

# University Academic Curriculum Vitae

## Personal Information

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**Name:** Attaullah Buriro

**Office:** BZ 1.3.22, Faculty of Engineering, UNIBZ Building, NOI-Tech Park, Bolzano.

**E-Mail:** aburiro@unibz.it,

## Education since leaving school

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- **1997-2001**, Bachelor of Engineering (Electronics), Faculty of Engineering, Mehran University of Engineering & Technology, Jamshoro, 72.11% (Aggregate of 4 years)
- **2008-2011**, Master of Engineering (Telecommunications), Faculty of Engineering, NED University of Engineering and Technology, Karachi, CGPA: 3.25/4 (top 5%)
- **2013-2017**, Ph.D. in Information Technology, University of Trento, Italy

## Present Appointment

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1. **Oct 2023** — **Assistant Professor at Ca' Foscari University of Venezia, Italy.**

I performed following activities:

- Carried out research in the domain of usable and secure user authentication and use of GANs in user authentication.
- Developed a 30-hour PhD level course titled “Advanced Behavioral Biometrics”.
- I was a co-organizers of CYBER-CHALLENGE<sup>1</sup> 2024.

## Professional Experience

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2. **Oct 2023 – Sep 2024: Assistant Professor at Ca' Foscari University of Venezia, Italy.**

I performed following activities:

- Carried out research in the domain of usable and secure user authentication and use of GANs in user authentication.
- Developed a 30-hour PhD level course titled “Advanced Behavioral Biometrics”.

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<sup>1</sup>CyberChallenge.IT is a national cybersecurity training program for university and high school students in Italy. The program is organized by the Cybersecurity National Lab and is supported by Italian universities and cybersecurity professionals. The program aims to train the next generation of cyber defenders and offers theoretical and practical courses, networking opportunities, and mentoring for students between the ages of 16 and 23

- I was a co-organizers of CYBER-CHALLENGE<sup>2</sup> 2024.

**3. Sep 2020 – Aug 2023: Assistant Professor at Free University of Bolzano, Italy.**

I performed following activities:

- Carried out research in the domain of usable and secure user authentication and use of GANs in user authentication.
- Developed and Taught a Master-level course titled “Systems Security” for three years and supervised the related capstone projects and theses.
- I was a co-organizers of CYBER-CHALLENGE 2023.

**4. Sep 2019 – Aug 2020: Postdoctoral Researcher (AR) at Free University of Bolzano, Italy.**

I performed following activities:

- Performed analysis of different CNN classifiers in terms of suitability for wood classification.
- Developed a spatial and a spectral hyperspectral image classifier to exploit the underlying differences between the spectral and spatial domain..
- Developed a data augmentation framework using GAN to generate RGB images of Heartwood and Sapwood classes.
- Developed a data augmentation framework using GAN to generate spectral signatures of Heartwood and Sapwood classes in hyperspectral images

**5. Mar 2018 – Feb 2019: Associate Professor (visiting) at Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan.**

I performed following activities:

- Established Department of Information Security and Headed the Department.
- Prepared the Higher Education Commission (HEC) required document for launching MS in information Security and initiated the admission process from Spring 2019 before leaving.
- Taught at both bachelor (Internet Architecture and Protocols) and Master (Machine Learning) level.
- Contributed to the management and administrative processes.
- Managed and lead major initiatives at the Department of Information Security.

**6. Mar 2018 – Feb 2019: Postdoctoral Researcher (AR) at DISI, University of Trento, Italy.**

I performed following activities:

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<sup>2</sup>CyberChallenge.IT is a national cybersecurity training program for university and high school students in Italy. The program is organized by the Cybersecurity National Lab and is supported by Italian universities and cybersecurity professionals. The program aims to train the next generation of cyber defenders and offers theoretical and practical courses, networking opportunities, and mentoring for students between the ages of 16 and 23

- Identified newer human behaviors that could potentially be used for user authentication on new generation devices.
- Collected data, performed evaluation, and developed proof-of-the-concept user authentication schemes for new generation devices.
- Targeted top-tier security and privacy venues for reporting the results.
- Prepared the lectures, labs and course material for the Network Security course.
- Helped my advisor in supervising a PhD student and in the preparation of the research proposals.

