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This is an **author produced version** of a paper published in:

25th International Conference on Mobile Human-Computer Interaction (MobileHCI).
ACM, Athens, Greece, 2023

DOI: <https://doi.org/10.1145/3565066.3609792>

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Workshop on Advances of Mobile and Wearable Biometrics (WAMWB)

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Biometrics is defined as the automated recognition of individuals based on their biological and behavioural characteristics. It represents a fundamental aspect of mobile Human-Computer Interaction (HCI), as mobile devices such as smartphones and wearables are designed to capture, process and transmit biometric data. While people benefit from the innumerable applications of biometric data in the context of HCI, new concerns have raised in relation with the performance, reliability, protection of privacy, bias, misuse, regulations, and their impact on society. The Workshop on Advances of Mobile and Wearable Biometrics (WAMWB) aims to highlight recent developments with respect to such challenges and risks.

CCS Concepts: • **Security and privacy** → **Biometrics**; • **Computing methodologies** → **Biometrics**; • **Human-centered computing** → **Human computer interaction (HCI)**.

Additional Key Words and Phrases: Mobile biometrics, wearable biometrics, user authentication, privacy, security

ACM Reference Format:

Giuseppe Stragapede, Ruben Vera-Rodriguez, and Ruben Tolosana. 2023. Workshop on Advances of Mobile and Wearable Biometrics (WAMWB). In *25th International Conference on Mobile Human-Computer Interaction (MobileHCI '23 Companion)*, September 26–29, 2023, Athens, Greece. ACM, New York, NY, USA, 5 pages. <https://doi.org/10.1145/3565066.3609792>

1 BACKGROUND

The rapid digitalization of society, together with the pervasiveness of mobile and wearable devices, is creating unprecedented Human-Computer Interaction (HCI) scenarios. Mobile devices such as smartphones, tablets, and wearables have high computing and connectivity capabilities, and they are provided with several sensors that are able to acquire a vast amount of biometric information, for purposes such as security (user recognition systems [3, 7, 14–19]), health and fitness (activity trackers) [9, 11–13], user profiling (social media and e-commerce) [4, 5, 10], etc. The availability of such a massive amount of information, and the widespread use of mobile and wearable biometric systems have raised concerns among the technical people as well as the general public regarding aspects such as the performance, reliability, protection of privacy, bias, misuse, regulations, and their impact on society [1, 2, 6, 8].

In light of the above, it is therefore of paramount importance to design feasible and effective solutions, compliant with new specifications accounting for social good. The Workshop on Advances of Mobile and Wearable Biometrics will highlight the recent developments in the evolving areas of mobile and wearable biometric systems in relation to such concerns.

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Manuscript submitted to ACM

2 PRE-WORKSHOP PLANS

Interested academics and practitioners of the field will be able to find information about the workshop on its dedicated web page¹. A Twitter page² and a mail address³ are also set up for the workshop. We will launch an open call and contact a large group of researchers working in the field of biometrics and HCI (industry and academics), and in general computer vision and machine learning communities, including the ELLIS Society⁴, and recent EU-funded, Innovative Training Networks (ITN) such as PriMa⁵ and TReSPAS⁶. Moreover, the European Association for Biometrics⁷ will also promote the workshop through their newsletter. LinkedIn posts, WikiCFP, mailing list posts such as CVML and others will also be used.

2.1 Call for Participation

We invite submissions from all areas (e.g., computer science, pattern recognition, security, privacy, etc.) relevant for, or applied to, mobile and wearable biometrics. Papers in three formats will be accepted:

- Position papers / extended abstracts: 2 pages (excluding references). They should describe new, previously, or concurrently published research or work-in-progress.
- Journal paper presentations. They should be in the format of the original publication, but they could have optionally an extended abstract of 2 pages (excluding references). Eligible journal papers must be published in 2021, 2022 and 2023 or have been formally accepted by June 1, 2023 and pending publication.
- Full length papers: 4-8 pages (excluding references). They should describe new work that has not been previously published, accepted for publication, or submitted for review at another venue during our review period.

Accepted submissions will be distributed in the workshop proceedings via CEUR-WS.org⁸. The authors will retain copyrights of the submissions, hence they can resubmit revised versions to any other conference or journal. Yet, authors may opt out of the proceedings. A best paper award may be assigned depending on the number of papers accepted. This will be finally decided by the scientific committee and workshop chairs.

Topics of interest include, but are not limited to:

- Physiological biometrics (fingerprint, face, iris, vein, etc.);
- Behavioral biometrics (signature, keystroke, gait, etc.);
- Cognitive biometrics (ECG, PPG, EDA, EEG, etc.);
- Attacks to biometric systems;
- Biometric template protection schemes;
- Privacy preserving solutions;
- Multibiometric recognition systems;
- Machine learning with limited computational resources;
- Usability, interfaces, and human factors;
- Database collection;

¹<https://sites.google.com/view/wamwb/>

²<https://twitter.com/wamwb>

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⁴<https://ellis.eu/>

⁵<https://www.prima-itn.eu/>

⁶<https://www.trespas-etn.eu/>

⁷<https://eab.org/>

⁸<https://ceur-ws.org/>

- Generation of synthetic data;
- Ethical, legal and psychological perspectives.

