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Summary

I am an experienced IT professional, academician and researcher, presently Head of Virtual Campus at one of the leading universities in Pakistan i.e. – COMSATS University Islamabad. Prior to my current assignment I worked as Head of IT Services, Director of Virtual Campus, General Manager IT, Assistant Professor with COMSATS University. I am providing consultancy services to Higher Education Commission of Pakistan as member of various technical committees. I am also collaborating with Prof. Maurer at Institute of Human-Centred Computing (HCC) Technical University Graz Austria, and working on projects related to Large Language Model (LLM) supported digital content processing and publishing. I had the opportunities to work on software development, network design/management and security auditing projects at various levels internationally. I possess a rich combination of technical, academic and management experience with an outstanding record of starting new projects. I did my PhD in Informatics from the Graz University of Technology - Austria. My professional career spans over 20 years and my work is acknowledged and appreciated at national and international levels.

Research Focus: My current work deals with the development and improvements in organizational IT infrastructures, information systems and data stores using modern DevOps best practices. I am exploring the use of AI (machine learning) to enhance capabilities of conventional information systems and unlock the value of structured and unstructured data.

Academic Qualification

- Ph.D. in Informatics/Computer Science, Dec. 2005 - March 2009
Graz University of Technology, Austria
Majors: Information retrieval, Data mining, Similarity detection, Multimodal information systems
- Master of Sciences (M.Sc.) Electronics, Jan. 1997 – Jan. 1999
Quaid-i-Azam University Islamabad, Pakistan
Majors: Digital Logic Design, Network Analysis, Computer Architecture, Computer Programming, Software Engineering, Electronics, Communication, Laser and Fiber Optics, etc.
- Bachelor of Sciences (B.Sc.), May 1994 – May 1996
University of Punjab Lahore, Pakistan
Majors: Mathematics, Statistics, Physics
- Diploma Certificate in Computers, July 1996 – June 1997
Petroman Training Institute, Islamabad, Pakistan
Majors: Digital Electronics, Assembly Language, Interfacing with computers, computer System architecture and organization etc.

Awards/Associations:

- Technical Team Lead, Austria-Forum/NID projects at ISDS Technical University Graz Austria
- Asi@Connect project evaluator for Trans Eurasia Information Network Korea, 2018 - 2022
- Ernst Mach Grant (EZA) Austria, 2017
- Member Higher Education Commission Government of Pakistan Technical committees, 2009- to date
- 12th TERADATA National IT excellence Award 18 May, 2014.
for Excellence in IT Enabled Services (period Jan. 2012 - Dec. 2013)
- HEC Merit Scholarship for PhD studies in Austria, 2005-2009

Summary of Skills

- Rich experience of research and technical management; I have worked in leading roles at various educational and IT services organizations. Launched IT enabled education platform (Virtual Campus). Played an active role in strengthening of PERN (Pakistan Education and Research Networks). Contributed significantly in IT and telecom related initiative at national level through Higher Education Commission of Pakistan.
- Rich experience of use of technology in education and general services sector. I architected complex systems for student information management, learning management, campus management, digitization and online publication platforms.
- Modern web application development. I have working expertise of Python, Java, PHP, Perl, ASP, SQL, BASH Shell scripting, microservices architecture. I have in depth knowledge of all major web/applications servers and hosting aspects, I used/managed all major IDEs and Data Base management systems. I possess practical knowledge of modern development operations, Git code management, CI/CD, Docker image building, containerization and deployment of service stacks.
- Hands-on knowledge of using AI and machine learning frameworks, libraries and models on enterprise and consumer grade GPUs. Worked on processing of multilingual contents including sentence transformation strategies, vector database creations and deterministic LLM inferences using localized systems.
- Computer Network management (all wired and wireless media types). I am experienced in setting up Windows and Linux/UNIX based networks, which includes, Domain management, installation and management of WWW server, POP & SMTP based Mail server, FTP server, RAS, Firewalls, NATs and Proxy servers. Setup and configuration of routers, switches, Remote Access Server platform, VoIP gateways etc.
- I have extensive working experience of setting up hypervisors and virtual machines using various windows and Linux platforms. Used major penetration testing and vulnerability analysis tools such as Kali Linux, Nessus/OpenVAS, Nexpose etc. Good knowledge of secure development practices based on OWASP guidelines.
- I have taught courses related to Computer Networks, Programming, Web and internet applications etc. I authored a number of peer reviewed research articles and also produced numerous technical project reports, regulatory, review and management documents.

Experience:

Over 20 Years of experience in Information Technology development and management.