**7. Oct. 2016 – Dec. 2016: Visting Scholar at imec-DistriNET Security Group, University of Leuven, Belgium.**

I performed following activities:

- Did academic collaboration in the mutual area of interest - User authentication.
- Published a paper out of my stay of 3 months at imec-DistriNET KULeuven..

**8. Feb. 2016 – Dec. 2017: Teaching Assistant of Network Security (Masters Course) University of Trento.**

I performed following activities:

- Assisted my advisor in preparing the lectures, labs and the course material.
- Graded the students' lab reports.
- Prepared exam papers, invigilated and graded the answer sheets.

**9. Jul. 2007 – Nov. 2012: Electonic/Communication Engineer at Pakistan Meteorological Department, National Seismic Monitoring and Tsunami Early Warning System, Karachi, Pakistan.**

I performed following activities:

- Installed, managed and troubleshooted the seismic equipment, i.e., Sensors, Digitizer, Data Communication Modules and VSAT equipment like iDirect 3100.
- Performed weekly data storage (both in raw form and analysed form). Set-up backups for each server (data analyzing server, data storage server, etc.).
- Installed and managed different type of networks like VSAT, VPN, point to point wireless networks etc, for secure transmission of seismic data to main centre located at Karachi and its back-up at Islamabad.

## **Participation in Exhibitions**

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- **Behavioral Biometrics for Smartphone User Authentication, The Data Economy in Privacy, Security & Trust, organized by EIT Digital, at Milan Expo 2015, Italy.**

## Experience in Academic Teaching

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- “**Advanced Behavioral Biometrics**” (a PhD level Course) at Ca’ Foscari University of Venice, Italy.
- “**Systems Security**” (a master level Course) at Free University of Bolzano for 3 consecutive years.
- “**Network Architecture and Protocols**” (a bachelor level Course) at Khwaja Fareed University Rahim Yar Khan, Pakistan.
- “**Network Security**” (a master level course) at University of Trento, Trento.

## Experience in Thesis Supervision

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- **Mwaita Kevin Fred**, Faculty of Computer Science, M.S Computational Data Science (Graduation: June. 2022), Thesis title: “*Real Time Gesture-Based Authentication and Command Extraction Application for Smart Devices*”, <https://www.linkedin.com/in/kevin-f-6706041aa/>
- **Mohammad Noman Riaz**, Department of Software Engineering, Virtual University of Pakistan, Islamabad, Pakistan, M.S (Graduation: Aug. 2019), Thesis title: “*Factors affecting transition time between capability maturity model integration in software industry of Pakistan: An Empirical Study*”, <https://www.linkedin.com/in/engr-muhammad-noman-riaz-436a60113/>
- **Getachew De. Abebe**<sup>3</sup>, DISI, University of Trento, Italy, M.Sc (Graduation: Mar. 2017). Thesis title: “*Implementation and Experimental Validation of a Multimodal Behavioral Biometrics for Smartphone User Authentication*”, <https://www.linkedin.com/in/getachew-d-abebe-b70a78b6/>
- **Rutger Van Acker**<sup>4</sup>, Department of Computer Science, Catholic University of Leuven, Leuven, Belgium, M.Sc (Graduation: Aug. 2017), Thesis title: “*Gesture-based authentication for smartphones using Wearable devices*”, <https://www.linkedin.com/in/rutger-van-acker-a5b786108/>

## Other Academic Responsibilities

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- Managing and leading major initiatives at the Department of Information Security at Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan, Pakistan.
- Actively involved in the recruitment, management, and the development of academic staff at Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan, Pakistan.
- Degree Committee Member at Free University of Bolzano, Bolzano, Italy.

