



IEEE International Joint Conference on Biometrics



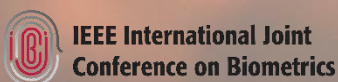
Conference Booklet

Edited by Vitomir Štruc



Photo by Luka Esenko

IEEE IJCB 2023
Ljubljana, Slovenia
25-28 September 2023



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Local Organizers



University of Ljubljana
Faculty of *Electrical Engineering*



Welcome

Welcome Message

Welcome to the 2023 edition of the IEEE International Joint Conference on Biometrics (IJCB). IEEE IJCB is the premier international forum for research on biometrics and related technologies and combines two major biometrics conferences, the IEEE International Conference on Biometrics Theory, Applications and Systems (BTAS), and the IAPR International Conference on Biometrics (ICB). The blending of these two conferences is made possible through a special agreement between the IEEE Biometrics Council and the IAPR Technical Committee on Biometrics (TC-4), and after years of online and hybrid events due to the COVID-19 pandemic is this year again held as a **fully in-person event** in Ljubljana, Slovenia. We are very excited to have you with us, to be able to meet face-to-face, exchange ideas and discuss the latest advancements in biometrics research.

The IJCB conference series continues to attract high-quality submissions on a broad range of topics related to biometrics and supporting technologies. This year, the conference received 199 papers, which underwent a rigorous peer-review procedure overseen by the IJCB 2023 Program Chairs (Zhen Lei, Hugo Proenca, Anderson Rocha and Luisa Verdoliva) and 26 Area Chairs. More than 230 reviewers helped with the reviewing process, provided comments on the submissions, and participated in the discussions during the rebuttal phase. Ultimately, 72 (36.2%) highest-quality papers were accepted for presentation at IJCB 2023, out of which 30 (15.1%) were scheduled as orals, and the remaining 42 (21.1%) as posters. Papers co-authored by either Program or General Chairs were handled with chair conflicts enabled in CMT. Ten competitions on different biometrics-related problems were also accepted to be part of IJCB this year. The competitions produced 10 summary papers that are part of the program of the conference.

Four special sessions are also being held in the scope of IJCB 2023, and we thank the special session organizers for enriching the regular conference program with posters and talks on several timely topics. Fadi Boutros, Nasir Memon, Vitomir Štruc and Andreas Uhl organized a special session on “Synthetic data in Biometrics”, Abhijit Das, Aritra Mukherjee, Xiangyu Zhu spearheaded a session on “3D Biometrics with Monocular Vision”, Ioannis Kakadiaris and Yi Yao set up a session on “Long-Range Biometrics Challenges” and Abhijit Das, Meiling Fang, Raghavendra Ramachandra organized a special session on “Recent Advances in Detecting Manipulation Attacks on Biometric Systems”. The special sessions received a total of 50 submissions and 26 were selected for presentation based on a peer-review procedure overseen by the special session organizers. Submissions from the organizers were handled by the Special Session Chair to avoid conflicts of interest.

Following the tradition of previous IJCBs, a call was also issued for presentation of biometrics papers published in major journals. In response to this call, multiple applications were received and 11 journal paper presentations were selected to be part of the IJCB 2023 program. These journal papers come from top-tier venues, including the IEEE Transactions on Biometrics, Behavior, and Identity Science, the go-to journal for biometrics-related research. The technical program of IJCB also consists of 2 demos that will be presented in parallel to the journal poster session. Federico Nocentini, Claudio Ferrari, and Stefano Berretti will present “S2L+S2D: Identity-Preserving Speech-Driven 3D Talking Heads” and Shiqi Yu will show off a demonstration on “Face detection and recognition by OpenCV”.

In addition to the paper presentations and demos, IJCB also hosts keynotes from leading researchers and winners of awards from IJCB’s sponsoring societies. Dr. Gouying Zhao from the University of Oulu will

Welcome

give a talk titled: "What can machines read from human faces?", and Dr. Manoj Aggarwal from Amazon One will share a keynote address on "Amazon One: A Peek under the Hood". The conference will also have talks by the winner of the IAPR Young Biometrics Investigator Award (YBIA) and the 2023 IEEE Biometrics Council Meritorious Service Award recipient. Both winners will be announced at IJCB 2023.

IJCB 2023 will feature 3 tutorials: "Face Recognition and Verification: Recent Trends and Threats" by Guido Borghi, Nicolò Di Domenico and Lorenzo Pellegrini; "Alpha and Omega of Deepfakes" by Abhijit Das and Antitza Dantcheva and "Power Papers: Some Practical Pointers" by Terence Sim. These tutorials will allow participants to gain insights on timely technical topics, such as deepfakes and face morphing attacks, but also learn new skills and improve their paper writing capabilities. Finally, a Doctoral Consortium is also planned that will give young researchers the opportunity to meet with established researchers and leaders from academia and discuss their work and career opportunities.

There will be ample opportunity to make new acquaintances and socialize with old colleagues during the social events of IJCB 2023. These include a trip to the Postojna Cave, one of the largest caves in this part of Europe, a reception at the conference hotel and a gala dinner in the medieval Castle of Ljubljana. We hope these events will give you the chance to make new friends and make your stay in Ljubljana as memorable as possible.

We are grateful for the support from our sponsors and supporters. This year, the NSF is a Diamond sponsor and offered generous travel support for students attending the IJCB 2023 Doctoral Consortium; Amazon, VISA and Rank One Computing are Silver Sponsors and the City of Ljubljana, Visit Ljubljana and I feel Slovenia are Local Supporters. We also highly appreciate the contributions of the IEEE Biometrics Council through its DEI travel grant program that allowed us to support researchers from various underrepresented groups in attending IJCB 2023. To all the sponsors and supporters, thank you!

We also wish to thank all members of the Organizing Committee for their hard work and effort in making IJCB 2023 a success: the Finance Chair Adam Czajka; the Publication Chairs Marta Gomez-Barrero and Kiran Raja; the Publicity Chairs Aparna Bharati, Jing Dong and Christian Rathgeb, the Sponsorship Chairs Sunpreet Arora and Zhenan Sun; the Competition Chairs Clinton Fookes and Ana Filipa Sequeira; the Demo Chairs Peter Peer and Shiqi Yu; the Special Session Chair Naser Damer; the Local Arrangement Chairs Simon Dobrišek and Žiga Emeršič; the Doctoral Consortium Chairs Tempestt Neal and Maria De Marsico; the DEI Chairs John Howard, Ajita Rattani, Albert Ali Salah; and members of Advisory Committee Christoph Busch, Rama Chellappa, Sebastien Marcel, Vishal Patel, Arun Ross and Tieniu Tan. We would especially like to thank our Web Chair Marija Ivanovska, who showed exceptional dedication and also helped with the VISA invitation letters, local arrangements and (too) many other conference tasks. We also thank Harriet Baldwin as well as our student volunteers for helping in the conference organization.

IEEE IJCB 2023 is the seventh edition of the IJCB conference series and is financially sponsored by the IEEE Biometrics Council and technically co-sponsored by IAPR. Welcome!

Kevin Bowyer, Alice O'Toole, Vitomir Štruc
IJCB 2023 General Chairs

Zhen Lei, Hugo Proenca, Anderson Rocha, Luisa Verdoliva
IJCB 2023 Program Chairs

People

IJCB 2023 Organizing Committee

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- Alice O'Toole
- Vitomir Štruc

Program Chairs

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- Hugo Proença
- Anderson Rocha
- Luisa Verdoliva

Finance Chair

- Adam Czajka

Publication Chairs

- Marta Gomez-Barrero
- Kiran Raja

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- Jing Dong
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- Jean-Luc Dugelay
- Stephanie Schuckers

Tutorial Chairs

- Antitza Dantcheva
- Zhenan Sun

Competition Chairs

- Clinton Fookes
- Ana Filipa Sequeira

Industry/Demo Chairs

- Peter Peer
- Shiqi Yu

Special Session Chairs

- Naser Damer

Local Arrangement Chairs

- Simon Dobrišek
- Žiga Emeršič

Doctoral Consortium Chairs

- Tempestt Neal
- Maria De Marsico

DEI Chairs

- John Howard
- Ajita Rattani
- Albert Ali Salah

Web Chair

- Marija Ivanovska

Advisory Committee

- Christoph Busch
- Rama Chellappa
- Sebastien Marcel
- Vishal Patel
- Arun Ross
- Tieniu Tan

People

IJCB 2023 Area Chairs

Main Conference

- Ajita Rattani
- Ana F. Sequeira
- Annalisa Franco
- Aparecido Marana
- Aparna Bharati
- Arun Vermury
- Christian Rathgeb
- David Menotti
- Di Huang
- Emanuele Maiorana
- Fernanda Andalo
- Fernando Alonso-Fernandez
- John Howard
- Karl Ricanek
- Kien Nguyen
- Naser Damer
- Jonathon Philips
- Paulo Correia
- Pavel Korshunov
- Rachael Jack
- Ruben Tolosana
- Ruben Vera-Rodriguez
- Victor Sanchez
- Xiangyu Zhu
- Yevgeniy Sirotin

Special Sessions

- Abhijit Das
- Fadi Boutros
- Ioannis A. Kakadiaris
- Naser Damer
- Raghavendra Ramachandra
- Vitomir Štruc
- Yi Yao

Competitions

- Ana F. Sequeira

IJCB 2023 Special Session Organizers

Synthetic data in Biometrics

- Fadi Boutros
- Nasir Memon
- Vitomir Štruc
- Andreas Uhl

3D Biometrics with Monocular Vision

- Abhijit Das
- Aritra Mukherjee
- Xiangyu Zhu

People

Long-Range Biometrics Challenges

- Ioannis A. Kakadiaris
- Yi Yao

Recent Advances in Detecting Manipulation Attacks on Biometric Systems

- Abhijit Das
- Meiling Fang
- Raghavendra Ramachandra

People

Reviewer List

Main conference

- Abdenour Hadid
- Abhijit Das
- Adam Czajka
- Aidan Boyd
- Ajay Kumar
- Ajian Liu
- Akshay Agarwal
- Alessandro Pianese
- Alexandre M. Ferreira
- Alice O'Toole
- Ana F. Sequeira
- Andrea Atzori
- Andrea Lagorio
- Andreas Uhl
- Andrew Beng Jin Teoh
- Andrey Kuehlkamp
- Anil Jain
- Annalisa Franco
- Anoop Namboodiri
- Anurag Chowdhury
- Aritra Mukherjee
- Arun Kumar S V
- Arun Ross
- Augusto Santos
- Aurea Soriano-Vargas
- Aythami Morales
- B. V. K. Vijaya Kumar
- Benedetta Tondi
- Bernardo Biesseck
- Bin Zhang
- Bo Peng
- Bruno Degardin
- Carmen Bisogni
- Chang Yu
- Changsheng Chen
- Chaona Chen
- Chiara Galdi
- Chiara Pero
- Chinmay Sahu
- Christian Riess
- Christoph Busch
- Christophe Charrier
- Christophe Rosenberger
- Claus Vielhauer
- Cuicui Kang
- Cunjian Chen
- Daigo Muramatsu
- Daile Osorio Roig
- Dan Zeng
- Daniel Moreira
- Daniel Riccio
- Davide Cozzolino
- Denton J. Bobeldyk
- Divyansh Aggarwal
- Dominik Söllinger
- Eduardo Luz
- Ehsan Yaghoubi
- Eli J. Laird
- Emanuela Marasco
- Emanuele Maiorana
- Fabio Narducci
- Fadi Boutros
- Feng Liu
- Fernanda Andaló
- Gabriel Cirac
- Gal Novich
- Gian Luca Marcialis
- Giovanni Poggi
- Giuseppe Stragapede
- Hailin Shi
- Haixia Wang
- Haiyan Chen
- Haiyu Wu
- Hannes Fassold
- Hatef Otroshi Shahreza
- Hazim Kemal Ekenel
- Hector J. Santos-Villalobos
- Henrique Sergio G. Costa
- Hugo Proenca
- Ignacio Serna
- Igor Kviatkovsky
- Ines Domingues
- Jag Mohan Singh
- Jaime S. Cardoso
- James Wayman
- Jan Niklas Kolf
- Jana Dittmann
- Jannis Priesnitz
- Jeremy M. Dawson
- Jeremy Speth
- Jianze Wei
- Joao Phillipe Cardenuto
- Joao R. Pinto
- João Neves
- John J. Howard
- Jorge Batista
- José Nascimento
- Joshua J. Engelsma
- Juan Tapia
- Julien Bringer
- Kailash A. Hambarde
- Kar-Ann Toh
- Kevin Bowyer

