DETERMINED 2022: Neurodevelopmental Impairments in Preterm Children — Computational Advancements
Preface

Vida Groznik[1,2,3,*,†], Aleksander Sadikov[1,3,†], Umberto Michelucci[4,5,†] and Marco A. Deriu[6,†]

[1]*University of Ljubljana, Faculty of Computer and Information Science, Večna pot 113, 1000 Ljubljana, Slovenia*

[2]*University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Glagoljaška 8, 6000 Koper, Slovenia*

[3]*NEUS Diagnostics d.o.o., Ziherlova 40E, 1000 Ljubljana, Slovenia*

[4]*TOELT llc, Machine Learning Research and Development, Birchlenstr. 25, 8600 Duebendorf, Switzerland*

[5]*Computer Science Department, Lucerne University of Applied Sciences and Arts, 6002 Lucerne*

[6]*PolitoBIOMed Lab, Department of Mechanical and Aerospace Engineering, Politecnico di Torino, 10129 Turin, Italy*

Abstract

This volume contains the papers presented at the International Workshop *DETERMINED 2022: Neurodevelopmental Impairments in Preterm Children — Computational Advancements* that was held at the University of Ljubljana, Faculty of Computer and Information Science in Ljubljana, Slovenia on 26 August, 2022. The workshop, held in a hybrid mode, consisted of fourteen contributions: a keynote speech given by Marinka Žitnik from Harvard Medical School and thirteen oral presentations based on as many submissions accepted after a single-blind peer-review process. Each oral presentation was complemented by a poster displayed throughout the workshop. The workshop organisers thank all authors, contributors, and attendees to DETERMINED 2022.

Keywords

Preterm Children, Neurodevelopmental Impairments, Computational Advancements, Machine Learning, PARENT project, scientific event, MSCA-ITN, Horizon2020, Workshop

1. Introduction

The first instalment of the DETERMINED 2022 international workshop was held at the University of Ljubljana, Faculty of Computer and Information Science in Ljubljana, Slovenia on 26 August 2022. The workshop was held in conjunction with the machine learning training school that has been organised in the framework of the PARENT project funded by the European Union's

Horizon 2020 research and innovation program under the Marie Sklodowska-Curie-Innovative Training Network 2020, Grant Agreement N° 956394 (https://parenth2020.com/). The goal of the DETERMINED 2022 workshop was to provide a unique forum for graduates, post-docs, and other scientists to present and exchange new research and ideas for the advancement of early diagnosis of motor and cognitive impairments in preterm children. This year the workshop hosted an exciting keynote talk, oral presentations, poster exhibitions, and a networking event to discuss such advancements.

DETERMINED 2022 was held in person with around fifty attendees. The whole workshop was also streamed live via ZOOM.

2. Call for papers, submission, and peer-review process

The call for papers was published on the workshop website[1] and distributed to the researchers via e-mails. The invitation to participate in the workshop aimed to gather contributions in terms of research ideas, research results, or literature reviews exploring technological innovations related to neurodevelopmental disorders, focusing primarily on preterm infants. Contributions targeted the following areas but not limited to:

- Machine Learning for Preterm Neonatal Care Applications;
- Big Data Analytics;
- Medical Image Processing and Signal Processing;
- Clinical Decision Support Systems (CDSSs);
- Precision Medicine;
- Biology and Bioinformatics;
- Neuroscience and Computational Neuroscience;
- IoT for Healthcare;
- Computational Modelling in Biological Systems and Medicine.

Authors submitted the papers to the workshop via EasyChair[2] conference management system. The system was used also for gathering the reports from reviewers selected by the scientific committee.

Each paper was reviewed by at least three independent reviewers through a single-blind review process. Thirteen papers (out of 15 submitted) were accepted for an oral presentation at the workshop.

3. Scientific Programme

DETERMINED 2022 opened with a keynote "Enabling scientific discovery using artificial intelligence" given by Marinka Žitnik, an Assistant Professor of Biomedical Informatics at Harvard Medical School. The keynote lecture was followed by the oral presentations given by the authors of the accepted submissions. The presentations were organised in two sessions.

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[1] https://parenth2020.com/2022-determined/
[2] https://easychair.org/

The oral presentations were supported by posters that were displayed during a co-located training event of the PARENT project and during the workshop.

3.1. Keynote speaker

Marinka Žitnik is an Assistant Professor at Harvard University with appointments in the Department of Biomedical Informatics, Broad Institute of MIT and Harvard, and Harvard Data Science. She studies applied machine learning with a focus on challenges in scientific discovery and medicine. Her methods leverage biomedical data at the scale of billions of interactions among millions of entities, blend machine learning with statistics and data science, and infuse biomedical knowledge into deep learning. Problems she investigates are motivated by network biology and medicine, genomics, drug discovery, and health.

Before joining Harvard, she was a postdoctoral scholar in Computer Science at Stanford University. She was also a member of the Chan Zuckerberg Biohub at Stanford. She received her bachelor's degree, double majoring in computer science and mathematics, and her Ph.D. in Computer Science from the University of Ljubljana. During her Ph.D. studies she was also researching at Imperial College London, University of Toronto, Baylor College of Medicine, and Stanford University.

4. Organisation

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