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<sup>3</sup>Co-supervised (with Prof. Bruno Crispo)

<sup>4</sup>Co-supervised (with Prof. Bruno Crispo)

## Membership

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- Pakistan Engineering Council (PEC/Electro/8384)
- Institute of Electrical and Electronic Engineers (IEEE)
- Association of Computing Machinery

## Research and Scholarships

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- My PhD was supported by EIT-Digital’s MobileShield & SecurePhone projects, European Training Network for Cyber Security project vide grant number 675320, and NATO Communication and Information Agency (NCIA) pilot project, namely, NATO Cybersecurity Incubator.
- I had earlier served University of Trento as “Assegno di Ricerca” (was being paid 26,000 Euros per annum) from 01/03/2017 to 30/08/2019.
- I served Free University of Bolzano as “Assegno di Ricerca” (was being paid 25,000 Euros per annum) from 01/10/2019 to 30/08/2020.
- **Grants:**
  - **Jan 2013 – Feb 2017**, University of Trento PhD Scholarship, €50,000
  - **Mar 2017 – Aug 2019**, Assegno di Ricerca, University of Trento, €26,000 per annum
  - **Sep 2019 – Aug 2019**, Assegno di Ricerca, Free University of Bolzano, €25,000 per annum

## Publications

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### Book Chapters

- (a) Zahid Akhtar and **Attaullah Buriro** (2021), **Multitrait Selfie: Low-Cost Multimodal Smartphone User Authentication**. Biometric Identification Technologies Based on Modern Data Mining Methods. Springer, [https://doi.org/10.1007/978-3-030-48378-4\\_11](https://doi.org/10.1007/978-3-030-48378-4_11)

### Journal Papers (selected)

- (a) Abdul Baseer Buriro, **Attaullah Buriro**, Muhammad Ali Jamshed, Waliullah Khan, and Muhammad Azfar Yaqub: “**Securing Military IoT: Context-Aware Biometrics at the Edge**”, IEEE Internet of Things Magazine (IEEE IOTMAG), 2024. [Q1][Submitted]
- (b) **Attaullah Buriro**, Ceol Samuele, Tahir Ahmad, Flaminia Luccio, and Riccardo Focardi: “**MBBS: A Multimodal Behavioral Biometric-based User Authentication Scheme for Smartphones**”, ACM Transactions on Computer-Human Interaction (ACM-TOCHI), 2024. [Submitted]

- (c) **Attaullah Buriro**, Zahid. Akhtar, Francesco. Ricci and Flaminia Luccio, **Wearable Wisdom: A Bi-Modal Behavioral Biometric Scheme for Smartwatch User Authentication**, in IEEE Access, vol. 12, pp. 61221-61234, **2024**, [IF=3.4, Q1]  
doi: 10.1109/ACCESS.2024.3395128.
- (d) Massimo, David, Elias Ganthaler, **Attaullah Buriro**, Francesco Barile, Marco Moraschini, Anton Dignös, Thomas Villgrattner, Angelika Peer, and Francesco Ricci, **Estimation of Mass and Lengths of Sintered Workpieces Using Machine Learning Models**, in IEEE Transactions on Instrumentation and Measurement, vol. 72, pp. 1-14, Art no. 2522414, **2023**, [IF=5.6, Q1]  
doi: 10.1109/TIM.2023.3298413,
- (e) Asghar, Iqra, Muhammad Ayaz Khan, Tahir Ahmad, Subhan Ullah, Khwaja Mansoor ul Hassan, and **Attaullah Buriro**, **Fortifying Smart Home Security: A Robust and Efficient User-Authentication Scheme to Counter Node Capture Attacks**, in Sensors, vol. 23, pp. 7628, MDPI, **2023**, [IF=3.4, Q1]  
<https://doi.org/10.3390/s23167268>
- (f) Muhammad Ayaz Khan, Subhan Ullah, Tahir Ahmad, Khwaja Jawad, and **Attaullah Buriro**, **Enhancing Security and Privacy in Healthcare Systems Using a Lightweight RFID Protocol**, in Sensors, vol. 23, pp. 5518, MDPI, **2023**, [IF=3.4, Q1]  
<https://doi.org/10.3390/s23125518>
- (g) Osama Khalid, Subhan Ullah, Tahir Ahmad, Saqib Saeed, Dina A. Alabbad, Mudassar Aslam, **Attaullah Buriro** and Rizwan Ahmad, **An insight into the machine-learning-based fileless malware detection**, in Sensors, vol. 23, no.2, pp. 612, MDPI, **2023**, [IF=3.4, Q1]  
<https://doi.org/10.3390/s23020612>
- (h) **Attaullah Buriro**, Sandeep Gupta, Yautsiukhin, A and Bruno Crispo, **Risk-Driven Behavioral Biometric-based One-Shot-cum-Continuous User Authentication Scheme.**, in Journal of Signal Processing Systems 93, pp. 989–1006, Springer, **2021**, [IF=1.6, Q2]  
<https://doi.org/10.1007/s11265-021-01654-2>
- (i) Sandeep Gupta, **Attaullah Buriro** and Bruno Crispo, **DriverAuth: A risk-based multi-modal biometric-based driver authentication scheme for ride-sharing platforms**, in Computers & Security (COSE), 83, pp. 122–139, Springer, **2019**, [IF=5.1, Q1]  
<https://doi.org/10.1016/j.cose.2019.01.007>
- (j) Sandeep Gupta, **Attaullah Buriro** and Bruno Crispo, **DriverAuth: Behavioral biometric-based driver authentication mechanism for on-demand ride and ridesharing infrastructure**, in ICT Express, vol 5, issue 1, pp. 16–20, ScienceDirect, **2019**, [IF=4.1, Q1]  
<https://doi.org/10.1016/j.icte.2018.01.010>
- (k) **Attaullah Buriro**, Bruno Crispo, and Mauro Conti, **AnswerAuth: A bi-modal behavioral biometric-based user authentication scheme for**