People

- Kevin Hernandez-Diaz
- Kiran Balagani
- Klemen Grm
- Kristopher W. Reese
- Larbi Boubchir
- Lazaro Janier Gonzalez-Soler
- Longteng Kong
- Lucia Cascone
- Luis Ducla Soares
- Luisa Verdoliva
- Luiz A. Zanlorensi
- Lukas Snoek
- Lunke Fei
- Luuk Spreeuwers
- Mahdi Ghafourian
- Maneet Singh
- Manuel Günther
- Marcelo Santos
- Marco Huber
- Maria De Marsico
- Marija Ivanovska
- Marta Gomez-Barrero
- Massimiliano Todisco
- Md Atiqur Rahman Ahad
- Mei Ngan
- Mei Wang
- Meiling Fang
- Mohamed Ebraheem
- Naser Damer
- Nasser Nasrabadi
- Nisha Srinivas
- Nuno Cruz Garcia
- Nuno Gonçalves
- Jonathon Philips
- Pablo Arias
- Paolo Gasti
- Patrick Flynn
- Pedro C. Neto
- Peter Peer
- Philipp Terhörst
- Raghavendra Ramachandra
- Rajesh Kumar
- Rama Chellappa
- Rayson Laroca
- Renu Sharma
- Ronald Wilson
- Ruben Tolosana
- Ruben Vera-Rodriguez
- Saheb Chhabra
- Sandipan Banerjee
- Saurabh Hinduja
- Sayde L. King
- Scott McCloskey
- Sergey Tulyakov
- Shaun Canavan
- Shiqi Yu
- Shuang Yang
- Silvio Barra
- Simon Dobrisek
- Souad Khellat-Kihel
- Srirangaraj Setlur
- Svetlana Yanushkevich
- Tetsushi Ohki
- Tharindu Fernando
- Thilina Lalitharatne
- Thomas Swearingen
- Tiago Gonçalves
- Tiago Roxo
- Tianxin Xie
- Valter Estevam
- Vasco Lopes
- Vishal Patel
- Vitomir Štruc
- Vitor Albiero
- Wei Jia
- Weisong Zhao
- Wlodzimierz Kasprzak
- Xiao Yang
- Xingbo Dong
- Yachun Li
- Yang Yang
- Yaoyao Zhong
- Yunlian Sun
- Zenghao Bao
- Zhaofeng He
- Zhe Cui
- Zhixiang He
- Zhiyuan Ma
- Zidu Wang
- Žiga Emeršič
- Žiga Babnik
- Zitong Yu

People

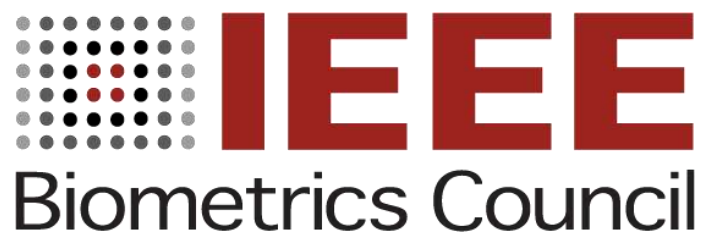
Special sessions

- Adam Czajka
- Andrea Atzori
- Andreas Uhl
- Andrey Kuehlkamp
- Andrey Makrushin
- Anthony Smith
- Anurag Chowdhury
- Aravind Sundaresan
- Aritra Mukherjee
- Arun Kumar S V
- Aythami Morales
- Barsha Mitra
- Benjamin Riggan
- Biying Fu
- Blaž Meden
- Chandranath Adak
- Chinmay Sahu
- Christos Smailis
- Darian Tomažević
- Dominik Söllinger
- Eli J. Laird
- Fernanda Andaló
- Gaurav Jaswal
- Giuseppe Stragapede
- Haoyu Zhang
- Jag Mohan Singh
- Jan Niklas Kolf
- Janez Krizaj
- João Neves
- Juan Tapia
- Kiran Raja
- Klemen Grm
- Lucia Cascone
- Marcel Grimmer
- Marco Huber
- Marija Ivanovska
- Matej Vitek
- Meiling Fang
- Narayan Vetrekar
- Pedro C. Neto
- Philipp Terhörst
- Praveen Kumar Chandaliya
- Richard Plesh
- Sanjoy K. Saha
- Shishir Shah
- Subhankar Ghosh
- Sushma Krupa Venkatesh
- Tim Oblak
- Xiao Lin
- Žiga Babnik

Competitions

- Adam Czajka
- Ana F. Sequeira
- Fadi Boutros
- Giulia Orrù
- Jan Niklas Kolf
- Joao R. Pinto
- Leonardo Capozzi
- Marco Huber
- Meiling Fang
- Naser Damer
- Pedro C. Neto
- Peter Peer
- Raghavendra Ramachandra
- Sandip Purnapatra
- Shiqi Yu
- Tiago Gonçalves
- Žiga Emeršič

Sponsoring Societies



General Information

Reception

Location: Grand Hotel Union

Date: 16 September, 2023

Time: 19:30 – 21:30

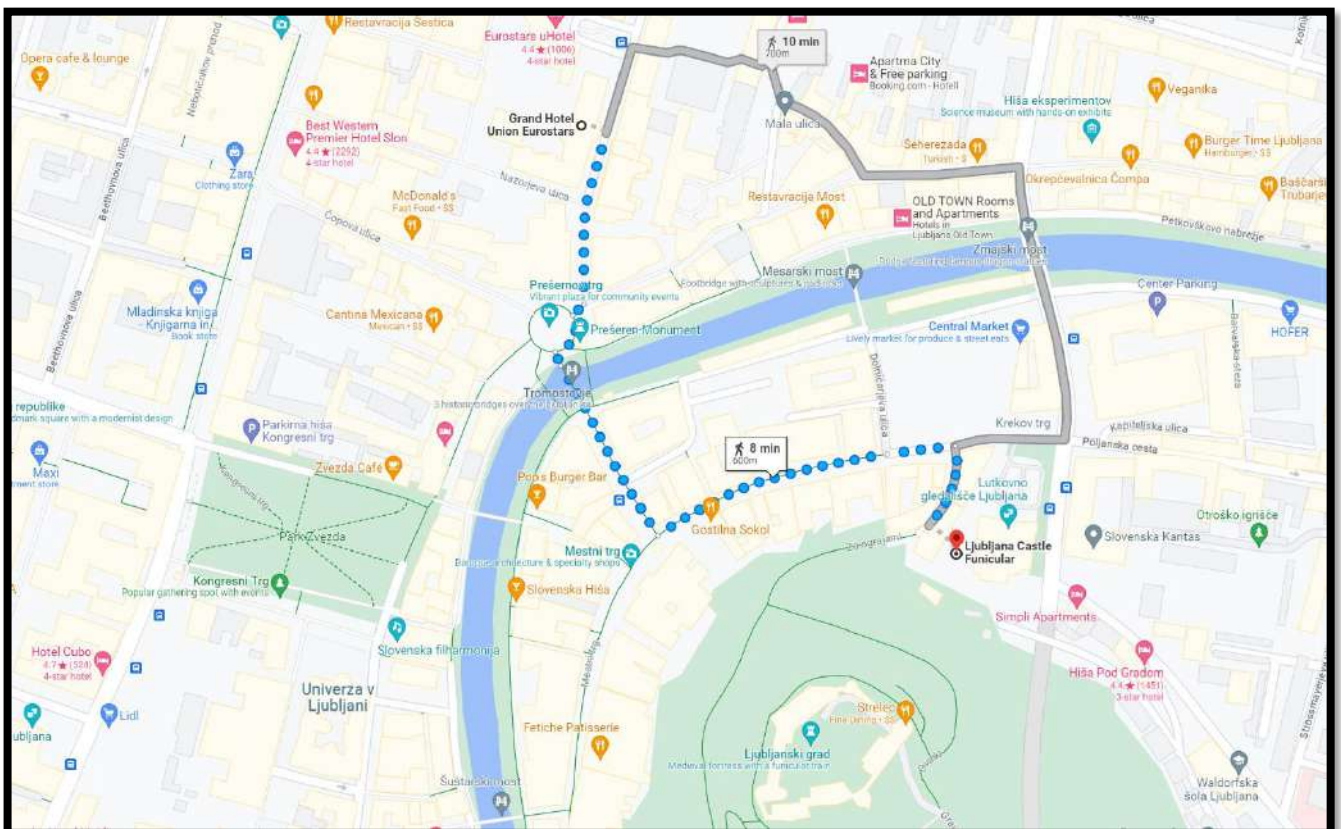
Gala dinner and award ceremony

Location: Ljubljana Castle

Date: 27 September, 2023

Time: 19:00 – 23:00

The Ljubljana Castle is accessible on foot or with the funicular. Return tickets for the funicular for the gala dinner are included in the registration fee. The walk to the castle takes 5-10 minutes (600m) from the venue. If you prefer to go the castle on foot, please make sure that you are there by 19:00.



