by the St. Petersburg Federal Research Center of the Russian Academy of Sciences (SPC RAS, which now includes SPIIRAS) in cooperation with MSLU, and held during September 27–30, 2021 in an online format. The conference was sponsored by HUAWEI (Russian Research Center) as a general sponsor, as well as ASM Solutions Ltd. and Alpha Cephei Inc. (Moscow, Russia). SPECOM 2021 was also supported by the International Speech Communication Association (ISCA) and the Saint Petersburg Convention Bureau. Monomax PCO was the official conference service agency.

SPECOM 2021 was held jointly with the 6th International Conference on Interactive Collaborative Robotics (ICR 2021), where problems and modern solutions of human–robot interaction were discussed.

During the SPECOM 2021 and ICR 2021 conferences, keynote lectures were given by Junichi Yamagishi (National Institute of Informatics, Tokyo, Japan) on “Automatic Detection of Generated Voices and Faces: ASVspoof and Deepfake Detection”, by

Mac Schwager (Stanford University, Stanford, USA) on "Enabling Robots to Cooperate and Compete: Distributed Optimization and Game Theoretic Methods for Multiple Interacting Robots", as well as by researchers of HUAWEI (Russian Research Center).

Due to the ongoing COVID–19 pandemic, for the second time, SPECOM 2021 was organized as a fully virtual conference. The virtual conference, in an online format via Zoom, had a number of advantages including an increased number of participants because listeners could take part without any fees, essentially reduced registration fees for authors of the presented papers, no costs for travel and accommodation, a paperless green conference with only electronic proceedings, free access to video presentations in YouTube after the conference, comfortable home conditions for presenters, etc.

This volume contains a collection of submitted papers presented at SPECOM 2021 which were thoroughly reviewed by members of the Program Committee and additional reviewers consisting of more than 100 famous specialists in the conference topic areas. In total, 74 accepted papers out of 163 papers submitted for SPECOM/ICR were selected by the Program Committee for presentation at the conference and for the inclusion in this book. Theoretical and more general contributions were presented in common plenary sessions. Problem–oriented sessions as well as panel discussions brought together specialists in niche problem areas with the aim of exchanging knowledge and skills resulting from research projects of all kinds.

We would like to express our gratitude to all authors for providing their papers on time, to the members of the Program Committee for their careful reviews and paper selection, and to the editors and correctors for their hard work in preparing this volume. Special thanks are due to the members of the Organizing Committee and Monomax PCO for their tireless effort and enthusiasm during the conference organization.

September 2021

Alexey Karpov
Rodmonga Potapova

Organization

The 23rd International Conference on Speech and Computer (SPECOM 2021) was organized by the St. Petersburg Federal Research Center of the Russian Academy of Sciences (SPC RAS, St. Petersburg, Russia) in cooperation with the Moscow State Linguistic University (MSLU, Moscow, Russia). The conference website is: http://www.specom.nw.ru/2021.

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