**smartphones**, in Journal of information security and applications (JISA), vol. 44, pp. 89-103, ScienceDirect, **2019**, [IF=3.8, Q1]  
<https://doi.org/10.1016/j.jisa.2018.11.008>

### Conference Papers (selected)

- (a) **Attaullah Buriro**: “**The Transformation of Mobile Biometrics: Ten Years of Growth, Potential, and Challenges**”, in proceedings of the 2025 ACM Symposium on Applied Computing (SAC-2025), Sicily, Italy [**Submitted**]
- (b) **Attaullah Buriro**, Flaminia Luccio, and Riccardo Focardi : “**EUAS-GAN: Enhancing User Authentication on Smartphones through GAN-Based Swiping Data Augmentation**”, in proceedings of the 2025 ACM Symposium on Applied Computing (SAC-2025), Sicily, Italy [**Submitted**]
- (c) **Attaullah Buriro**, Flaminia Luccio, Gabriele Costa, and Riccardo Focardi: “**Z-MDZS: Zero-day Malware Detection using Zero-Shot Machine Learning Schemes**”, in proceedings of the 2025 IEEE Consumer Communications & Networking Conference (IEEE CCNC), Las Vegas, US [**Accepted**].
- (d) **Attaullah Buriro** and Flaminia Luccio: “**ClapMetrics: Decoding Users’ Gender and Age Through Smartwatch Gesture Dynamics**”, in proceedings of the 19<sup>th</sup> International Conference on Emerging Technologies (ICET-2024), GIKI, Topi (Swabi), Pakistan [**Accepted**].
- (e) **Attaullah Buriro** and Flaminia Luccio. “**2IN1: A Bimodal Behavioral Biometric-based User Authentication Scheme for Smartphones.**” ITASEC’24: The Italian Conference on CyberSecurity. CEUR, 2024, Salerno, Italy.
- (f) **Attaullah Buriro** and Samuele Ceol. “**A Multimodal Behavioral Biometric Scheme for Smartphone User Authentication (MBBS).**” In Proceedings of the 28<sup>th</sup> ACM Symposium on Access Control Models and Technologies (ACM SACMAT 2023). pp. 43-45. 2023, Trento, Italy.  
<https://doi.org/10.1145/3589608.359508>
- (g) Gupta, Sandeep, **Attaullah Buriro**, and Bruno Crispo. “**Smarthandle: A novel behavioral biometric-based authentication scheme for smart lock systems.**” In Proceedings of the 2019 3<sup>rd</sup> International Conference on Biometric Engineering and Applications, pp. 15-22. 2019.  
<https://doi.org/10.1145/3345336.33453>
- (h) **Attaullah Buriro**, Bruno Crispo, Sandeep Gupta, and Filippo Del Frari. “**Dialerauth: A motion-assisted touch-based smartphone user authentication scheme.**” In Proceedings of the 8<sup>th</sup> ACM conference on data and application security and privacy (CODASPY’18), pp. 267-276. 2018.
- (i) **Attaullah Buriro**, Bruno Crispo and Y. Zhauniarovich, “**Please hold on: Unobtrusive user authentication using smartphone’s built-in sensors,**” 2017 IEEE International Conference on Identity, Security and Behavior Analysis (ISBA), New Delhi, India, 2017, pp. 1-8,  
doi: 10.1109/ISBA.2017.7947684.