Social Excursions

1. Monday, 25 September, 2023: **Trip to the Postojna cave**, 15:00 -20:00 (optional)
2. Tuesday, 26 September, 2023: **Guided Ljubljana City Tour**, 18:00 -19:00

General Information

Registration

Monday: 8:00 – 9:30, Banquet Room

Tuesday: 7:30 – 9:00, Banquet Room

Wednesday: 8:00 – 9:00, Banquet Room

Thursday: 8:00 – 9:00, Banquet Room

Getting around

The easiest way to move around the city is to use the city buses – “Trole”. To be able to ride a bus, you first need to purchase the so-called URBANA card. You can buy one at most newsstands and vending machines that are located at larger bus stops. The URBANA card works like every reloadable prepaid card. You can add credit to your card and then spend it on the bus rides. Users of the Urbana Single City Card can also install the Urbana mobile app on their Android or iOS smartphones, which then serves as a virtual card. For more information, see: <https://www.lpp.si/en/informations-passengers/urbana-mobile-app>



If you decide to explore the city with a bicycle, the BICIKELJ service may be the right choice for you. The BICIKELJ stations are placed all over the city. You can borrow a bicycle from any station in the city and return it to any other station in the city as long as there is a free spot for the bicycle. The weekly membership fee for the BICIKELJ service in Ljubljana is **1 EUR**, the annual membership fee is **3 EUR**. If you borrow a bicycle for one hour, then the service is free, an additional hour costs 1 EUR. You need to register on-line for the service. More information is available here: <https://www.bicikelj.si/en/home>



General Information



Free WiFi in Ljubljana

The [WiFree Ljubljana](https://www.wifree-ljubljana.com/) wireless network allows visitors to Ljubljana city centre to use free wireless internet for up to 60 minutes a day. For more information, visit the following URL: <https://www.visitljubljana.com/en/visitors/travel-information/wifree-ljubljana/>



Open Kitchen Ljubljana

There is a food festival, called Open Kitchen (slo. odprta kuhinja) every Friday 5 minutes away from the venue. The food festival allows you to buy small portions of food from a wide variety of restaurants and has something for everyone. See: <https://www.odprtakuhna.si/en/>



IJCB 2023 Keynotes

Keynotes at a Glance

Tuesday, 26 September 2023, 9:00 - 10:00:

Gouying Zhao, Academy professor, University of Oulu

KEYNOTE: What can machines read from human faces?

Wednesday, 27 September 2023, 9:00 - 10:00:

Winner of the IAPR Young Biometrics Investigator Award

KEYNOTE: Will be announced at the conference

Thursday, 28 September 2023, 9:00 – 10:00:

Manoj Aggarwal, Director of Applied Science, Amazon One

KEYNOTE: Amazon One: A Peek under the Hood

IJCB 2023 Keynotes

Gouying Zhao, Academy professor, University of Oulu

KEYNOTE: What can machines read from human faces?



Guoying Zhao received the Ph.D. degree in computer science from the Chinese Academy of Sciences, Beijing, China, in 2005. She is currently an Academy Professor and full Professor (tenured in 2017) with University of Oulu. She is/was also a visiting professor with Aalto University and Stanford University. She is a member of Academia Europaea, a member of Finnish Academy of Sciences and Letters, IEEE Fellow, IAPR Fellow and AAIA Fellow. She was panel chair for IEEE conference on Automatic Face and Gesture (FG 2023), publicity chair of 22nd Scandinavian Conference on Image Analysis

(SCIA 2023), co-program chair for ACM International Conference on Multimodal Interaction (ICMI 2021), and co-publicity chair for FG2018, and has served as associate editor for IEEE Trans. on Multimedia, Pattern Recognition, IEEE Trans. on Circuits and Systems for Video Technology, Image and Vision Computing and Frontiers in Psychology Journals. Her current research interests include image and video descriptors, facial-expression and micro-expression recognition, emotional gesture analysis, affective computing, and biometrics. Her research has been reported by Finnish TV programs, newspapers and MIT Technology Review.

ABSTRACT: The face is very special for us humans. Most people spend more time looking at faces than at any other type of objects. Given a face image/video, technology has been able to get the information regarding people's age, gender, ethnicity, identity, facial expressions, etc. Recent years' efforts have been put on reading concealed and imperceptible visual cues from

IJCB 2023 Keynotes

faces, such as facial micro-expressions, subtle facial color changes, and physiological signals, like the heart rate. This talk focuses on research developments from reading well-seen facial cues to hidden micro and imperceptible cues with the discussion about the technology, applications and ethical concerns.

Manoj Aggarwal, Director of Applied Science, Amazon One

KEYNOTE: Amazon One: A Peek under the Hood



Manoj Aggarwal is a technologist with over 20 years of experience in computer vision, biometrics and AI. He is currently a Director of Applied Science at Amazon where he is leading the science teams that built the palm recognition engine powering Amazon One. Before Amazon, he founded two startups to build computer vision-based systems for wide area surveillance, iris recognition and automated sports production. He received his Ph.D. degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in 2001.

ABSTRACT: Amazon One is a fast, convenient, contactless way for people to use their palm to enter, identify, and pay. The service is highly secure and uses custom-built algorithms and hardware to create a person's unique palm signature. In this talk, I will discuss pieces of the technology behind Amazon One, including the image acquisition system and the recognition engine. I will also share insights into components beyond recognition such as generative AI, image quality estimation and liveness detection that are key to achieving a good customer experience.

IJCB 2023 Tutorials

IJCB 2023 will host three tutorial, which be held on **Monday, September 25th, 2023**.

Tutorial 1: Alpha and Omega of Deepfakes

- Presenters: Abhijit Das and Antitza Dantcheva
- Room: Union Hall/Unionska dvorana
- Time: 9:30 – 11:50

Description: In this tutorial, we will discuss the evolution of deepfake manipulation – from generation to detection technology available. We will introduce the deepfake technology and its verballity to society, and create a threat to the law and order of any government. We will also highlight the recent incidents, where the broadcast of fake news has jeopardized the integrity of certain regions. Hence detecting deepfakes has earned significant attention. Consequently, it has become a hot topic of interest for governments, industry and policymakers to mitigate such vulnerabilities. Next, we will showcase the activeness of the research community from both the angle of deepfake generation and detection to resolve the threat. Finally, we will discuss the available commercial solutions and the way forward.

Tutorial 2: Face Recognition and Verification: Recent Trends and Threats

- Presenters: Guido Borghi, Nicolò Di Domenico and Lorenzo Pellegrini
- Room: Union Hall/Unionska dvorana
- Time: 12:00 – 14:30

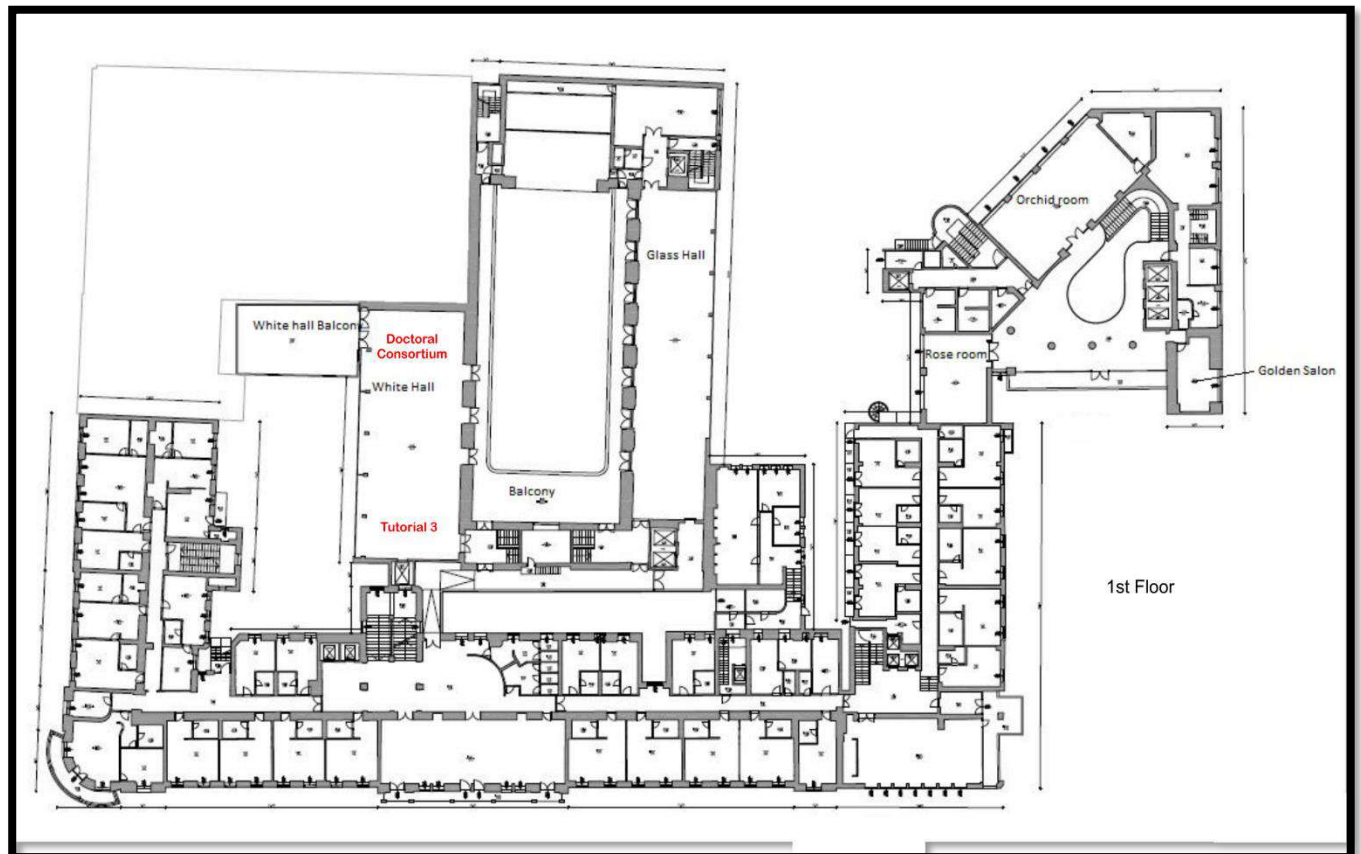
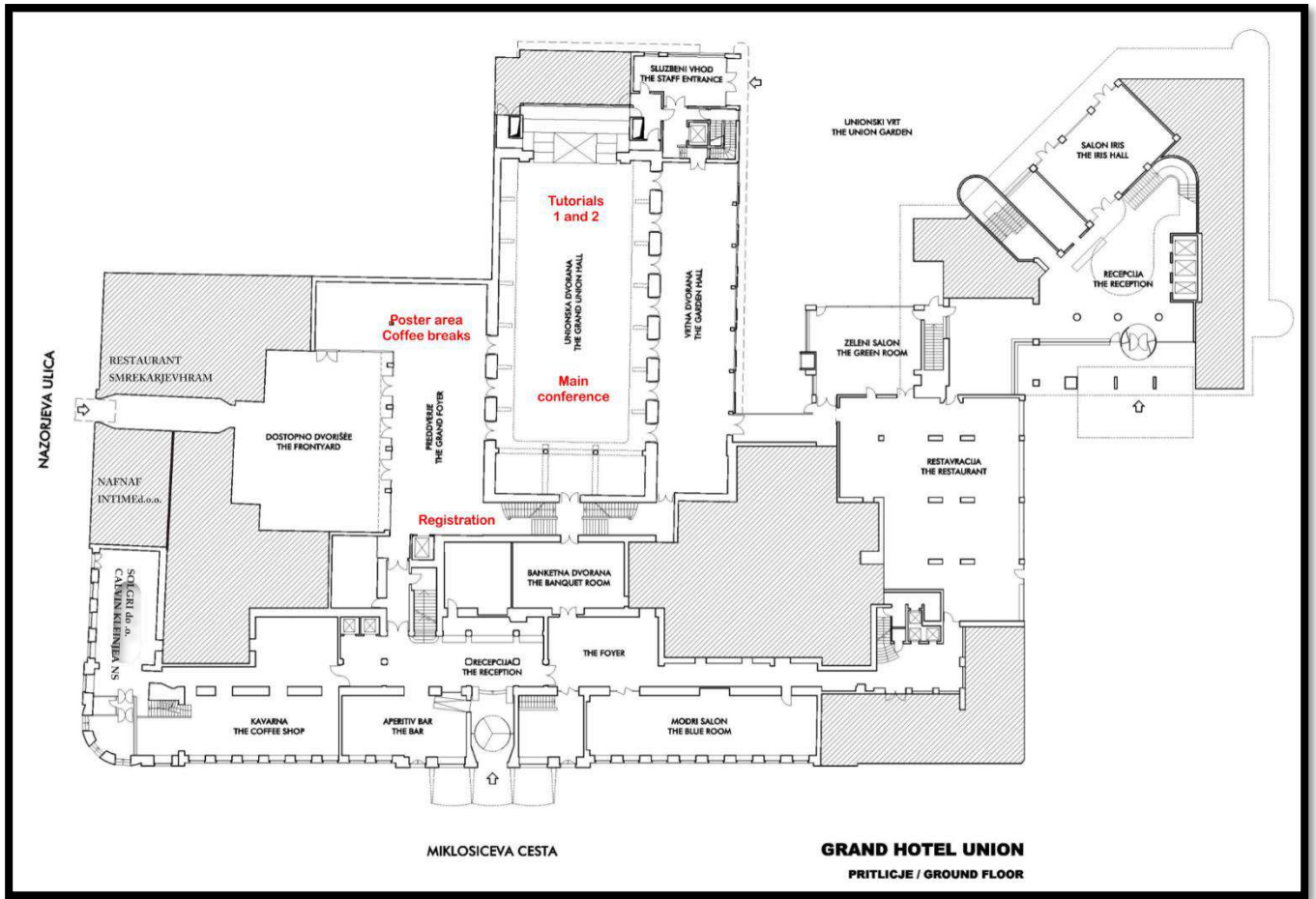
Description: Face recognition technology has gained widespread prominence due to its multifaceted applications across various domains, ranging from identity verification to personalized user experiences, and therefore the need for secure and efficient facial identity verification has become crucial. Ensuring the robustness of Face Recognition and Verification systems against malicious attempts to bypass or impersonate users is vital to safeguard individuals and organizations from potential cyber threats. In particular, the Morphing Attack, i.e., the possibility to elude face verification systems through a facial morphing operation between a criminal and an accomplice, has recently emerged as a serious security threat. Despite the importance of this kind of attack, the development and comparison of Morphing Attack Detection (MAD) methods is still a challenging task, especially with solutions based on deep learning approaches. Therefore, we have developed and publicly release Revelio, a flexible and modular framework for the reproducible development and evaluation of MAD systems. After an analysis about the recent trend of Face Recognition systems available in the market and in the literature, we will show how it is possible to use the Revelio framework to develop and deploy effective Single Image MAD (S-MAD) and Differential MAD (D-MAD) algorithms on publicly released datasets, even obtaining state-of-the-art performance. Finally, we will show and illustrate the use of the FVC-onGoing and NIST MORPH FRVT, web platforms that can be used to effectively test MAD systems on sequestered datasets.

