Attachment 'C'

University Academic Curriculum Vitae

Personal information

Name: Attaullah Buriro

Place of birth: Daharki, Pakistan

Date of birth: 01/04/1978 Nationality: Pakistani Number of children: 3

Year of birth of the children: (i) 03/09/2009, (ii) 13/07/2015 and (iii)

04/05/2017

Address: Via Cosma E Damiano, 83, Trento

Telephone numbers:

• Mobile: 328-8545515

Private:Office:

E-Mail: buriro97@gmail.com

Education since leaving school

• 1997-2001, Bachelor of Engineering (Electronics), Faculty of Engineering, Mehran University of Engg. & Tech, Jamshoro, 72.11% (Aggregate of 4 years).

Education: Electronics, Signal processing, Telecommunication, Control Engineering, Microprocessor and interfacing techniques

 2008-2011, Master of Engineering (Telecommunications), Faculty of Engineering, NED University of Engineering and Technology, Karachi, CGPA: 3.25/4 (top 5%).

Education: Digital Communication, Satellite Communication, Information Security, Routing Protocols

2013-2017, PhD. In Information Technology, University of Trento, Italy,
During my PhD, I investigated newer behaviors that could potentially be
used for user authentication on smart devices, i.e., smartphone, tablet,
smartwatch. We proposed, developed, tested and analyzed our solution
on real Android devices with real users.

- Associate Professor
- 01/03/2018 (on leave)
- Senior Academic Position (after PhD) at Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan, Pakistan.

Present appointment

- Brief description of responsibilities:
 - Teaching at both bachelor and Master level.
 - Effective contribution to the management and administrative processes.
 - o Managing and leading major initiatives at the Department of

- Information Security.
- Active involvement in the recruitment, management, and development of academic staff.
- Postdoctoral Researcher
- 01/03/2017 31/08/2019

Professional experience

- Level of appointment (in national / international context) (**Post-PhD**) at the University of Trento, Italy
- brief description of responsibilities
 - Identification of newer human behaviors that could potentially be used for user authentication on new generation devices.
 - Data collection, evaluation, and development of proof-of-theconcept user authentication schemes for new generation devices.
 - Targeting top-tier security and privacy venues (i.e., IEEE S&P, ACM CCS, IEEE TIFS, etc.) for reporting the results.
 - Preparation of lectures, labs and course material for Network Security course.
 - o Preparation of the research proposals.

Chronological list of all previous employments (each with job title, starting and finishing dates, level, employer, responsibilities)

From / to	Job title	Name of academic Institution	Academic level	responsibilities
Mar. 2018 – Present	Associate Professor	KFUEIT Rahim Yar Khan, Pakistan	Post PhD	TeachingRecruitment
Mar. 2017 – present	Postdoctoral Researcher	University of Trento	Post PhD	- Doing research - Assisting advisor in teaching, and proposal writing.
Jul. 2007 – Apr. 2017	Electronic Engineer	Pakistan Meteorological Department	Bachelor Master	 Installation, management and maintenance of seismic and communication equipment
Feb. 2016 – May 2016	Teaching Assistant (Network Security)	University of Trento	PhD	- Assisting my advisor in slides, labs and grading.
Nov. 2009 – Sep. 2012	Adjunct Faculty	Muhammad Ali Jinnah University	Bachelor Master	- Taught several courses at undergrad level

During my PhD, I had served in EIT Digital's SecurePhone project, NATO's Behavioural biometrics project and NeCS project as the main researcher.

Participation in exhibitions (where applicable)

Behavioral Biometrics for Smartphone User Authentication, 7th September 2015, The Data Economy in Privacy, Security & Trust, organized by EIT Digital, at Milan Expo 2015, Milan Italy.

Experience in academic teaching

- I have taught Network Architecture and Protocols a bachelor level course in 2018-2019 Spring session.
- I have served as teaching assistant for the Network Security a master level course at the University of Trento, Italy.
- I have supervised one Master level thesis and co-supervised 2 Master level theses till today.