- (j) **Attaullah Buriro**, Zahid Akhtar, Bruno Crispo and F. Del Frari, ”**Age, Gender and Operating-Hand Estimation on Smart Mobile Devices,**” 2016 International Conference of the Biometrics Special Interest Group (BIOSIG), pp. 1-5, Darmstadt, Germany, 2016  
doi: 10.1109/BIOSIG.2016.7736910.
- (k) **Attaullah Buriro**, Bruno Crispo, Filippo Del Frari, Jeffrey Klardie, and Konrad Wrona, ”**ITSME: Multi-modal and Unobtrusive Behavioural User Authentication for Smartphones**”. In Technology and Practice of Passwords. PASSWORDS 2015. LNCS vol 9551. Springer, [https://doi.org/10.1007/978-3-319-29938-9\\_4](https://doi.org/10.1007/978-3-319-29938-9_4)

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## Further Data

### Presentations at scientific conferences

- (a) **Malware Detection using Anomaly Detection Algorithms**, the 15<sup>th</sup> International Conference on Ubiquitous and Future Networks (ICUFN - 2024), Budapest. July. 2-6<sup>th</sup> 2024, Hungary.
- (b) **2in1: A Bimodal Behavioral Biometric-based User Authentication Scheme for Smartphones**, 8<sup>th</sup> Italian Conference on Cybersecurity (ITASEC-2024), Salerno. April. 9<sup>th</sup> 2024, Italy.
- (c) **MBBS: A Multimodal Behavioral biometric scheme for smartphone user authentication**, SFSCON, NOI TECH PARK, Nov. 10<sup>th</sup> 2023, Bolzano, Italy.
- (d) **MBBS: A Multimodal Behavioral biometric scheme for smartphone user authentication**, First Software and Platform Security Workshop, SER-ICS - Spoke 6, Venice. Oct. 23<sup>rd</sup> 2023, Italy.
- (e) **Behavioral Biometrics-based identity verification for new generation devices**, SACMAT’ 23: 28<sup>th</sup> ACM Symposium on Access Control Models and Technologies, Trento, 9<sup>th</sup> June. 2023, Italy.
- (f) **A Multimodal Behavioral Biometric Scheme for Smartphone User Authentication (MBBS)**, SACMAT’ 23: 28<sup>th</sup> ACM Symposium on Access Control Models and Technologies, Trento, 7<sup>th</sup> June. 2023, Italy.
- (g) **DeepClap: A Gesture-Based User Authentication Scheme with Deep Neural Networks**, 1<sup>st</sup> International Workshop on Trends in Digital Identity (TDI 2023), co-located with SACMAT’ 23: 28<sup>th</sup> ACM Symposium on Access Control Models and Technologies, Trento, 6<sup>th</sup> June. 2023, Italy.
- (h) **Behavioral Biometrics-based identity verification for new generation devices**, SFSCON, NOI Tech park, 12<sup>th</sup> Nov. 2022, Bolzano, Italy.
- (i) **ClapAuth: A Gesture-based User-friendly Authentication Scheme to Access a Secure Infrastructure**, 5<sup>th</sup> International Workshop on Emerging Technologies for Authorization and Authentication (ETAA 2022), 30<sup>th</sup> Sep. 2022, Copenhagen, Denmark.