Tutorial 3: Power Papers: Some Practical Pointers

- Presenter: Terence Sim
- Room: White hall/Bela dvorana (main part)
- Time: Morning-Noon

Description: Writing a good research paper takes effort; more so if there is a page limit. Yet this skill is required of every researcher, who, more often than not, fumbles his or her way through. Good grammar is only a start; care and craft must be applied to turn a mediocre paper into a memorable one. Writing skills can indeed be honed. From the tutor: "In this reprise talk, I will highlight the common mistakes many researchers make, and offer practical pointers to pack more punch into your paper. Needless to say, the talk will be biased: I will speak not from linguistic theories, but from personal experience, sharing what has, and has not, worked for me. I will cover the major sections of a technical paper: the Title, Introduction, Related Work, Figures and Tables, and Conclusion. I will discuss the purpose of each section, present common mistakes, and provide concrete examples of good writing. I will also show how the different sections ought to be linked to reinforce the message behind the paper."

Floor Plan



IJCB 2023 Program at a Glance

Week's Schedule at a Glance

Monday, 25.9.2023	Tuesday, 25.9.2023	Wednesday, 25.9.2023	Thursday, 25.9.2023
Tutorials/DC	Main Conference	Main Conference	Main Conference
Break	Lunch		
Tutorials/DC	Main Conference	Main Conference	Main Conference
Trip to Postojna Cave	Guided City Tour	Banquet	
	Reception		

Program Overview

Monday, 25.9.2023

8:00 - 9:30	Registration
9:30 - 11:50	Tutorial 1: Alpha and Omega of Deepfakes
12:00 - 14:30	Tutorial 2: Face Recognition and Verification: Recent Trends and Threats
9:30 - 13:30	Tutorial 3: Power Papers: Some Practical Pointers
9:15 - 14:00	Doctoral Consortium
15:00 - 20:00	Trip to Postojna Cave

Tuesday, 26.9.2023

7:30 - 8:45	Registration
8:45 - 9:00	IJCB 2023 Opening session
9:00 - 10:00	Keynote 1 - Guoying Zhao (Oulu)
10:00 - 10:30	Coffee break
10:30 - 11:45	Oral session 1 - Face, Iris and Fingerprint
11:45 - 12:30	Special Session 1 - Biometric recognition and identification at altitude and range
12:30 - 14:00	Lunch
14:00 - 15:15	Oral session 2 - Gait, Gesture and Action Recognition
15:15 - 16:30	Poster session 1 + Coffee break
16:30 - 17:45	Poster session 2
18:00 - 19:00	Guided Ljubljana City Tour
19:30 - 21:30	IJCB 2023 Reception

IJCB 2023 Program at a Glance

Wednesday, 27.9.2023

8:00 - 9:00	Registration
9:00 - 10:00	Keynote 2 - IAPR YBIA 2023 Award winner
10:00 - 10:30	IEEE Biometrics Council Meritorious Service Award recipient address
10:30 - 11:00	Coffee break
11:00 - 12:30	Oral session 3 - Face Generation, Attribute and Presentation Attack Detection
12:30 - 13:15	Special Session 2 - Advances in detecting manipulation attacks on biometric systems
13.15 - 14:30	Lunch
14:30 - 15:45	Oral session 4 - Multi-modal and Multi-Spectral Biometrics
15:45 - 17:00	Poster session 3 + Coffee break
17:00 - 18.00	Poster session 4 + Demos + Journal Presentations
19:00 - 23:00	Gala dinner at the Castle of Ljubljana

Thursday, 28.9.2023

8:00 - 9:00	Registration
9:00 - 10:00	Keynote 3 - Manoj Aggarwal (Amazon One)
10:00 - 10:30	Coffee break
10:30 - 11:45	Oral session 5 - DeepFakes and Digital Forensics
11:45 - 12:30	Special Session 3 - Synthetic data in Biometrics
12:30 - 1:15	Special Session 4 - 3D Biometrics with Monocular Vision
13:15 - 14:30	Lunch
14:30 - 15:45	Oral session 6 - Privacy, Demographic Biases & Fairness
15:45 - 17:00	Poster session 5 + Coffee break
17:00 - 17:15	Closing Session

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Detailed Program

Sunday, 24 September 2023

IEEE Biometrics Council AdCom Meeting

- Room: Lotus salon, 8th floor
- When: 5pm to 7pm, CEST

Monday, 25 September 2023

9:30 – 11:50	Tutorial 1: Alpha and Omega of Deepfakes + Presenters: Abhijit Das and Antitza Dantcheva + Room: Union Hall/Unionska dvorana
9:30 – 10:30	Tutorial 1: Alpha and Omega of Deepfakes – Part 1
10:30 – 10:50	Coffee Break Room: Grand Foyer
10:50 – 11:50	Tutorial 1: Alpha and Omega of Deepfakes – Part 2
11:50 – 12:00	Break
12:00 – 14:30	Tutorial 2: Face Recognition and Verification: Recent Trends and Threats + Presenters: Guido Borghi , Nicolò Di Domenico and Lorenzo Pellegrini + Room: Union Hall/Unionska dvorana
12:00 – 13:30	Tutorial 2: Face Recognition and Verification: Recent Trends and Threats – Part 1
13:30 – 13:50	Coffee Break Room: Grand Foyer
13:50 – 14:30	Tutorial 2: Face Recognition and Verification: Recent Trends and Threats – Part 2
15:00 – 20:00	Trip to Postojna Cave

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9:30 – 13:30	Tutorial 3: Power Papers: Some Practical Pointers + Presenter: Terence Sim + Room: White hall/Bela dvorana (main)
9:30 – 10:30	Tutorial 3: Power Papers: Some Practical Pointers – Part 1
10:30 – 10:50	Coffee Break Room: Grand Foyer
10:50 – 11:50	Tutorial 3: Power Papers: Some Practical Pointers – Part 2
11:50 – 12:00	Break
12:00 – 13:30	Tutorial 3: Power Papers: Some Practical Pointers – Part 3
13:30 – 13:50	Coffee Break Room: Grand Foyer

9:15 – 14:00	Doctoral Consortium + DC Chairs: Maria De Marsico, Tempestt Neal + Room: White hall/Bela dvorana (main)
9:15 – 9:30	Opening Remarks
9:30 – 9:50	Mentor/mentee Meet & Greet
9:50 – 10:40	Lightning Talks Session 1 (8-minutes each)
10:40 – 11:00	Coffee Break
11:00 – 11:50	Lightning Talks Session 2 (8-minutes each)
11:50 – 12:50	One-on-one mentoring session
12:50 – 14:00	Group lunch with all mentors Students interact with all mentors during this session Room: Grand Foyer

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Tuesday, 26 September 2023

8:45 – 9:00	<p>IJCB 2023 Opening session Room: Union Hall/Unionska dvorana</p>
9:00 – 10:00	<p>Keynote 1 – What can machines read from human faces? Speaker: Gouying Zhao, Academy professor, University of Oulu Room: Union Hall/Unionska dvorana Chair: Alice O’Toole</p>
10:00 – 10:30	<p>Coffee Break Room: Grand Foyer/Poster Area</p>
10:30 – 11:45	<p>Oral session 1 – Face, Iris and Fingerprint Room: Union Hall/Unionska dvorana Chair: Richa Singh</p> <ol style="list-style-type: none"> <i>Dual Dense Uncertainty Embedding for Iris Recognition</i>; Wang, Yunlong*; Wei, Jianze; He, Zhaofeng; Sun, Zhenan; Tan, Tieniu <i>Sclera-TransFuse: Fusing Swin Transformer and CNN for Accurate Sclera Segmentation</i>; Li, Haiqing*; wang, caiyong; Guangzhe, Zhao; He, Zhaofeng; Wang, Yunlong; Sun, Zhenan <i>COLFIPAD: A Presentation Attack Detection Benchmark for Contactless Fingerprint Recognition</i>; Priesnitz, Jannis*; Kolberg, Jascha; Fang, Meiling; Madhu, Akhila; Rathgeb, Christian; Damer, Naser; Busch, Christoph <i>MRA-GNN: Minutiae Relation-Aware Model over Graph Neural Network for Fingerprint Embedding</i>; Su, Yapeng*; Zhao, Tong; Zhang, Zicheng <i>CoNAN: Conditional Neural Aggregation Network For Unconstrained Face Feature Fusion</i>; Jawade, Bhavin*; Mohan, Deen Dayal; Fedorishin, Dennis; Setlur, Srirangaraj; Govindaraju, Venu
11:45 – 12:30	<p>Special session 1 – Biometric recognition and identification at altitude and range Room: Union Hall/Unionska dvorana Chair: Ioannis A. Kakadiaris</p> <ol style="list-style-type: none"> <i>Human Body Model based ID using Shape and Pose Parameters</i>; Sundaresan, Aravind*; Burns, John B; Sur, Indranil; Yao, Yi; Lin, Xiao; Kim, Sujeong <i>DOERS: Distant Observation Enhancement and Recognition</i>; System Du, Dawei; Hill, Cole; Bertocco, Gabriel Capiteli; Pamplona Segundo, Mauricio ;

