

5th Signal Processing and Monitoring (SPaM) in Labour International Workshop 2024

Cagliari, Italy, July 1-3, 2024

<https://sites.unica.it/spam2024/>

Please go to the web-link above for social and programme updates!

SUNDAY (30TH JUNE)

Informal social activities on morning and afternoon (updates on the website) - at your expense. Registration is required! [Visit the website for some proposals.](#)

Informal social get together and aperitif/dinner: 7:30 pm-11:00 pm, at [Sa Panada](#), in [Via Giovanni Maria Dettori, 8, 09124 Cagliari CA.](#)

Drinks and platters with traditional Sardinian food in the form of finger-food served on platters, typically for two (costs between 15 and 25 Euros per person). Registration is required (do not book by yourself! We'll provide a form to indicate your presence or not).

MONDAY (1ST JULY)

8:30 REGISTRATION

9:00 – 9:10 WELCOME FROM THE ORGANISERS

9:10 – 9:35 CLINICAL CONCEPTS AND CHALLENGES IN INTRAPARTUM FETAL MONITORING

Austin Ugwumadu, St George's Hospital, London, UK

9:35 – 10:45 BIG DATASETS FOR CTG RESEARCH

Chair: A. Georgieva

9:35 – 9:50 Ioana Duta, Oxford University, UK

Developing large scale international datasets for fetal monitoring

9:50 – 10:05 Lyuba Bozhilova, Oxford Labour Monitoring group, Oxford University, UK

Maternity data: integrating multicentre datasets to uncover risk factor trends

10:15 – 10:20 Samuel Boudet, Lille Catholic University, France

Building a dataset for an AI competition on CTG pattern recognition: from false signals and baseline to variability and contractions

10:20 – 10:35 Robert Kearney, McGill Biomedical Engineering, Canada

Building a comprehensive CTG dataset for a retrospective cohort of 250k US births

10:35 – 10:40 Imane Ben M'Barek, Université Paris Cité, France

Dataset from three Paris hospitals

10:40 – 10:45 Lovers/Daumer/Georgieva

SPaM'22 review publication and the multicentre results for deceleration duration

10:45 – 10:50 Whole workshop discussion

10:50 – 11:20 COFFEE BREAK

11:20 – 12:30 LESSONS FROM A LARGE US POPULATION – CLINICAL AND CTG ANALYSES

Chair: R. Vullings

11:20 – 11:35 Yvonne Wu, Pediatric neurology, UCSF, US

Definition and Incidence of HIE

11:35 – 11:50 Marie-Coralie Cornet, Perinatal-neonatal medicine, UCSF, US

Importance of chorioamnionitis and other risk factors in predicting HIE

11:50 – 12:00 Ethan Grooby, McGill Biomedical Engineering, Canada

Modelling static and dynamic clinical data for prior probability risk assessment

12:00 – 12:10 Johann Vargas Calixto, McGill Biomedical Engineering, Canada

Accounting for the evolution of the FHR properties in labor to better detect infants at risk of HIE

12:10 – 12:20 Derek Degbedzui, McGill Biomedical Engineering, Canada

A deep-learning classifier of HIE risk using an FHR time-frequency representation and long short-term memory (LSTM) networks

12:20 – 12:30 Mahdi Shamsi, McGill Biomedical Engineering, Canada

Clinical Insights for HIE Risk Detection from Latent Representations of CTG Signals

12:30 – 14:00 LUNCH

14:00 – 15:15 DEEP LEARNING FOR CTG ANALYSIS (PART 1)

Chair: P. Warrick

14:00 – 14:20 Petar Djuric, Stony Brook, US

Real time monitoring of fetal wellbeing via latent processes

14:20 – 14:40 Ivan Jordanov & Antoniya Georgieva, Portsmouth & Oxford Universities, UK

Multitask Deep Learning Model based on large CTG datasets from Oxford

14:40 – 15:00 Maria Signorini, Politecnico di Milano, Italy

The role of Machine Learning and Deep Learning methods and models in monitoring and predicting fetal states in pregnancy

15:00 – 15:15 Whole workshop discussion

15:15 – 15:45 COFFEE BREAK

15:45 – 16:30 DEEP LEARNING FOR CTG ANALYSIS (PART 2)

Chair: I. Jordanov

15:45 – 16:00 Jaleed Khan, Oxford University, UK

Deep Learning in Antepartum Fetal Monitoring

16:00 – 16:15 Imane Ben M'Barek, Université Paris Cité, France

Development of a Deep Learning Model to predict hypoxia using data from 3 hospitals

16:15 – 16:30 Whole workshop discussion

Take home messages and future directions re deep learning in CTG

16:30 – 16:55 FETAL HEAD COMPRESSION AND ITS POSSIBLE ROLE IN NEUROLOGIC INJURY

Barry Schifrin, US

17:15 -20:30 SOCIAL PROGRAM: TREASURE HUNT IN CAGLIARI

Meeting point: the workshop venue

20:30 – INFORMAL TRADITIONAL SARDINIAN DINNER (MEAT OR VEGETARIAN) IN DOWNTOWN CAGLIARI AT “AMMENTOS” RESTAURANT, IN [VIA SASSARI, 120, 09124 CAGLIARI](#).