- (j) **Behavioral Biometrics - a new form of identity verification - a Tutorial**, 8<sup>th</sup> International Summer School on Software Engineering July 4-6, 2022 Bolzano, Italy,  
<https://seschool-series.github.io/2022/>.
- (k) **On the use of *Biometrics* and Cryptography in vehicles**, KICK OFF: CYBERSECURITY ROUNDTABLE, Automotive Excellence Suditrol, Bolzano-Bozen, Italy,  
<https://www.automotive-suedtirol.com/eventsandworkshops>.  
Blog: <https://www.automotive-suedtirol.com/blog>
- (l) **SwipeGAN: Swiping Data Augmentation using Generative Adversarial Networks for Smartphone User Authentication**, 3<sup>rd</sup> International ACM Workshop on wireless security and machine learning (ACM WISEML, Co-Located with WISEC 2021), Abu Dhabi, UAE.
- (m) **SNAPAUTH: A Gesture-based Unobtrusive Smartwatch User Authentication Scheme**, 1st International Workshop on Emerging Technologies for Authorization and Authentication (Co-Located with ESORICS 2018), Barcellona, Spain.
- (n) **Mobile Biometrics: Towards A Comprehensive Evaluation Methodology**, The 51st International Carnahan Conference on Security Technology (ICCST-2017), Madrid, Spain.
- (o) **Behavioral Biometrics for Smartphone User Authentication**, PhD Dissertation Defence, University of Trento, Italy.
- (p) **Age, Gender, and Operating-hand Estimation on Smart Mobile Devices**, 15th International Conference of the Biometrics Special Interest Group (BIOSIG), Germany.
- (q) **Behavioral Biometrics for Smartphone User Authentication**, The Data Economy in Privacy, Security & Trust, organized by EIT Digital, at Milan Expo 2015, Italy.
- (r) **Touchstroke: Touch-typing Biometrics for Smartphone User Authentication**, International Workshop on Recent Advances in Digital Security: Biometrics and Forensics, Genova, Italy.
- (s) **Introduction to Behavioral Biometrics, User Authentication Schemes on Smartphones, Security Evaluation of Behavioral Biometrics**, International Cyber Security Summer School, organized by NATO Communications and Information Agency (NCIA), The Hague, Netherlands.
- (t) **Arm Movement Biometrics for Smartphone User Authentication**, 11<sup>th</sup> International Summer School for Advance Studies on Biometrics for Secure Authentication, Alghero, Italy.

#### Third Mission Activites:

- (a) **Behavioral Biometrics for User Authentication in Mobile Devices (BBUAM) to be held in conjunction to Joint National Conference**

- on Cybersecurity 2025, <https://itasec.it/>. [Organizer]
- (b) **Cyberchallenge 2024 at UNIVE**, (<https://cyberchallenge.it/venues/unive>), UNIVE, Italy, 13-02 - 31-05, 2024, Venice, Italy. [Co-organizer & Tutor]
  - (c) **Cyberchallenge 2023 at UNIBZ**, (<https://cyberchallenge.it/venues/unibz>), UNIBZ, Italy, 13-02 - 31-05, 2023, Bolzano, Italy. [Co-organizer & Tutor]
  - (d) **The 1<sup>st</sup> International Workshop on Intelligent Cyber-Physical Security (ICPS-2025) in conjunction to AINA-2025 Conference**, <https://siti.di.unisa.it/icps2025/>. [PC Member]
  - (e) **Frontiers in Computer Science - Computer Security**, <https://loop.frontiersin.org/people/2791181/overview>. Since 2024. [Review Editor]
  - (f) **19<sup>th</sup> IEEE International Conference on Emerging Technologies (ICET-2024)**, <https://icet.org.pk/2024/index.php>. [Member Advisory Committee / TPC Member]
  - (g) **International workshop on Edge Intelligence for smart sensing and IoT (EIxS2I)**, [https://inets.inf.unibz.it/?page\\_id=181](https://inets.inf.unibz.it/?page_id=181). [TPC Member]
  - (h) **The 1<sup>st</sup> International Usable Security and Privacy for Emerging Technologies Workshop (ASPIRING-2024)**, held in conjunction with RCIS 2024, <https://aspiring-workshop.github.io/2024/>. [TPC Member]
  - (i) **Wireless Communications and Networking (WCN) of the ACM Symposium on Applied Computing (SAC 2024)**, <https://monet.knu.ac.kr/sac2025/>. [TPC Member]
  - (j) **Wireless Communications and Networking (WCN) of the ACM Symposium on Applied Computing (SAC 2024)**, <https://monet.knu.ac.kr/sac2024/wcn.html>. [TPC Member]
  - (k) **Behavioral Biometrics - a new form of identity verification - a Tutorial**, 8<sup>th</sup> International Summer School on Software Engineering July 4-6, 2022 Bolzano, Italy, <https://seschool-series.github.io/2022/> [Invited Speaker].
  - (l) **On the use of *Biometrics* and Cryptography in vehicles**, KICK OFF: CYBERSECURITY ROUNDTABLE, Automotive Excellence Suedtirol, Bolzano-Bozen, Italy, <https://www.automotive-suedtirol.com/eventsandworkshops>. Blog: <https://www.automotive-suedtirol.com/blog> [Invited Speaker]
  - (m) **ClapMetrics: Decoding Users' Gender and Age Through Smart-watch Gesture Dynamics**, SFSCON, NOI TECH PARK, Nov. 8<sup>th</sup> 2024, Bolzano, Italy.[Invited Speaker]