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	<p>Robbins, Wes J; RichardWebster, Brandon; Collins, Roderic; Sarkar, Sudeep; Boulton, Terrance E; McCloskey, Scott*</p> <p>3. <i>ATDetect: Face Detection and Keypoint Extraction at Range and Altitude</i>; Lau, Chun Pong; Suin, Maitreya*; Chellappa, Rama</p> <p>4. <i>Novel Body Biometric for Long-Range Recognition Under Extreme Conditions</i>; Jonnalagedda, Padmaja*; Bhanu, Bir</p>
12:30 – 14:00	<p>Lunch Room: Grand Foyer</p>
14:00 – 15:15	<p>Oral session 2 – Gait, Gesture and Action Recognition Room: Union Hall/Unionska dvorana Chair: Mark Nixon</p> <p>1. <i>PointGait: Boosting End-to-End 3D Gait Recognition with Point Clouds via Spatiotemporal Modeling</i>; Wang, Rui*; Shen, Chuanfu; Fan, Chao; Huang, George; Yu, Shiqi</p> <p>2. <i>GaitRef: Gait Recognition with Refined Sequential Skeletons</i>; Zhu, Haidong*; Zheng, Wanrong; Zheng, Zhaoheng; Nevatia, Ram</p> <p>3. <i>A Multi-Stage Adaptive Feature Fusion Neural Network for Multimodal Gait Recognition</i>; Zou, Shinan*; Xiong, Jianbo; Fan, Chao; Yu, Shiqi; Tang, Jin</p> <p>4. <i>BehaveFormer: A Framework with Spatio-Temporal Dual Attention Transformers for IMU-enhanced Keystroke Dynamics</i>; Senarath, Dilshan*; Tharinda, Sanuja; Vishvajith, Maduka; Rasnayaka, Sanka; Wickramanayake, Sandareka; Meedeniya, Dulani</p> <p>5. <i>GaitMorph: Transforming Gait by Optimally Transporting Discrete Codes</i>; Cosma, Adrian*; Radoi, Emilian</p>
15:15 – 16:30	<p>Poster session 1 + Coffee break Room: Grand Foyer/Poster Area Chair: Shiqi Yu</p> <p>Main conference Posters</p> <p>1. <i>Age-constrained Ear Recognition: The EICZA Dataset and SASE Baseline</i></p>

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- Model*, Qin, Wenda*; Betke, Margrit; Etter, Lauren; Simukanga, Alinani ; Gill, Christopher
2. *GaitRef: Gait Recognition with Refined Sequential Skeletons*, Zhu, Haidong*; Zheng, Wanrong; Zheng, Zhaoheng; Nevatia, Ram
3. *Lifespan Face Age Progression using 3D-Aware Generative Adversarial Networks*, Jensen, Eric Kastl; Bjerre, Morten; Grimmer, Marcel*; Busch, Christoph
4. *A Large-Scale Re-identification Analysis in Sporting Scenarios: the Betrayal of Reaching a Critical Point*, Freire Obregon, David*; Lorenzo-Navarro, Javier; Santana, Oliverio J.; Hernandez-Sosa, Daniel; Castrillón-Santana, Modesto
5. *Adaptive Adversarial Patch Attack on Face Recognition Models*, Yan, Bei; Zhang, Jie*; Yuan, Zheng; Shan, Shiguang
6. *BehaveFormer: A Framework with Spatio-Temporal Dual Attention Transformers for IMU-enhanced Keystroke Dynamics*, Senarath, Dilshan*; Tharinda, Sanuja; Vishvajith, Maduka; Rasnayaka, Sanka; Wickramanayake, Sandareka; Meedeniya, Dulani
7. *Recognizing People by Body Shape Using Deep Networks of Images and Words*, Myers, Blake A*; Jaggernauth, Lucas; Metz, Thomas; Hill, Matthew Q.; Gandi, Veda Nandan; Castillo, Carlos; O'Toole, Alice
8. *Enhancing 3D-Air Signature by Pen Tip Tail Trajectory Awareness: Dataset and Featuring by Novel Spatio-temporal CNN*, Atreya, Saurabh K; BORA, MAHESWAR; Mukherjee , Aritra; DAS, ABHIJIT*
9. *GaitMorph: Transforming Gait by Optimally Transporting Discrete Codes*, Cosma, Adrian*; Radoi, Emilian
10. *Template Recovery Attack on Homomorphically Encrypted Biometric Recognition Systems with Unprotected Threshold Comparison*, Bassit, Amina*; Hahn, Florian; Rezgui , Zohra ; Kelly, Una; Veldhuis, Raymond; Peter, Andreas
11. *KinfaceNet: A New Deep Transfer Learning based Kinship Feature Extraction Framework*, Ghosh, Pallabi*; Shomaji, Sumaiya; Woodard, Damon L; Forte, Domenic

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12. *iWarpGAN: Disentangling Identity and Style to Generate Synthetic Iris Images*; Yadav, Shivangi*; Ross, Arun

13. *Vocal Style Factorization for Effective Speaker Recognition in Affective Scenarios*; Sandler, Morgan L*; Ross, Arun

14. *Analysis of fNIRS as a Biometric Modality*; Chennoju, Bhuvan*; Bajaj, Keerti; Rahman, Mostafizur; Derakhshani, Reza

Special session 1 Posters

15. *Human Body Model based ID using Shape and Pose Parameters*; Sundaresan, Aravind*; Burns, John B; Sur, Indranil; Yao, Yi; Lin, Xiao; Kim, Sujeong

16. *Gait Recognition with Mask-based Regularization*; Shen, Chuanfu*; Lin, Beibei; Zhang, Shunli; Yu, Xin; Huang, George; Yu, Shiqi

17. *DOERS: Distant Observation Enhancement and Recognition System*; Du, Dawei; Hill, Cole; Bertocco, Gabriel Capiteli; Pamplona Segundo, Mauricio ; Robbins, Wes J; RichardWebster, Brandon; Collins, Roderic; Sarkar, Sudeep; Boulton, Terrance E; McCloskey, Scott*

18. *ATDetect: Face Detection and Keypoint Extraction at Range and Altitude*; Lau, Chun Pong; Suin, Maitreya*; Chellappa, Rama

19. *Challenges in Off-angle to Frontal Iris Image Conversion using Pix2Pix Generative Adversarial Networks*; Kota, Jitendra Sai*; Karakaya, Mahmut

20. *Novel Body Biometric for Long-Range Recognition Under Extreme Conditions*; Jonnalagedda, Padmaja*; Bhanu, Bir

21. *UG-LDFace: Unified and Generalized Framework for Long-Range Disguised Face Recognition*; Dosi, Muskan*; Chiranjeev, Chiranjeev; Vatsa, Mayank ; Singh, Richa

22. *(Un)fair Exposure in Deep Face Rankings at a Distance*; Atzori, Andrea*; Fenu, Gianni; Marras, Mirko

16:30 – 17:45

Poster session 2

Room: Grand Foyer/Poster Area

Chair: Alexandre Bernardino

Main conference Posters

1. *Dual Dense Uncertainty Embedding for Iris Recognition*; Wang, Yunlong*; Wei, Jianze; He, Zhaofeng; Sun, Zhenan; Tan, Tieniu
2. *AdvGen: Physical Adversarial Attack on Face Presentation Attack Detection Systems*; Patnaik, Sai Amrit*; Chansoriya, Shivali; Namboodiri, Anoop
3. *PointGait: Boosting End-to-End 3D Gait Recognition with Point Clouds via Spatiotemporal Modeling*; Wang, Rui*; Shen, Chuanfu; Fan, Chao; Huang, George; Yu, Shiqi
4. *Weakly Supervised Face and Whole Body Recognition in Turbulent Environments*; Nikhal, Kshitij N*; Riggan, Benjamin
5. *Vista-Morph – Unsupervised Image Registration of Visible-Thermal Facial Pairs*; Ordun, Catherine*; Raff, Edward; Purushotham, Sanjay
6. *Explaining Face Recognition Through SHAP-Based Pixel-Level Face Image Quality Assessment*; Biagi, Clara*; Rethfeld, Louis P; Kuijper, Arjan; Terhörst, Philipp
7. *W2H-Net: Fast Prediction of Waist-to-Hip Ratio from Single Partial Dressed Body Scans in Arbitrary Postures via Deep Learning*; Zhao, Ran; Dai, Xinxin; Hu, Pengpeng*; Munteanu, Adrian
8. *Sclera-TransFuse: Fusing Swin Transformer and CNN for Accurate Sclera Segmentation*; Li, Haiqing*; wang, caiyong; Guangzhe, Zhao; He, Zhaofeng; Wang, Yunlong; Sun, Zhenan
9. *Improving Latent Fingerprint Orientation Field Estimation Using inpainting Techniques*; Wang, Zheng*; Jia, Zexi; Huang, Chuanwei; Fei, Hongyan; Wu, Song; Feng, Jufu
10. *CarVer: Setting the Standard for Face Verification with Caricatures*; Davis, Sara R*; Lingenfelter, Bryson; McElhinney, Kevin; Sengupta, Shamik; Hand, Emily

11. *Towards Generalizable Morph Attack Detection with Consistency Regularization*; Kashiani, Hossein*; Alipour Talemi, Niloufar; Ebrahimi Saadabadi, Mohammad Saeed; Nasrabadi, Nasser

12. *Can personalised hygienic masks be used to attack face recognition systems?*; Komaty, Alain*; Krivokuca, Vedrana; Ecabert, Christophe; Marcel, Sébastien

13. *COLFIPAD: A Presentation Attack Detection Benchmark for Contactless Fingerprint Recognition*; Priesnitz, Jannis*; Kolberg, Jascha; Fang, Meiling; Madhu, Akhila; Rathgeb, Christian; Damer, Naser; Busch, Christoph

14. *MRA-GNN: Minutiae Relation-Aware Model over Graph Neural Network for Fingerprint Embedding*; Su, Yapeng*; Zhao, Tong; Zhang, Zicheng