Other academic responibilities

- Effective contribution to the management and administrative processes.
- Managing and leading major initiatives at the Department of Information Security.
- Active involvement in the recruitment, management, and the development of academic staff.

Memberships

Pakistan Engineering Council (PEC/Electro/8384)

Research and scholarships

- 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 have been serving University of Trento as "Assegno di Ricerca" (being paid 26,000 Euros per annum) since 1st March 2017.

Date	Award	Funding Body	Title	Amount
granted	Holder(s)			received
Jan	Attaullah	University of	28th cycle of	~50,000€
2013 –	Buriro	Trento	University of	full
Feb			Trento, PhD	duration
2017			scholarship	
			competiations	
Mar	Attaullah	University of	Assengio di	26,000€
2017 –	Buriro	Trento	ricerca	Per year
Feb -				
2019				

Publications

Conference papers

 AirSign: A Gesture-Based Smartwatch User Authentication Attaullah Buriro, R. Van Acker, B. Crispo and A. Mahboob, Proc. of the 52nd European Conf. on *International Carnahan* Conference on Security Technology (ICCST), Montreal, QC, Canada, 2018, pp. 1-5. DOI: 10.1109/CCST.2018.8585571

SnapAuth: A Gesture-based Unobtrusive Smartwatch User Authentication Scheme

Attaullah Buriro, B. Crispo, M. Eskandri, S. Gutpa, A.Mahboob, R. Van Acker

Proceedings of the 1st International Workshop on Emerging Technologies for Authorization and Authentication (ETAA), Barcelona, Spain, 2018, pp. 30—37

DialerAuth: A Motion-assisted Touch-based Smartphone User Authentication Scheme

Attaullah Buriro, B. Crispo, S. Gutpa, F. Del Frari

Proceedings of the 8th ACM conference on Data and Application Security and Privacy, Tempe, AZ, USA, 2018, pp. 267—276

Multimodal Smartphone User Authentication using Touchstroke, Phone-movement, and Face Patterns

Z. Akhtar, **Attaullah Buriro**, B. Crispo, T.H. Falk

Proceedings of the 5th IEEE Global Conference on Signal and Information Processing (GlobalSIP), Montreal, Canada, 2017 pp. 1368—1372.

Mobile Biometrics: Towards a Comprehensive Evaluation Methodology

Attaullah Buriro, Z. Akhtar, B. Crispo and S.Gupta

Proceedings of the 51st International Carnahan Conference on Security Technology (ICCST), Madrid, Spain, 2017, pp. 1--6. DOI: 10.1109/CCST.2017.8167859

Evaluation of Motion-based Touch-typing Biometrics for Online Banking

Attaullah Buriro, S.Gupta, and B. Crispo

Proceedings of the *International Conference of the Biometrics Special Interest Group (BIOSIG)*, Darmstadt, 2017, pp. 1-5. DOI: 10.23919/BIOSIG.2017.8053504

Please hold on: Unobtrusive User Authentication using Smartphone's built-in Sensors

Attaullah Buriro, B.Crispo, and Y. Zhauniarovich

Proceedings of the IEEE International Conference on Identity, Security and Behavior Analysis (ISBA), New Delhi, 2017, pp. 1-8. DOI: 10.1109/ISBA.2017.7947684

Age, Gender, and Operating-Hand Estimation on Smart Mobile Devices

Attaullah Buriro, Z. Akhtar, B.Crispo, and F. Del Frari

International Conference of the Biometrics Special Interest Group (BIOSIG), Darmstadt, 2016, pp. 1-5.

DOI: 10.1109/BIOSIG.2016.7736910

 Hold & Sign: A Novel Behavioral Biometrics for Smartphone User Authentication

Attaullah Buriro, B.Crispo, F. Del Frari, and Konrad Wrona

IEEE Security and Privacy Workshops (SPW), San Jose, CA, 2016, pp. 276-285.