- (n) **MBBS: A Multimodal Behavioral biometric scheme for smartphone user authentication**, SFSCON, NOI TECH PARK, Nov. 10<sup>th</sup> 2023, Bolzano, Italy. [Invited Speaker]
- (o) **Behavioral Biometrics-based identity verification for new generation devices**, SFSCON, NOI Tech park, 12<sup>th</sup> Nov. 2022, Bolzano, Italy. [Invited Speaker]
- (p) **Behavioral Biometrics for Smartphone User Authentication**, The Data Economy in Privacy, Security & Trust, organized by EIT Digital, at Milan Expo 2015, Italy. [Invited Speaker]
- (q) **Introduction to Behavioral Biometrics, User Authentication Schemes on Smartphones, Security Evaluation of Behavioral Biometrics**, International Cyber Security Summer School, organized by NATO Communications and Information Agency (NCIA), The Hague, Netherlands [Invited Speaker/Tutor at Summer School]

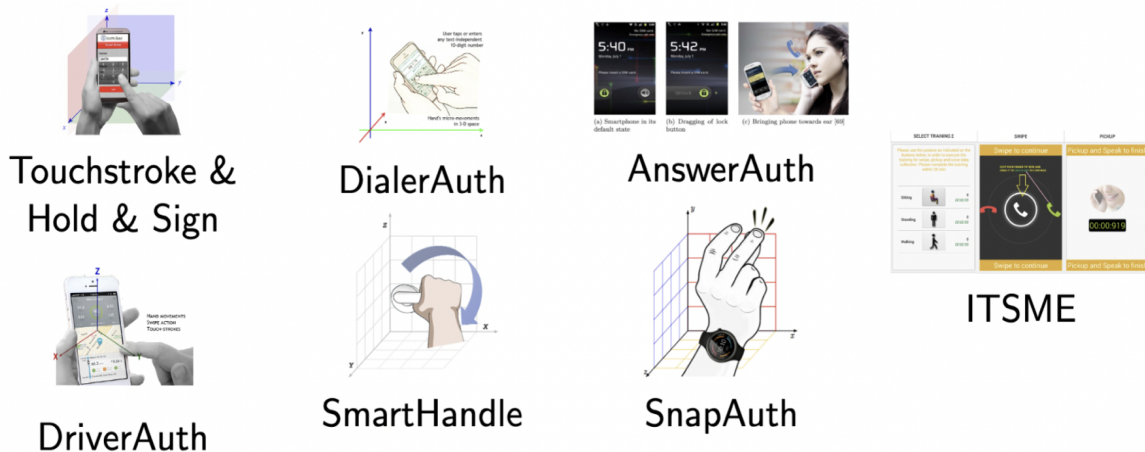
**Reviewer of Journals & Conferences (selected):**