15. *How Colorful Should Faces Be? Harmonizing Color and Model Quantization for Resource-restricted Face Recognition*; Kolf, Jan Niklas*; Elliesen, Jurek; Boutros, Fadi; Damer, Naser

16. *CoNAN: Conditional Neural Aggregation Network For Unconstrained Face Feature Fusion*; Jawade, Bhavin*; Mohan, Deen Dayal; Fedorishin, Dennis; Setlur, Srirangaraj; Govindaraju, Venu

17. *Analyzing Bias in Diffusion-based Face Generation Models*; Perera, Malsha V*; Patel, Vishal

Competition Posters

18. *Iris Liveness Detection Competition (LivDet-Iris) — The 2023 Edition*; Tinsley, Patrick*; Purnapatra, Sandip; Mitcheff, Mahsa; Boyd, Aidan; Crum, Colton R; Fang, Meiling; Damer, Naser; Liu, Xingyu; Wang, Caiyong; Sun, Xianyun; Chang, Zhaohua; Li, Xinyue; Guangzhe, Zhao; Tapia, Juan; Busch, Christoph; Aravena, Carlos; Schulz, Daniel; Schuckers, Stephanie; Bowyer, Kevin; Flynn, Patrick; Czajka, Adam

19. *DFGC-VRA: DeepFake Game Competition on Visual Realism Assessment*; Peng, Bo*; Sun, Xianyun; wang, caiyong; Wang, Wei; Dong, Jing; Sun, Zhenan; Zhang, Rongyu; Cong, Heng; Fu, Lingzhi; Wang, Hao; Zhang, Yusheng; Zhang, HanYuan; Zhang, Xin; Liu, Boyuan; Ling, Hefei; dragar, luka; Batagelj, Borut; Peer, Peter; Struc, Vitomir; Zhou, Xinghui; Liu, Kunlin; Feng, Weitao; Zhang, Weiming; Wang, Haitao; Diao, Wenxiu

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20. *LivDet2023 – Fingerprint Liveness Detection Competition: Advancing Generalization*; Micheletto, Marco; Casula, Roberto; Orrù, Giulia*; Carta, Simone; Concas, Sara; La Cava, Simone Maurizio; Fierrez, Julian; Marcialis, Gian Luca

21. *SynFacePAD 2023: Competition on Face Presentation Attack Detection Based on Privacy-aware Synthetic Training Data*; Fang, Meiling*; Huber, Marco; Fierrez, Julian; Ramachandra, Raghavendra; Damer, Naser; Alkhaddour, Alhasan; Kasantcev, Maksim; Pryadchenko, Vasiliy; Yang, Ziyuan; Huangfu, Huijie; Chen, Yingyu; Zhang, Yi; Pan, Yuchen; Jiang, Junjun; Liu, Xianming; Sun, Xianyun; Wang, Caiyong; Liu, Xingyu; chang, zhaohua chang; Guangzhe, Zhao; Tapia, Juan; Gonzalez-Soler, Lazaro Janier; Aravena, Carlos ; Schulz, Daniel

22. *AG-ReID 2023: Aerial-Ground Person Re-identification Challenge Results*; Nguyen, Kien*; Fookes, Clinton ; Sridharan, Sridha; Liu, Feng; Liu, Xiaoming; Ross, Arun; Michalski, Dana; Nguyen, Huy; Deb, Debayan; Kothari, Mahak; Saini, Manisha; Du, Dawei; McCloskey, Scott; Bertocco, Gabriel; Boulton, Terrance; Andaló, Fernanda; Rocha, Anderson; Zhu, Haidong; Zheng, Zhaoheng; Nevatia, Ram; Randhawa, Zaigham A; Sabri, Sinan; Doretto, Gianfranco

23. *Liveness Detection Competition – Noncontact-based Fingerprint Algorithms and Systems (LivDet-2023 Noncontact Fingerprint)*; Purnapatra, Sandip*; Rezaie, Humaira; Jawade, Bhavin; Liu, Yu; Pan, Yue; Brosell, Luke; Sumi, Mst Rumana A; Igene, Lambert; Dimarco, Alden; Huber, Marco; Kolf, Jan Niklas; Fang, Meiling; Damer, Naser; Adami, Banafsheh; Chitic, Raul; Seelert, Karsten; Mistry, Vishesh; Parthe, Rahul; Kacar, Umit; Setlur, Srirangaraj; Dey, Soumyabrata; Schuckers, Stephanie

24. *EFaR 2023: Efficient Face Recognition Competition*; Kolf, Jan Niklas*; Boutros, Fadi; Elliesen, Jurek; Theuerkauf, Markus; Damer, Naser; Alansari, Mohamad Y; Abdul Hay, Oussama; Alansari, Sara Yousif ; Javed, Sajid; Werghi, Naoufel; Grm, Klemen; Struc, Vitomir; Alonso-Fernandez, Fernando; Hernandez-Diaz, Kevin; Bigun, Josef; George, Anjith; Ecabert, Christophe; Otroshi Shahreza, Hatef; Kotwal, Ketan; Marcel, Sébastien; Medvedev, Lurii; Bo, Jin; Nunes, Diogo; Hassanpour, Ahmad; Khatiwada, Pankaj; Toor, Aafan Ahmad; Yang, Bian

25. *Human Identification at a Distance: Challenges, Methods and Results on HID 2023*; Yu, Shiqi*; Wang, Chenye; Zhao, Yuwei; Wang, Li; Wang, Ming; Li, Qing; Li, Wenlong; Wang, Runsheng; Huang, Yongzhen; Wang, Liang; Makihara, Yasushi; Ahad, Md Atiqur Rahman

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	<p>26. <i>Sclera Segmentation and Joint Recognition Benchmarking Competition: SSRBC 2023</i>; Das, Abhijit*; Atreya, Saurabh K; Mukherjee , Aritra; Vitek, Matej; Li, Haiqing; wang, caiyong; Guangzhe, Zhao; Boutros, Fadi; Siebke, Patrick; Kolf, Jan Niklas; Damer, Naser; Sun, Ye; Hexin, Lu ; Aobo, Fab; Sheng, You; nathan, sabari; Ramamoorthy, Suganya; R S, Rampriya; G, Geetanjali; Sihag, Prinaka; Nigam, Aditya; Peer, Peter; Pal , Umapada; Struc, Vitomir</p> <p>27. <i>The Unconstrained Ear Recognition Challenge 2023: Maximizing Performance and Minimizing Bias</i>, Emersic, Ziga*; Ohki, Tetsushi; Akasaka, Muku; Arakawa , Takahiko ; Maeda , Soshi ; Okano, Masora ; Sato, Yuya; George, Anjith; Marcel, Sébastien; Ganapathi, Iyyakutti Iyappan; Ali, Syed Sadaf; Javed, Sajid; Werghi, Naoufel; Işık , Selin Gök; Sarıtaş , Erdi ; Ekenel, Hazim Kemal; Hudovernik , Valter; Kolf, Jan Niklas; Boutros, Fadi; Damer, Naser; Sharma, Geetanjali ; Kamboj, Aman ; Nigam, Aditya; Jain, Deepak Kumar; Cámara, Guillermo; Peer, Peter; Struc, Vitomir</p>
18:00 – 19:30	Guided Ljubljana City Tour
19:30 – 21:30	IJCB 2023 Reception

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Wednesday, 27 September 2023

9:00 – 10:00	Keynote 2 – IAPR YBIA 2023 Award winner Keynote Talk Speaker: IAPR YBIA 2023 Award winner Room: Union Hall/Unionska dvorana Chair: Vitomir Štruc
10:00 – 10:30	IEEE Biometrics Council Meritorious Service Award recipient address Room: Union Hall/Unionska dvorana Chair: Nasir Memon
10:30 – 11:00	Coffee break
11:00 – 12:30	Oral session 3 – Face Generation, Attribute and Presentation Attack Detection Room: Union Hall/Unionska dvorana Chair: Mayank Vatsa <ol style="list-style-type: none">1. <i>Detecting Morphing Attacks via Continual Incremental Training</i>; Pellegrini, Lorenzo; Borghi, Guido*; Franco, Annalisa; Maltoni, Davide2. <i>FedSIS: Federated Split Learning with Intermediate Representation Sampling for Privacy-preserving Generalized Face Presentation Attack Detection</i>; Alkhunaizi, Naif T*; Srivatsan, Koushik; Almalik, Faris; Almakky, Ibrahim; Nandakumar, Karthik3. <i>StyleAU: StyleGAN based Facial Action Unit Manipulation for Expression Editing</i>; Yanliang, Guo*; Hou, Xianxu; Liu, Feng; Shen, Linlin; Wang, Lei; Wang, Zhen; Liu, Peng4. <i>ExFaceGAN: Exploring Identity Directions in GAN's Learned Latent Space for Synthetic Identity Generation</i>; Boutros, Fadi*; Klemm, Marcel; Fang, Meiling; Kuijper, Arjan; Damer, Naser5. <i>DiffIQA: Face Image Quality Assessment Using Denoising Diffusion Probabilistic Models</i>; Babnik, Žiga*; Peer, Peter; Štruc, Vitomir
12:30 – 13:15	Special Session 2 – Recent Advances in Detecting Manipulation Attacks on Biometric Systems Room: Union Hall/Unionska dvorana Chair: Raghavendra Ramachandra <ol style="list-style-type: none">1. <i>SDeMorph: Towards Better Facial De-morphing from Single Morph</i>; Shukla, Nitish*

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	<p>2. <i>A Dual Domain Attention Mechanism for Face Forgery Detection</i>; Suo, Yucong*; Zhao, Xiaohan; Guo, Yuanfang; Li, Yangxi; Wang, Yunhong</p> <p>3. <i>On Self-Supervised Learning and Prompt Tuning of Vision Transformers for Cross-sensor Fingerprint Presentation Attack Detection</i>; Nadeem, Maryam*; Nandakumar, Karthik</p>
13:15 – 14:30	<p>Lunch Room: Grand Foyer/Poster Area</p>
14:30 – 15:45	<p>Oral session 4 – Multi-modal and Multi-Spectral Biometrics Room: Union Hall/Unionska dvorana Chair: Sébastien Marcel</p> <p>1. <i>Explaining, Analyzing, and Probing Representations of Self-Supervised Learning Models for Sensor-based Human Activity Recognition</i>; Khaertdinov, Bulat*; Asteriadis, Stylianos</p> <p>2. <i>Bridging the Gap: Heterogeneous Face Recognition with Conditional Adaptive Instance Modulation</i>; George, Anjith*; Marcel, Sébastien</p> <p>3. <i>Adapt-FuseNet: Context-aware Multimodal Adaptive Fusion of Face and Gait Features using Attention Techniques for Human Identification</i>; Prakash, Ashwin; S, Thejaswin; Nambiar, Athira*; Bernardino, Alexandre</p> <p>4. <i>TriGait: Aligning and Fusing Skeleton and Silhouette Gait Data via a Tri-Branch Network</i>; Sun, Yan*; Feng, Xueling; Ma, Liyan; Hu, Long; Nixon, Mark</p> <p>5. <i>Sweat Gland Enhancement Method for Fingertip OCT Images Based on Generative Adversarial Network</i>; Miao, Qingran*; Wang, Haixia; Zhang, Yilong</p>
15:45 – 17:00	<p>Poster session 3 + Coffee break Room: Grand Foyer/Poster Area Chair: Marta Gomez- Barrero</p> <p>Main conference Posters</p> <p>1. <i>Detecting Morphing Attacks via Continual Incremental Training</i>; Pellegrini, Lorenzo; Borghi, Guido*; Franco, Annalisa; Maltoni, Davide</p> <p>2. <i>A Multi-Stage Adaptive Feature Fusion Neural Network for Multimodal Gait Recognition</i>; Zou, Shinan*; Xiong, Jianbo; Fan, Chao; Yu, Shiqi; Tang, Jin</p> <p>3. <i>FedSIS: Federated Split Learning with Intermediate Representation Sampling for Privacy-preserving Generalized Face Presentation Attack Detection</i>; Alkhunaizi, Naif T*; Srivatsan, Koushik; Almalik, Faris; Almakky, Ibrahim; Nandakumar, Karthik</p>