This dinner is not included in the registration fees. Cost is about 32€ including appetizers, tris of first courses, tris of second courses, sweets, water, wine, ... Meeting point at the restaurant: SPAM2024 group

TUESDAY (2ND JULY)

9:30 – 10:10 IMPLEMENTATION OF FETAL MONITORING TECHNOLOGIES, HOSPITAL & HOME - 1

Chair: P. Djuric

9:30 – 9:50 Rik Vullings, Eindhoven University, NL

Generalization of signal processing methods and technology from intrapartum monitoring to antepartum monitoring

9:50 – 10:10 Beatrijs van der Hout, Máxima Medical Center, NL

NEMO implementation of eCTG at the labour ward, the obstetric high care and towards the home setting

10:10 – 10:30 Martin Daumer, Technical University of Munich & TRIUM, Germany

Central monitoring - benefits and risks analysis

10:30– 11:00 COFFEE BREAK

11:00 – 12:30 IMPLEMENTATION OF FETAL MONITORING TECHNOLOGIES, HOSPITAL & HOME - 1

Chair: M. Holzmann

11:00 – 11:20 Nicolo Pini, Columbia University and Cassandra Hendrix, Hassenfeld Children's Hospital at NYU Langone, US

Charting fetal ANS development from at-home monitoring

11:20 – 11:40 Mariana Tome, Oxford Labour Monitoring group, University of Oxford, UK

Ensuring usability and successful clinical implementation of the Oxford Fit for Labour tool

11:40 – 12:00 Tatiana Lashina, Philips, Netherlands

12:00 – 12:30 Whole workshop discussion

12:30 – 14:00 LUNCH

14:00 – 15:30 HUMAN-BASED INTRAPARTUM CTG INTERPRETATION

Chair: A. Ugwumadu

14:00 – 14:20 Aimee Lovers, University of Amsterdam, NL

Physiology-based Interpretation

14:20 – 14:40 Veronica Blanco Gutierrez, Bristol University, UK

The future of intrapartum CTG interpretation: human vs machine

14:40 – 15:00 Imane Ben M'Barek, Université Paris Cité, France

Evaluation of Intra-Observer Variability with and without Computerized CTG

15:00 – 15:10 Caroline Reis Gonçalves, Hospital Sofia Feldman, Brazil

Cardiotocography experience in Brazil

15:10 – 15:25 Whole workshop discussion

15:25 – 15:55 COFFEE BREAK

15:55 – 16:20 “BECAUSE THAT’S WHERE THE MONEY IS”: PREGNANCY MONITORING IN LOW RESOURCE SETTINGS

Charles Delahunt, Global Health Labs, Washington, US

19:30 – 23:00 NETWORKING DINNER: [“LA MARINELLA” RESTAURANT](#).

The organizers are providing a complimentary bus transfer from the Hotel Regina Margherita to the restaurant and back. **DEPARTURE TIME: 19:00**. We will have a list of the registered people. If someone prefers going on their own, please inform the local organizers earlier. We will move back to Hotel Regina Margherita departing at 23:00 the latest from the restaurant.

WEDNESDAY (3RD JULY)

9:30 – 10:30 OTHER RELEVANT PREDICTIONS AROUND PREGNANCY AND BIRTH

Chair: D. Pani

9:30 – 9:45 Ivar de Vries & Rik Vullings, Eindhoven University, NL

Application of sparse domain Kalman filtering for non-invasive fetal electrocardiogram waveform analysis

9:45 – 10:05 Philip Warrick, PeriGen and McGill Biomedical Engineering, Canada

Modelling labor cervical dilation and fetal station with Gaussian processes

10:05 – 10:30 Malin Holzmann, Karolinska Institutet, Sweden

Short-term variation of the fetal heart rate as a marker of intraamniotic infection in pregnancies with preterm prelabor rupture of membranes: a historical cohort study

10:30 – 11:00 COFFEE BREAK

11:00 – 11:35 ALGORITHMS FOR FETAL ECG ANALYSIS

Chair: R. Vullings

11:00 – 11:15 Giulia Baldazzi, University Cagliari, Italy

The role of wavelet denoising for the enhancement of noninvasive fetal ECG

11:15 – 11:35 Hau-Tieng Wu, Duke University, US

Noise robust time-frequency analysis tools for complicated biomedical signals, using fetal ECG as an example

11:35 – 12:00 REFLECTIONS FROM THE WORKSHOP AND IMPLICATIONS FOR FUTURE WORK

William Fifer, Columbia University, US

12:00 – 12:30 WHOLE WORKSHOP DISCUSSIONS

Funding opportunities for multicentre research to improve fetal monitoring methods and devices

Take-home messages

12:30 GOOD-BYE LUNCH

14:30-19:30 VISIT TO SU NURAXI (BARUMINI)

The organizers are providing a complimentary bus transfer from the WORKSHOP VENUE to the Archeological site and back, for those who registered. If you are opting for this later, please urgently inform the local organizers as the seats on the buses are limited (but we can find a way). We expect to be back in Cagliari at 19:00-19:30. Tickets for the visit at a discounted group rate (max 13€/person) are at your expense. A visit with an English guide was already blocked for you.