- (a) **Jul. 2016** - - - - - **IEEE Access**, <http://ieeaccess.ieee.org/>.
- (b) **Dec. 2016** - - - - - **Neural Computing and Applications (NCAA)**, <http://www.springer.com/computer/ai/journal/521>.
- (c) **Jan. 2018** - - - - - **Journal of Engineering & Technology (JAES)**, <https://journals.uetjournals.com/index.php/JEAS>.
- (d) **Mar. 2018** - - - - - **KSII Transactions on Internet and Information Systems**, <http://www.itiis.org/>.
- (e) **Apr. 2018** - - - - - **Sensors**, <http://www.mdpi.com/journal/Sensors/>.
- (f) **Jun. 2018** - - - - - **IEEE Transactions on Mobile Computing**, <https://www.computer.org/web/tmc>
- (g) **Jul. 2018** - - - - - **Computer Standards & Interfaces**, <https://www.journals.elsevier.com/computer-standards-and-interfaces>
- (h) **Oct. 2018** - - - - - **IEEE Transactions on Biometrics, Behavior, and Identity Science**, <http://tbiom.ieee-biometrics.org/>
- (i) **Dec. 2018** - - - - - **Mehran University Research Journal of Engineering & Technology**, <http://publications.muet.edu.pk/index.php/muetrj>
- (j) **Aug. 2019** - - - - - **ACM CHI Conference on Human Factors in Computing Systems**, <https://chi2020.acm.org/>
- (k) **April. 2018** - - - - - **IEEE IAPR International Conference on Biometrics**, <https://icb2018.org/>

- (l) April. 2024 -...- ACM Transactions on Computer-Human Interaction (ACM-TOCHI),  
<https://dl.acm.org/journal/tochi>

**Research Outcome**

- (a) Google Scholar (citations 1017, H-index=19)
- (b) 41 scopus index publications (citations 573 , H-index=14)
- (c) Some of our developed production-ready solutions



**Entrepreneurship:**

Planning to launch a SPIN OFF – a user authentication solutions provider using some of the already produced solutions.

**Statement of Interest:**

I am excited and honored to have been selected for the “Junior University Researcher with Fixed-Term Contract” position on the Recommender Systems and Decision Support project, under the esteemed guidance of Prof. Markus Zanker, at the Faculty of Engineering, Free University of Bozen-Bolzano, Italy.

My research journey has been at the confluence of four pivotal domains: Security, Data Science, Machine Learning/Deep Learning, and Biometrics. I am passionate about teaching and conducting research in these areas. Before joining UNIBZ, I have been exploring innovative human behaviors that could potentially replace the less secure and less user-friendly authentication methods on smart devices such as tablets, smartphones, and smartwatches. My expertise encompasses identifying unique human behaviors, data collection, hypothesis testing, adaptive machine learning, and developing proof-of-concept systems for seamless and secure authentication. My work has been published in top-tier security venues, including the Journal of Information Security and Applications (JISA), Computers &

Security (COSE), IEEE Security and Privacy Workshop (IEEE S&P 2016), ACM CODASPY. Among my publications, I am particularly proud of:

- (a) “AnswerAuth – A Bimodal Behavioral Biometric-based User Authentication Scheme for Smartphones”
- (b) “DialerAuth – A Motion-Assisted Touch-Based Smartphone User Authentication Scheme”
- (c) “Hold & Sign: A Novel Behavioral Biometrics for Smartphone User Authentication”
- (d) Wearable Wisdom: A Bi-Modal Behavioral Biometric Scheme for Smartwatch User Authentication

This position excites me for several reasons: Firstly, it offers an opportunity to continue my research and apply my expertise in machine learning, deep learning, user-centric design, and security to develop algorithms for digital recommender systems. Secondly, it presents challenging research questions that will complement and enhance the skills I have acquired during my previous research endeavors. Lastly, I am passionate about academia, and this role represents a significant step towards achieving an academic position in a European university, making it a breakthrough opportunity for my career.

**Language Competence:**

Sindhi (Native), Urdu (C2), English (C1), Italian (A2)

**Date:** 28/10/2024

**Signature:** \_\_\_\_\_