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4. *StyleAU: StyleGAN based Facial Action Unit Manipulation for Expression Editing*; Yanliang, Guo*; Hou, Xianxu; Liu, Feng; Shen, Linlin; Wang, Lei; Wang, Zhen; Liu, Peng
 5. *ExFaceGAN: Exploring Identity Directions in GAN's Learned Latent Space for Synthetic Identity Generation*; Boutros, Fadi*; Klemm, Marcel; Fang, Meiling; Kuijper, Arjan; Damer, Naser
 6. *FingerSTR: Weak Supervised Transformer for Latent Fingerprint Segmentation*; Jia, Zexi*; Wang, Zheng; Huang, Chuanwei; Wu, Song; Fei, Hongyan; Feng, Jufu
 7. *DiffIQA: Face Image Quality Assessment Using Denoising Diffusion Probabilistic Models*; Babnik, Žiga*; Peer, Peter; Štruc, Vitomir
 8. *Optimal-Landmark-Guided Image Blending for Face Morphing Attacks*; He, Qiaoyun; Deng, Zongyong; He, Zuyuan; Zhao, Qijun*
 9. *SV-DeiT: Speaker Verification with DeiT-Cap Spoofing Detection*; Ranjan, Rishabh*; Vatsa, Mayank; Singh, Richa
 10. *ViT Unified: Joint Fingerprint Recognition and Presentation Attack Detection*; Grosz, Steven A*; Wijewardena, Kanishka P; Jain, Anil
 11. *Deep Boosting Multi-Modal Ensemble Face Recognition with Sample-Level Weighting*; Rahimi Malakshan, Sahar*; Ebrahimi Saadabadi, Mohammad Saeed; Najafzadeh, Nima; Nasrabadi, Nasser
 12. *Improving Face Recognition from Caption Supervision with Multi-Granular Contextual Feature Aggregation*; Hasan, Md Mahedi*; Nasrabadi, Nasser
 13. *Multimodal Context-based Continuous Authentication*; Lakshminarayan, Saandeep; Chaudhary, Meghna; Neal, Tempestt; Canavan, Shaun*
 14. *On the Biometric Capacity of Generative Face Models*; Boddeti, Vishnu*; Sreekumar, Gautam; Ross, Arun
 15. *Unmasking Deepfakes: Masked Autoencoding Spatiotemporal Transformers for Enhanced Video Forgery Detection*; Das, Sayantan*; Kolahdouzi, Mojtaba; Hickie, Will; Özparlak, Levent; Etemad, Ali
- Special session 2 Posters**
16. *SDeMorph: Towards Better Facial De-morphing from Single Morph*; Shukla, Nitish*

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	<p>17. <i>Fingerprint Presentation Attack Detection with Supervised Contrastive Learning</i>; Huang, Chuanwei*; Fei, Hongyan; Wu, Song; Wang, Zheng; Jia, Zexi; Feng, Jufu</p> <p>18. <i>Sound-Print: Generalised Face Presentation Attack Detection using Deep Representation of Sound Echoes</i>; Ramachandra, Raghavendra*; Singh, Jag Mohan; Venkatesh, Sushma Krupa</p> <p>19. <i>A Universal Anti-Spoofing Approach for Contactless Fingerprint Biometric Systems</i>; Adami, Banafsheh; Tehranipoor, Sara; Nasrabadi, Nasser; Karimian, Nima*</p> <p>20. <i>A Dual Domain Attention Mechanism for Face Forgery Detection</i>; Suo, Yucong*; Zhao, Xiaohan; Guo, Yuanfang; Li, Yangxi; Wang, Yunhong</p> <p>21. <i>On Self-Supervised Learning and Prompt Tuning of Vision Transformers for Cross-sensor Fingerprint Presentation Attack Detection</i>; Nadeem, Maryam*; Nandakumar, Karthik</p>
17:00 – 18:00	<p>Poster session 4 + Demo session Room: Grand Foyer/Poster Area Chair: Maria de Marsico</p> <p>1. <i>Multi-Biometric Fuzzy Vault based on Face and Fingerprints</i>; Rathgeb, Christian*; Tams, Benjamin; Merkle, Johannes; Nesterowicz, Vanessa; Korte, Ulrike; Neu, Matthias</p> <p>2. <i>Explaining, Analyzing, and Probing Representations of Self-Supervised Learning Models for Sensor-based Human Activity Recognition</i>; Khaertdinov, Bulat*; Asteriadis, Stylianos</p> <p>3. <i>Two-Dimensional Dynamic Fusion for Continuous Authentication: Attrapadung, Nuttapong; Hanaoka, Goichiro; Kotoi-Xie, Haochen M; Matsuda, Takahiro; Moriyama, Takumi ; Murakami, Takao; Nakamura, Hidenori ; Schuldt, Jacob CN*; Tokuyama, Masaaki; Zhang, Jing</i></p> <p>4. <i>Bridging the Gap: Heterogeneous Face Recognition with Conditional Adaptive Instance Modulation</i>; George, Anjith*; Marcel, Sébastien</p> <p>5. <i>Vulnerability of Automatic Identity Recognition to Audio-Visual Deepfakes</i>; Korshunov, Pavel*; Chen, Haolin; Garner, Philip N.; Marcel, Sébastien</p> <p>6. <i>Modeling Spoof Noise by De-spoofing Diffusion and its Application in Face Anti-spoofing</i>; Zhang, Bin*; Zhu, Xiangyu; Zhang, Xiao-Yu; Lei, Zhen</p>

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7. *Adapt-FuseNet: Context-aware Multimodal Adaptive Fusion of Face and Gait Features using Attention Techniques for Human Identification*; Prakash, Ashwin; S, Thejaswin; Nambiar, Athira*; Bernardino, Alexandre

8. *On the Use of Cross- and Self-Module Attentive Statistics Pooling Techniques for Text-Independent Speaker Verification*; Alam, Jahangir *

9. *CCFace: Classification Consistency for Low-Resolution Face recognition*; Ebrahimi Saadabadi, Mohammad Saeed*; Rahimi Malakshan, Sahar; Kashiani, Hossein; Nasrabadi, Nasser

10. *TriGait: Aligning and Fusing Skeleton and Silhouette Gait Data via a Tri-Branch Network*; Sun, Yan*; Feng, Xueling; Ma, Liyan; Hu, Long; Nixon, Mark

11. *Sweat Gland Enhancement Method for Fingertip OCT Images Based on Generative Adversarial Network*; Miao, Qingran*; Wang, Haixia; Zhang, Yilong

Journal Paper Posters

12. *Leveraging Ensembles and Self-Supervised Learning for Fully-Unsupervised Person Re-Identification and Text Authorship Attribution*; Bertocco, Gabriel Capiteli*; Theophilo, Antonio; Andaló, Fernanda ; Rocha, Anderson, IEEE Transactions on Information Forensics and Security

13. *Biometric Template Protection for Neural-Network-Based Face Recognition Systems: A Survey of Methods and Evaluation Techniques*; Krivokuca, Vedrana*; Marcel, Sébastien, IEEE Transactions on Information Forensics and Security

14. *PoseNormNet: Identity-preserved Posture Normalization of 3D Body Scans in Arbitrary Postures*; Zhao, Ran*; Dai, Xinxin; Hu, Pengpeng; Munteanu, Adrian; IEEE Transactions on Industrial Informatics

15. *PatientHandNet: 3D Open-palm HandReconstruction from Sparse Multi-view Depth Images*; Dai, Xinxin; Zhao, Ran; Hu, Pengpeng*; Munteanu, Adrian; IEEE Transactions on Instrumentation and Measurement

16. *Parameter agnostic stacked wavelet transformer for detecting singularities*; Agarwal, Akshay*; Vatsa, Mayank ; Singh, Richa; Ratha, Nalini; Information Fusion

17. *Demographic Bias in Low-Resolution Deep Face Recognition in the Wild*; Atzori, Andrea*; Fenu, Gianni; Marras, Mirko; IEEE Journal of Selected Topics in Signal Processing

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	<p>18. <i>A Unified Framework for High Fidelity Face Swap and Expression Reenactment</i>; Peng, Bo*; Fan, Hongxing; Wang, Wei; Dong, Jing; Lyu, Siwei; IEEE Transactions on Circuits and Systems for Video Technology</p> <p>19. <i>D-LORD: DYSL-AI Database for Low-Resolution Disguised Face Recognition</i>; Manchanda, Sunny; Bhagwatkar, Kaushik; BALUTIA, KAVITA; Agarwal, Shivang*; Chaudhary, Jyoti; Dosi, Muskan; Chiranjeev, Chiranjeev; Vatsa, Mayank ; Singh, Richa; IEEE Transactions on Biometrics, Behavior, and Identity Science</p> <p>20. <i>Quality-aware Fusion of Multisource Internal and External Fingerprints under Multisensor Acquisition</i>; Wang, Haixia*; Zhang, Yilong; IEEE Transactions on Biometrics, Behavior, and Identity Science</p> <p>21. <i>Unlinkable Zero-Leakage Biometric Cryptosystem: Theoretical Evaluation and Experimental Validation</i>; Hine, Gabriel E.; Kuzu, Ridvan S.; Maiorana, Emanuele; Campisi, Patrizio; IEEE Transactions on Information Forensics and Security</p> <p>22. <i>Completely Contactless and Online Finger Knuckle Identification for Real-World Applications</i>; Zhou, Zhenyu*; Kumar, Ajay; IEEE Journal of Selected Topics in Signal Processing</p> <p>Demo Presentations and Posters</p> <p>23. <i>S2L+S2D: Identity-Preserving Speech-Driven 3D Talking Heads</i>; Federico Nocentini, Claudio Ferrari, Stefano Berretti</p> <p>24. <i>Face detection and recognition by OpenCV</i>, Shiqi Yu</p>
19:00 – 23:00	<p>Gala dinner at the Castle of Ljubljana Location: Ljubljana Castle</p>

Thursday, 28 September 2023

9:00 -10:00	<p>Keynote 3 – Amazon One: A Peek under the Hood Speaker: Manoj Aggarwal, Director of Applied Science, Amazon One Room: Union Hall/Unionska dvorana Chair: Hugo Proença</p>
10:00 -10:30	<p>Coffee break Room: Grand Foyer/Poster Area</p>

