

3rd Symposium on Foundations of Responsible Computing

FORC 2022, June 6–8, 2022, Cambridge, MA, USA

Edited by

L. Elisa Celis



Editors

L. Elisa Celis

Department of Statistics and Data Science, Yale University, New Haven, CT, USA
elisa.celis@yale.edu

ACM Classification 2012

Theory of computation; Security and privacy → Formal methods and theory of security; Security and privacy; Social and professional topics → Computing / technology policy; Theory of computation → Theory and algorithms for application domains; Theory of computation → Machine learning theory; Theory of computation → Algorithmic game theory and mechanism design; Theory of computation → Design and analysis of algorithms; Mathematics of computing → Probability and statistics; Applied computing → Law, social and behavioral sciences; Computing methodologies → Machine learning

ISBN 978-3-95977-226-6

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <https://www.dagstuhl.de/dagpub/978-3-95977-226-6>.

Publication date

July, 2022

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <https://portal.dnb.de>.

License

This work is licensed under a Creative Commons Attribution 4.0 International license (CC-BY 4.0): <https://creativecommons.org/licenses/by/4.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPIcs.FORC.2022.0

ISBN 978-3-95977-226-6

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

LIPICs – Leibniz International Proceedings in Informatics

LIPICs is a series of high-quality conference proceedings across all fields in informatics. LIPICs volumes are published according to the principle of Open Access, i.e., they are available online and free of charge.

Editorial Board

- Luca Aceto (*Chair*, Reykjavik University, IS and Gran Sasso Science Institute, IT)
- Christel Baier (TU Dresden, DE)
- Mikolaj Bojanczyk (University of Warsaw, PL)
- Roberto Di Cosmo (Inria and Université de Paris, FR)
- Faith Ellen (University of Toronto, CA)
- Javier Esparza (TU München, DE)
- Daniel Král' (Masaryk University - Brno, CZ)
- Meena Mahajan (Institute of Mathematical Sciences, Chennai, IN)
- Anca Muscholl (University of Bordeaux, FR)
- Chih-Hao Luke Ong (University of Oxford, GB)
- Phillip Rogaway (University of California, Davis, US)
- Eva Rotenberg (Technical University of Denmark, Lyngby, DK)
- Raimund Seidel (Universität des Saarlandes, Saarbrücken, DE and Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Wadern, DE)

ISSN 1868-8969

<https://www.dagstuhl.de/lipics>

■ Contents

Preface	
<i>L. Elisa Celis</i>	0:vii
Organizers	
.....	0:ix
Papers	
Controlling Privacy Loss in Sampling Schemes: An Analysis of Stratified and Cluster Sampling	
<i>Mark Bun, Jörg Drechsler, Marco Gaboardi, Audra McMillan, and Jayshree Sarathy</i>	1:1–1:24
Leximax Approximations and Representative Cohort Selection	
<i>Monika Henzinger, Charlotte Peale, Omer Reingold, and Judy Hanwen Shen</i>	2:1–2:22
On Classification of Strategic Agents Who Can Both Game and Improve	
<i>Saba Ahmadi, Hedyeh Beyhaghi, Avrim Blum, and Keziah Naggita</i>	3:1–3:22
Individually-Fair Auctions for Multi-Slot Sponsored Search	
<i>Shuchi Chawla, Rojin Rezvan, and Nathaniel Sauerberg</i>	4:1–4:22
Robustness Should Not Be at Odds with Accuracy	
<i>Sadia Chowdhury and Ruth Urner</i>	5:1–5:20
Improved Generalization Guarantees in Restricted Data Models	
<i>Elbert Du and Cynthia Dwork</i>	6:1–6:12
Differential Secrecy for Distributed Data and Applications to Robust Differentially Secure Vector Summation	
<i>Kunal Talwar</i>	7:1–7:16



■ Preface

The Symposium on Foundations of Responsible Computing (FORC), now in its third year, is a forum for mathematically rigorous research in computation and society writ large. The Symposium aims to catalyze the formation of a community supportive of the application of theoretical computer science, statistics, economics, and other relevant analytical fields to problems of pressing and anticipated societal concern.

Topics include, but are not restricted to theoretical approaches to fairness in machine learning, including the investigation of definitions, algorithms, lower bounds, and tradeoffs; formal approaches to privacy, including differential privacy; computational and mathematical social choice, including apportionment and redistricting; economic incentives, including mechanism design for social good; metrics and implications of robustness, including formal methods for explainability; bias in the formation of, and diffusion in, social networks; and mathematical approaches bridging computer science, law, and ethics; mathematically rigorous work on societal problems that have not traditionally received attention in the theoretical computer science literature.

Twenty-four papers were selected to appear at FORC 2022, held on June 6-8, 2022 at the Harvard University Center for Mathematical Sciences and Applications in Cambridge, MA, USA. The twenty-four papers were selected by the program committee, with the help of additional expert reviewers, out of fifty-three submissions. FORC 2022 offered two submission tracks: archival-option (giving authors of selected papers the option to appear in this proceedings volume) and non-archival (in order to accommodate a variety of publication cultures, and to offer a venue to showcase FORC-relevant work that will appear or has recently appeared in another venue). Seven archival-option and seventeen non-archival submissions were selected for the program.

Thank you to the entire program committee and to the external reviewers for their hard work during the review process amid the continued challenging conditions of the pandemic. It has been an honor and a pleasure to work together with you to shape the program of this young conference. Finally, we would like to thank our generous sponsors at the Harvard Center of Mathematical Sciences and Applications (CSMA) for partial conference support.

Elisa Celis
New Haven, CT
April 30, 2022



■ Organizers

Program Committee

JAlfredo Viola
Amit Deshpande
Ashia Wilson
Cristobal Guzman
Deeparnab Chakrabarty
Elisa Celis (PC Chair)
Gireeja Ranade
Guy Rothblum
Ingal Talgam-Cohen
Jamie Morgenstern
Kobbi Nissim
Kunal Talwar
Pan Xu
Rachel Cummings
Rasmus Pagh
Ravi Kumar
Ruth Urner
Sampath Kannan
Seth Neel
Shuchi Chawla
Toshihiro Kamishima

Steering Committee

Avrim Blum
Cynthia Dwork
Shafi Goldwasser
Sampath Kannan
Jon Kleinberg
Kobbi Nissim
Toni Pitassi
Omer Reingold
Guy Rothblum
Salvatore Ruggieri
Salil Vadhan
Adrian Weller

Student Volunteers

Vijay Keswani
Anay Mehrotra