DOI: 10.1109/SPW.2016.20

 ITSME: Multimodal and Unobtrusive Behavioral User Authentication for Smartphones

Attaullah Buriro, B.Crispo, F. Del Frari, J. Klardie, and K. Wrona

Technology and Practice of Passwords. PASSWORDS 2015. 2015, Lecture Notes in Computer Science, vol 9551,

DOI: https://doi.org/10.1007/978-3-319-29938-9 4

 Touchstroke: Smartphone User Authentication Based on Touch-typing Biometrics

Attaullah Buriro, B.Crispo, F. Del Frari, and K. Wrona

New Trends in Image Analysis and Processing -- ICIAP 2015 Workshops. ICIAP 2015. Lecture Notes in Computer Science, vol 9281,

DOI: https://doi.org/10.1007/978-3-319-23222-5_4

Secure LAN Management with SNMPv2 over IPSec

R. A. Butt, and Attaullah Buriro

Proceedings of the 6th International Conference on Telecommunication Systems, Services, and Applications (TSSA), Bali, 2011, pp. 271-274.

DOI: 10.1109/TSSA.2011.6095448

Journal Papers

 DriverAuth: A risk-based multimodal biometric-based driver authentication scheme for ride-sharing platforms

Sandeep Gupta, Attaullah Buriro, and Bruno Crispo

Computers & Security (Elsevier), Vol. 83, pp.122-139, 2019

DOI: https://doi.org/10.1016/j.cose.2019.01.007

 AnswerAuth: A Bimodal Behavioral Biometric-based User Authentication Scheme for Smartphones

Attaullah Buriro, B. Crispo, and Mauro Conti

Journal of Information Security and Applications (Elsevier), Vol. 44, pp. 89-103, 2019

DOI: https://doi.org/10.1016/j.jisa.2018.11.008

Classification of Attacks on Wireless Sensor Networks: A Survey

M.N. Riaz, Attaullah Buriro, and Athar Mahboob

International Journal of Wireless and Microwave Technologies (IJWMT), Vol.8, No.6, pp. 15-39, 2018.

DOI: 10.5815/ijwmt.2018.06.02

FGEHF: Authenticated Web Based Applications for Human Resource Management System

S. A. khuhro, M. A. Panhwar, **Attaullah Buriro**, A. Ahmed, S. A. Khuhawar, and S. Hayat

Indian Journal of Science and Technology, Vol 11(43),

DOI: <u>10.17485/ijst/2018/v11i43/131751</u>

OPAS: A Trusted Web-based Online Property Advertising System

S. A. khuhro, M. A. Panhwar, **Attaullah Buriro**, A. Ahmed, S. A. Khuhawar, and Ngin Kimlong

Indian Journal of Science and Technology, Vol 11(40),

DOI: 10.17485/ijst/2018/v11i40/131750

DriverAuth: Behavioral Biometric-based Driver Authentication Mechanism for On-demand ride and ridesharing infrastructure

S. Gupta, **Attaullah Buriro**, B. Crispo ICT Express (2018)

DOI: https://doi.org/10.1016/i.icte.2018.01.010

• Demystifying Authentication Concepts in Smartphones: Ways and Types to Secure Access

S. Gupta, **Attaullah Buriro**, B. Crispo Mobile Information Systems (2018)

DOI: https://doi.org/10.1155/2018/2649598

Social Success Factors Affecting Implementation of Agile Software Development Methodologies in Software Industry of Pakistan: An Empirical Study

M.N. Riaz, **Attaullah Buriro**, A. Mahboob International Journal of Advanced Computer Science and Application (IJACSA), Vol.9, No.7, 2018. DOI: 10.14569/IJACSA.2018090713

MobiGuard: A Mechanism for Protecting and Controlling User's Personal Data on Android Smartphones

S. A. Khuhro, **Attaullah Buriro**, K. Ngin, and D. Vasan Imperial Journal of Interdisciplinary Research (IJIR), Vol-3, Issue-12, (2017).