2.2 Review Process and Important Dates

The review process of the papers is single-blind and it will be implemented through Google Forms. We count on a scientific committee of distinguished researchers of the field of biometrics to contribute to the revision process. They are Vishal M. Patel (John Hopkins University, USA), Naser Damer (Fraunhofer IGD, Germany), Richard Guest (University of Kent, UK), Emanuele Maiorana (Roma Tre University, Italy), Marta Gomez-Barrero (Hochschule Ansbach, Germany), Christoph Busch (Norwegian University of Science and Technology, Norway), Maria De Marsico (Sapienza Università di Roma, Italy), Shiqi Yu (Southern University of Science and Technology, China), Aythami Morales (Universidad Autónoma de Madrid, Spain), Julian Fierrez (Universidad Autónoma de Madrid, Spain), and Javier Ortega-Garcia (Universidad Autónoma de Madrid, Spain). We thank them for their availability and precious help. Moreover, Pietro Melzi, Paula Delgado-Santos, and Juan Carlos Ruiz-Garcia, members of the BiDA Lab at Universidad Autónoma de Madrid (Spain), will provide support in the organization and running of the workshop event as local organizing team.

The important dates for the participation in the workshop are as follows:

- Deadline for paper submissions: June 24, 2023
- Notifications of acceptance: July 14, 2023
- Camera-ready: July 21, 2023

3 WORKSHOP SCHEDULE

The workshop will take place on September 26, 2023, together with the ACM International Conference on Mobile Human-Computer Interaction, Athens, Greece. The expected workshop duration is half day (around 4 hours). We expect approximately 10-12 submissions, and the authors of accepted papers will be invited to participate in the workshop in person. However, in order to be able to reach a greater audience, the workshop will take place in hybrid form, by using a streaming service such as Zoom. The tentative workshop schedule will be as follows:

- Welcome greetings (15 minutes). A brief presentation of the workshop background, goal, and accomplished participation will take place. Then, a quick round of informal personal presentation will take place so the participants can connect.
- Full-length paper presentations (15 minutes for presenting and 3 minutes for Q&A per paper). This session will include both journal paper presentations and full length papers. The authors will be asked to prepare a slide-based presentation.
- Coffee and networking break (20 minutes). During this time the participants can have a break and freely interact with each other.
- Keynote speech (45 minutes). An internationally recognized researcher of the field of biometrics will be invited to give a speech in relation to biometrics in mobile HCI.
- Short paper presentation (10 minutes for presenting and 3 minutes for Q&A per paper). This session will include extended abstract / position papers. The authors might prepare a slide-based presentation.
- Closing remarks (15 minutes). The workshop wrap up and the highlighting of the results will take place. The workshop best paper will be announced.

4 DIVERSITY AND INCLUSION CONSIDERATIONS

We strongly commit to foster diversity and inclusion, and the Workshop on Advances of Mobile and Wearable Biometrics (WAMWB) will be advertised at the WiCV @ CVPR 2023 workshop.

5 EXPECTED OUTCOMES

We expect to have around 10-12 papers, and one relevant keynote speech, delivered by a recognized researcher of the field. The goal of the workshop is to highlight recent developments in the evolving areas of mobile and wearable biometric recognition systems in relation with HCI, and to foster knowledge exchange, networking, sparking new ideas and collaborations between participants. We expect the participation of both academia and industry. Depending on the number of full-length papers received, we might edit a Q1/Q2 journal special issue inviting extended versions of the best workshop submissions presenting new work.

6 ORGANIZERS

Giuseppe Stragapede received his M.Sc. degree in electronic engineering from Politecnico di Bari, Italy, in 2019. After one year as a computer vision engineer in the industry, in 2020 he started his PhD with a Marie Curie Fellowship within the PriMa (Privacy Matters) EU project in the Biometrics and Data Pattern Analytics - BiDA Lab, at the Universidad Autonoma de Madrid, Spain. His research interests include biometrics (especially mobile biometrics), data protection, signal processing, and machine learning.

Ruben Vera-Rodriguez received his PhD degree in electrical and electronic engineering from Swansea University, U.K., in 2010. Since then, he has been affiliated with the Biometric Recognition Group, Universidad Autonoma de Madrid, Spain, where he is currently an Associate Professor since 2018. His research interests include signal and image processing, pattern recognition, HCI and biometrics, with emphasis on signature, face, gait verification, mobile biometrics and forensic applications of biometrics. He is actively involved in several national and European projects focused on biometrics. He has been awarded recently with a Medal from the Spanish Royal Academy of Engineering for his research contributions. He is member of ELLIS Society.

Ruben Tolosana received his PhD from Universidad Autonoma de Madrid in 2019. He joined the Biometrics and Data Pattern Analytics (BiDA) Lab at Universidad Autonoma de Madrid in 2014, where he is currently collaborating as an Assistant Professor. He has received several awards such as the European Biometrics Industry Award (2018) from the European Association for Biometrics (EAB) and the Best PhD Thesis Award in 2019-2022 from the Spanish Association for Pattern Recognition and Image Analysis (AERFAI). His research interests are mainly focused on machine learning, deep learning, signal and image processing, and pattern recognition, particularly in the areas of deepfakes, biometrics, and HCI. He has participated in several national and EU projects focused on the deployment of biometric technologies. He is member of ELLIS Society.

7 ACKNOWLEDGMENTS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 860315. This workshop has also been supported by projects INTER-ACTION (PID2021-126521OB-I00 MICINN/FEDER) and HumanCAIC (TED2021-131787B-I00 MICINN).

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