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<p>10:30 – 11:45</p>	<p>Oral session 5 – DeepFakes and Digital Forensics Room: Union Hall/Unionska dvorana Chair: Anderson Rocha</p> <ol style="list-style-type: none"> 1. <i>OSVConTramer: A Hybrid CNN and Transformer based Online Signature Verification</i>; Sekhar, Chandra V*; Gautam, Avinash; P, Viswanath 2. <i>Identity-Preserving Aging of Face Images via Latent Diffusion Models</i>; Banerjee, Sudipta*; Mittal, Govind; Joshi, Ameya; Hegde, Chinmay; Memon, Nasir 3. <i>Optimal-Landmark-Guided Image Blending for Face Morphing Attacks</i>; He, Qiaoyun; Deng, Zongyong; He, Zuyuan; Zhao, Qijun* 4. <i>DFP-Net: An explainable and trustworthy framework for detecting deepfakes using interpretable prototypes</i>; Khalid, Fatima; Javed, Ali*; Malik, Khalid Mahmood; Irtaza, Aun 5. <i>iWarpGAN: Disentangling Identity and Style to Generate Synthetic Iris Images</i>; Yadav, Shivangi*; Ross, Arun
<p>11:45 – 12:30</p>	<p>Special Session 3 – Synthetic data in Biometrics Room: Union Hall/Unionska dvorana Chairs: Vitomir Štruc, Fadi Boutros</p> <ol style="list-style-type: none"> 1. <i>Synthetic Data for the Mitigation of Demographic Biases in Face Recognition</i>; Melzi, Pietro*; Rathgeb, Christian; Tolosana, Ruben; Vera-Rodriguez, Ruben; Morales, Aythami; Lawatsch, Dominik; Domin, Florian; Schaubert, Maxim 2. <i>Meta-evaluation for 3D Face Reconstruction Via Synthetic Data</i>; Sariyanidi, Evangelos; Ferrari, Claudio*; Berretti, Stefano; Schultz, Robert; Tunc, Birkan 3. <i>SynthDistill: Face Recognition with Knowledge Distillation from Synthetic Data</i>; Otroshi Shahreza, Hatef*; George, Anjith; Marcel, Sebastien 4. <i>Depth-guided Robust Face Morphing Attack Detection</i>; Rachalwar, Harsh J; Fang, Meiling; Damer, Naser; Das, Abhijit*
<p>12:30 – 13:15</p>	<p>Special Session 4 – 3D Biometrics with Monocular Vision Room: Union Hall/Unionska dvorana Chair: Abhijit Das</p> <ol style="list-style-type: none"> 1. <i>Online Model-based Gait Age and Gender Estimation</i>; Shehata, Allam*; Alsherbawi Aljazeera, Mohamad Ammar; Gaher, Levin; Li, Xiang; Makihara, Yasushi; Yasushi Yagi,

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	<p>2. <i>NeutrEx: A 3D Quality Component Measure on Facial Expression Neutrality</i>, Grimmer, Marcel*; Rathgeb, Christian; Veldhuis, Raymond; Busch, Christoph</p> <p>3. <i>Recent Advancement in 3D Biometrics using Monocular Camera</i>; Das, Abhijit*; Mukherjee, Aritra</p>
14:00 – 15:15	<p>Lunch Room: Grand Foyer/Poster Area</p>
14:30 – 15:45	<p>Oral session 6 – Privacy, Demographic Biases & Fairness Room: Union Hall/Unionska dvorana Chair: <u>Karthik Nandakumar</u></p> <p>1. <i>Benchmark Dataset Dynamics, Bias and Privacy Challenges in Voice Biometrics Research</i>; Rusti, Casandra*; Leschanowsky, Anna; Quinlan, Carolyn; Pnacekova, Michaela; Gorce, Lauriane; Hutiri, Wiebke</p> <p>2. <i>Toward responsible face datasets: modeling the distribution of a disentangled latent space for sampling face images from demographic groups</i>; Rahimi Noshanagh, Parsa*; Ecabert, Christophe; Marcel, Sebastien</p> <p>3. <i>HEBI: Homomorphically Encrypted Biometric Indexing</i>; Bauspieß, Pia*; Grimmer, Marcel; Fougner, Cecilie; Le Vasseur, Damien; Thaulow Stöcklin, Thomas; Rathgeb, Christian; Kolberg, Jascha; Costache, Anamaria; Busch, Christoph</p> <p>4. <i>Zero-shot racially balanced dataset generation using an existing biased StyleGAN2</i>; Jain, Anubhav*; Memon, Nasir; Togelius, Julian</p> <p>5. <i>Assessing the Privacy Risk of Cross-Platform Identity Linkage using Eye Movement Biometrics</i>; Aziz, Samantha D*; Komogortsev, Oleg</p>
15:45 – 17:00	<p>Poster session 5 + Coffe break Room: Foyer/Poster Area Chair: <u>Hugo Proença</u></p> <p>1. <i>Benchmark Dataset Dynamics, Bias and Privacy Challenges in Voice Biometrics Research</i>; Rusti, Casandra*; Leschanowsky, Anna; Quinlan, Carolyn; Pnacekova, Michaela; Gorce, Lauriane; Hutiri, Wiebke</p> <p>2. <i>OSVConTramer: A Hybrid CNN and Transformer based Online Signature Verification</i>; Sekhar, Chandra V*; Gautam, Avinash; P, Viswanath</p> <p>3. <i>De-identifying Face Image Datasets While Retaining Facial Expressions</i>; Leibl, Andreas Josef*; Meißner, Andreas; Altmann, Stefan; Attenberger, Andreas; Mayer, Helmut</p>

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4. *HBRC-500: A Long Range Recognition Benchmark Dataset using Face and Whole-body Imagery*, Nimpa Fondje, Cedric A*; Nikhal, Kshitij N; Peace, John B; Karl, Ryan; Lee, Mun Wai ; Berkowitz, Phillip; Gramzinski, Katrina; Kennedy, Bridget; Uzuegbunam, Nkirukaegbunam; Ou, Victoria L; Barrett, Tyler J; Arend, Oliver; Liane, Wei Ming; Semenova, Svetlana; Riggan, Benjamin
5. *Toward responsible face datasets: modeling the distribution of a disentangled latent space for sampling face images from demographic groups*, Rahimi Noshanagh, Parsa*; Ecabert, Christophe; Marcel, Sebastien
6. *Approximating Optimal Morphing Attacks using Template Inversion*, Colbois, Laurent*; Otroshi Shahreza, Hatef; Marcel, Sébastien
7. *How Close Are Other Computer Vision Tasks to Deepfake Detection?*, Nguyen, Huy Hong*; Yamagishi, Junichi; Echizen, Isao
8. *Writer Identification from Nordic Historical Manuscripts using Transformer Networks*, Adak, Chandranath*; Jaswanth, Batturi; Akhtar, Zahid; Kasen, Andre; Chanda, Sukalpa
9. *Identity-Preserving Aging of Face Images via Latent Diffusion Models*, Banerjee, Sudipta*; Mittal, Govind; Joshi, Ameya; Hegde, Chinmay; Memon, Nasir
10. *Unconventional Biometrics: Exploring the Feasibility of a Cognitive Trait based on Visual Self-Recognition*, Graupner, Hendrik*; Schwetlick, Lisa; Engbert, Ralf; Christoph, Meinel
11. *DFP-Net: An explainable and trustworthy framework for detecting deepfakes using interpretable prototypes*, Khalid, Fatima; Javed, Ali*; Malik, Khalid Mahmood; Irtaza, Aun
12. *HEBI: Homomorphically Encrypted Biometric Indexing*, Bauspieß, Pia*; Grimmer, Marcel; Fougner, Cecilie; Le Vasseur, Damien; Thaulow Stöcklin, Thomas; Rathgeb, Christian; Kolberg, Jascha; Costache, Anamaria; Busch, Christoph
13. *Zero-shot racially balanced dataset generation using an existing biased StyleGAN2*, Jain, Anubhav*; Memon, Nasir; Togelius, Julian
14. *Assessing the Privacy Risk of Cross-Platform Identity Linkage using Eye Movement Biometrics*, Aziz, Samantha D*; Komogortsev, Oleg
15. *All about that BASE: Modeling Biometric Authentication Systems and their*

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Evaluations to enable a more efficient Exchange of Research Results; Klieme, Eric*; Christoph, Meinel

Special session 3 Posters

16. *Synthetic Data for the Mitigation of Demographic Biases in Face Recognition*; Melzi, Pietro*; Rathgeb, Christian; Tolosana, Ruben; Vera-Rodriguez, Ruben; Morales, Aythami; Lawatsch, Dominik; Domin, Florian; Schaubert, Maxim

17. *Inversion of Deep Facial Templates using Synthetic Data*; Otroshi Shahreza, Hatef*; Marcel, Sebastien

18. *SynthDistill: Face Recognition with Knowledge Distillation from Synthetic Data*; Otroshi Shahreza, Hatef*; George, Anjith; Marcel, Sebastien

19. *Sampling From Autoencoders' Latent Space via Quantization And Probability Mass Function Concepts*; Bouayed, Aymene Mohammed M*; Iacovelli, Adrian; Naccache, David

20. *Meta-evaluation for 3D Face Reconstruction Via Synthetic Data*; Sariyanidi, Evangelos; Ferrari, Claudio*; Berretti, Stefano; Schultz, Robert; Tunc, Birkan

21. *Synthetic Face Generation Through Eyes-to-Face Inpainting*; Hassanpour, Ahmad*; Mousavi Mobarakeh, Sayed Amir; Etefaghi Daryani, Amir; Ramachandra, Raghavendra; Yang, Bian

22. *Protocol Based Similarity Evaluation of Publicly Available Synthetic and Real Fingerprint Datasets*; Söllinger, Dominik*; Kirchgasser, Simon; Makrushin, Andrey; Dittmann, Jana; Uhl, Andreas

23. *Leveraging Synthetic Data and Hard Pair Mining for Selfie vs ID Face Verification*; Agarwal, Shivang*; Chaudhary, Jyoti; Savani, Hard; Sharma, Shivam; Vatsa, Mayank ; Singh, Richa; Adhikari, Shyam Prasad; Reddy, Sangeeth Battu; Agrawal, Kshitij; Misra, Hemant

24. *Depth-guided Robust Face Morphing Attack Detection*; Rachalwar, Harsh J; Fang, Meiling; Damer, Naser; Das, Abhijit*

Special session 4 Posters

25. *Recent Advancement in 3D Biometrics using Monocular Camera*; Das, Abhijit*; Mukherjee, Aritra

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	<p>26. <i>Online Model-based Gait Age and Gender Estimation</i>; Shehata, Allam*; Alsherfawi Aljazaerly, Mohamad Ammar; Gaher, Levin; Li, Xiang; Makihara, Yasushi; Yasushi Yagi</p> <p>27. <i>NeutrEx: A 3D Quality Component Measure on Facial Expression Neutrality</i>; Grimmer, Marcel*; Rathgeb, Christian; Veldhuis, Raymond; Busch, Christoph</p>
17:00 – 17:15	<p>Closing Session Room: Union Hall/Unionska dvorana</p>

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