Further data

Presentations at scientific conferences over past 3 years (invited or selected, keynote, nature and status of conference)

- 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. (Sep. 2018)
- Mobile Biometrics: Towards A Comprehensive Evaluation Methodology, The 51st International Carnahan Conference on Security Technology (ICCST-2017), Madrid, Spain. (Oct. 2017)
- Age, Gender, and Operating-hand Estimation on Smart Mobile Devices, 15th International Conference of the Biometrics Special Interest Group (BIOSIG), Germany. (Sep. 2016)
- Behavioral Biometrics for Smartphone User Authentication, The Data Economy in Privacy, Security & Trust, organized by EIT Digital, at Milan Expo 2015, Italy. (Sep. 2015)
- Touchstroke: Touch-typing Biometrics for Smartphone User Authentication, International Workshop on Recent Advances in Digital Security: Biometrics and Forensics, Genova, Italy. (Sep. 2015)
- 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. (Aug. 2015)

Dear Committee Members.

Statement of interest

I would like to apply for "Assegno Di Ricerca" position on the project Hyperspectral images for inspection applications (H2I) under the supervision of Prof. Tammam Tillo offered by the Faculty of Computer Science at the Free University of Bozen, Bolzano, Italy.

I have been working at the intersection of four major areas, i.e., Security, Data Science, Machine Learning and Biometrics and would love to teach and research in all these domains. Throughout my research period, I have been investigating newer human behaviors that could potentially replace the less secure and less usable authentication schemes available on the smart-devices, i.e., tablets, smartphone, smartwatch. My expertise includes identification of unique human behaviors, collecting the required data, hypothesis testing and adaptive machine learning, evaluating and prototyping the proof-of-the-concept systems for implicit and frictionless authentication. I have been able to publish my work at top security venues, i.e., Security and Privacy workshop (IEEE S&P -2016), ACM CODASPY, etc. I consider three publications, i.e., (i) "AnswerAuth – A Bimodal Behavioral Biometric-based User Authentication Scheme for smartphone", (ii) "DialerAuth – A Motion-assisted Touch-based

Smartphone User Authentication Scheme", and (iii) "Hold & Sign: A Novel Behavioral Biometrics for Smartphone User Authentication", as representative of my work. I was the main researcher in these works.

I have been studying/applying machine learning (mainly classification), for user authentication scenario, since the last 6.5 years and know nearly all the classifiers, from simplest, e.g., Bayesian Networks (BN), K-Nearest Neighbor, Random Forest, etc., to complex, e.g., Multilayer Perceptron (MLP), Support Vector Machine (SVM), and Deep Learning, etc. I have been using WEKA, Matlab, R and scikit-learn as tools for my analysis throughout. I am well conversant with all the necessary Matlab toolboxes (e.g., PRTOOLS, DDTOOL), WEKA (e.g., Fast Random Forest, DL4J, etc.) and R (H20, etc). I have applied the above-mentioned classifiers in one-class, binary-class, and multi-class settings, based on the scenarios.

Finally, I explain my reasons why I find this position as interesting and a great opportunity; Firstly, it would give me a chance to continue researching and applying my expertise of machine learning to develop algorithms for the classification of Hyperspectral images. Secondly, it could offer challenging research questions to complement the skills I have already learned during my research period. Lastly, I like academia and to reach an academic position in any European university, this opportunity could be a breakthrough.

Language competence

Sindhi: Native, Urdu:C2, English: C1, Italian: A1

Date: Trento, 08/08/2019

Signature

Informativa ai sensi degli artt. 13, Reg UE 2016/679 "Regolamento Europeo in materia di protezione dei dati personali"

Data protection code in compliance with art. 13 of the REG EU 2016/679

1. Finalità, base giuridica del trattamento cui sono destinati i dati

- 1.1 I dati personali da Lei forniti direttamente al titolare verranno trattati nel rispetto del Regolamento Europeo, della normativa nazionale in materia, nonché degli obblighi di riservatezza.
- 1.2 Le operazioni di trattamento saranno finalizzate unicamente alla corretta esecuzione dei compiti istituzionali dell'Università, nonché all'espletamento di tutti gli adempimenti connessi al procedimento di selezione per il quale ha presentato la documentazione. La base giuridica del trattamento è quindi di natura contrattuale e precontrattuale.
- 1.3 I compiti istituzionali dell'Università riguardano la didattica e la ricerca e sono di rilevante interesse pubblico.

2. Modalità del trattamento

2.1 Il trattamento dei dati avverrà in modo da garantirne la sicurezza e la riservatezza nel pieno rispetto di quanto previsto dal "Regolamento Europeo" e dalla legislazione nazionale in materia e dei Regolamenti universitari interni e potrà essere effettuato mediante operazioni manuali e/o l'utilizzo di strumenti informatici e/o telematici atti tra l'altro a memorizzare, gestire o trasmettere i dati stessi.

3. Periodo di conservazione dei dati

3.1 I Suoi dati verranno conservati per un periodo di tempo non superiore a quello necessario al soddisfacimento delle finalità indicate e comunque per il tempo strettamente necessario all'espletamento degli adempimenti previsti per legge. Si specifica che l'anagrafica e i dati di carriera sono conservati dall'Ateneo illimitatamente nel tempo. I dati inerenti graduatorie sono conservati illimitatamente nel tempo. La conservazione dei restanti dati è sotteso ai tempi di conservazione degli atti amministrativi che li contengono.

4. Natura obbligatoria o facoltativa del conferimento

4.1 Die personenbezogenen Daten, die Sie betreffen und uns lieferten, sind für ein korrektes Abwickeln des Auswahlverfahrens, an dem Sie teilnehmen, unabdingbar und ihre Übermittlung ist gesetzlich verpflichtend. Eine Verweigerung der Mitteilung der erforderlichen Informationen oder der Einwilligung zu ihrer Verarbeitung oder deren Widerruf kann die Hinderung der Verfahrensabwicklung, an der Sie

1. Purpose, legal basis of the processing

- 1. Your personal data you provided to the owner of the data processing will be used in adherence to the European Regulation, the national law and the internal Regulations as well as in accordance with the obligation to observe secrecy.
- 1.2. The processing of personal data will be exclusively finalized to fulfill the institutional duties of the University as well as to carry out all the tasks related to the duties of your application. The legal basis for processing is therefore contractual and pre-contractual.
- 1.3. The institutional tasks of the University concern didactics and research and are of relevant public interest.

2. Modalities of processing

2. 1. The processing of personal data will ensure your safety as well as your privacy in adherence to the European Regulation, the national law and the internal Regulations: the processing of personal data will be carried out through manual transactions and/or using digital and telematics instruments capable of storing, processing or transmitting the data itself.

3. Period of conservation

3.1 Your personal data will be saved for a timeframe that will not exceed the required time to fulfill the indicated purposes and anyway only for the strictly necessary time length to comply with the duties prescribed by the law. The personal data and career data are kept by the University indefinitely over time. The data concerning the rankings are kept indefinitely over time. The retention of the remaining data is subject to the time limits for the retention of the administrative acts containing them.

4. Mandatory or optional nature of the transmitting

4.1 Your personal data transmitted to us are essential for the correct running of the operations related to your application. Providing the personal data is legally required. Your refusal to provide them, the lack of consensus for processing them when necessary or your withdrawal of the consensus may therefore prevent the smooth running of the operations of

interessiert sind, zur Folge haben und es insbesondere unmöglich machen, Ihre Anfrage zu bearbeiten.

5. Elaborazione e ambito di comunicazione e diffusione dei dati

5.1 Il trattamento dei dati personali raccolti potrà essere effettuato dai nostri incaricati, allo scopo adeguatamente formati nel pieno rispetto di quanto previsto dal Codice della Privacy. I Suoi dati potranno essere, altresì, trattati da soggetti cui la facoltà di accedervi sia riconosciuta da disposizioni di legge, o di normativa secondaria. In particolare, i Suoi dati nel rispetto delle norme del REG UE 2016/679, potranno essere comunicati ad altro soggetto pubblico per gli adempimenti connessi al controllo delle dichiarazioni sostitutive di cui all'art. 71 del D.P.R. 445/2000. I dati potranno, inoltre, essere a tutti i soggetti che, secondo le norme di legge, sono tenuti a conoscerli o possono conoscerli, nonché ai soggetti che sono titolari del diritto di accesso.

your direct interest causing the impossibility to proceed in your submitted request.

5. Processing, communication and dissemination of personal data

5.1 The processing of the collected personal data may be carried out by our adequately trained employees in full compliance with the provisions of the Privacy code. Your personal data may be also processed by subjects entitled by the law or secondary legislation. Your data may be transmitted to another public institution in order to verify the declarations in lieu of certificate (see art. 71 of D.P.R: 445/2000). The data could be furthermore transmitted to all the subjects who must/can receive communication about them and to all the subjects who are entitled to access to your data.

6. Estremi indentificativi del titolare, responsabile e del Privacy Officer

- 6.1 Titolare del trattamento è la Libera Università di Bolzano, con sede legale in Piazza Università n. 1, 39100 Bolzano, nella persona del Presidente e legale rappresentante pro tempore.
- 6.2 Il Data Protection Officer (DPO) della Libera Università può essere contattato al seguente indirizzo e-mail: privacy@unibz.it.

7. Esistenza di un processo decisionale automatizzato

7.1 Lei non verrà sottoposto a una decisione basata unicamente sul trattamento automatizzato dei dati personali da Lei forniti, che produca effetti giuridici che la riguardano o che incidano in modo analogo significativamente sulla sua persona.

8. Diritti dell'interessato

- 8.1 Lei ha il diritto di chiedere al Titolare l'accesso ai dati che la riguardano, la loro rettifica o la cancellazione, l'integrazione dei dati incompleti, la limitazione del trattamento, la portabilità dei dati e di proporre reclamo all'autorità nazionale (Garante della Privacy http://www.garanteprivacy.it/) nonché di esercitare gli altri diritti riconosciuti dalla Normativa Applicabile (artt. 15 ss. GDPR). Qualora per il trattamento dei dati personali è stato prestato il consenso, è riconosciuta la facoltà di revocarlo.
- 8.2. L'esercizio dei diritti può essere esercitato scrivendo all'indirizzo e-mail: privacy@unibz.it oppure ai seguenti numeri/Indirizzi: Libera Università di Bolzano, Piazzetta Franz Innerhofer 8, 39100 Bolzano, Ufficio personale accademico, tel. 0471 011300, fax. 0471 011309. Prima di poterLe fornire, o modificare

6. Owner of the data processing and Data protection officer

- 6.1 The owner of the data processing is the Free University of Bolzano, registered office "Piazza Università n. 1, Bolzano" in the person of the President and legal representative pro tempore.
- 6.2. The Data Protection officer can be contacted under the following e-mail address: privacy@unibz.it

7. Decision based on automated processing

7.1 You will not be subject to a decision based solely on automated processing, which produces legal effects concerning you or similarly significantly affects you..

8. Your rights

- 8.1 You have the right to request from the Owner of the data processing access to and rectification or erasure of personal data, to have incomplete personal data completed, the restriction of processing concerning the data subject and to object to processing as well as the right to data portability and the right to lodge a complaint with a supervisory authority (Garante della Privacy http://www.garanteprivacy.it/), as well as to exercise the other rights recognized by Applicable Law (Art. 15 ff. GDPR).
- 8.2. If you have consented to processing of your personal data, you have the right to withdraw such consent at any time. You can exercise your rights by using the following E- Mail address: privacy@unibz.it, or by contacting Free University

qualsiasi informazione, potrebbe essere necessario verificare la Sua identità.	o of Bozen-Bolzano, Personnel Academic Staff, tel. 0471 – 011300, fax. 0471 – 011 309 Before we	
	can provide you the requested information, we may need to verify your identity.	