Austria Forum/HCC TU Graz: (June 2018- To date) [Remote]

I am working as technical team lead for projects related to LLM supported knowledge management and information repositories. <https://www.austria-forum.org> <https://www.nid-library.com>
I am also responsible of installing and managing remote project application servers hosted in Austria.

COMSATS University Islamabad: (Aug 2001- To date) [Full Time]

Working at present in COMSATS University Islamabad (<http://www.comsats.edu.pk>) as **Head of Virtual Campus and Information Technology Service**. My Job responsibilities include strategic management of IT infrastructure and services at the university. I also provide technical assistance to planning and development units of university in preparation of technical project proposals.

Projects initiated/completed by me at CUI includes:

1. Establishment of CUI Virtual Campus, the setup includes a state-of-the-art campus management student information and learning management system. The facility also includes purpose-built lecture capturing facility that allows production of quality courseware.
2. Establishment of a 500+ node LAN, comprising of UTP, STP, fiber, and Wireless 802.11b/g/n/ac based links supporting high bandwidth at CUI. Setup of internet connectivity at Abbottabad and Virtual Campus Islamabad using Fiber, DXX cross connect (STM1) copper, Satellite data links.

4. Established the ISP node (<http://ciit.net.pk>) at Abbottabad (2002-2005) with user management and accounting/billing software. Created transparent cascaded proxy meshing for effective bandwidth management offering services to LAN and WAN users
5. Setup and execution of Network Research LAB with routing switching equipment and multi platform environment to test benchmark network applications, services and hardware.
6. Develop VoIP gateway supporting PSTN connectivity for CUI. Implemented online help desk and IVR information system for ISP. Deployed and customized a number of open source information management tools for information support services.
7. Network/Security Audit of National Testing Center, Dushanbe Tajikistan, UEE/READ initiative. (A world Bank consultancy assignment/project)
8. Lead a team that developed a next generation digital publication and collaboration platform i.e., Networked Interactive Document (NID) Library for Austria Forum / ISDS TU Graz.

Various Positions held at COMSATS University

Head IT Services: Head of IT infrastructure and services at university.

Director/Incharge Virtual Campus: Management Head of Online education unit of university.

General Manager IT: Head of Campus IT Center and network operations.

Assistant Professor: Taught courses to undergraduate and graduate students.

HEC approved PhD supervisor: 1 successful PhD student supervision/defense

eletel Inc. (Nov 1999 – Aug 2001) [Full Time]

Worked in eletel Inc. (<http://www.eletel.com>) as Software Consultant. My job assignments include management/monitoring of eletel's messaging gateway servers and development of different web based applications for them, that includes web Telephony products, web site development for their different products, web interface development for their Fax Voice Telephony messaging system Callex and also developed a web based front end for their IP to PSTN line voice messaging service (PC to Phone). eletel being a US based company don't have its own office setup in PK so I work at different reputed local establishments (Anjum Asim Shahid & Co. and Secure Software Transactions) doing job for eletel.

Quaid-i-Azam University. (Aug 2000 - Feb 2001) [Part Time]

Worked as visiting Faculty in the Department of Electronics of QAU (<http://www.qau.edu.pk>), and taught LAB courses of M.Sc. Electronics, Final semester which involves computer interfacing, Data communication, general computer networks. I supervised final semester network/data-communication projects of department students.

Hamdard University. (July 1999-Dec 1999) [Full Time]

Worked in Hamdard University as Lecturer/System Admin, teaching course of Computer Networks, Digital Logic Design and electronics to MCS classes, my job assignment also includes Network Administration and I setup computer lab for the university's Faisalabad campus and configured web, proxy, mail, ftp servers. I also developed University's Web page, message board, web based mail server interface.

COMSATS Institute Islamabad. (June 1999-April 2001). [Part Time]

Worked as visiting Faculty member in COMSATS Institute of Information Technology Islamabad (<http://ciit.edu.pk>) teaching different courses (Data communication & Networking, Internet programming, Operating Systems etc.)

Systems Research Pvt. Ltd. (Jan 1999-July 1999) [Full Time]

Worked in *Systems Research Pvt. Ltd.* as System Administrator in Network Department and Faculty member in Systems Research Institute. My job assignments at SysRes includes Management of 300+ PC hybrid LAN setup, installation and configuration of proxy, Web and mail servers. I also taught courses of Internet/Intranet Applications and Web development in SRI.

Research / Publications

Refereed Publications:

- Zaka, B., Nawaz, M., "Tapping in the Potentials of Knowledge Economy: Revamping IT and Business Processes Outsourcing Industry", IPSI Transactions on Internet Research, vol. 21(1), pp. 67-74, 2025. <https://doi.org/10.58245/ipsi.tir.2501.06>
- Zaka, B.; Emerging Technologies in Digital Libraries: Net Interactive Document (NID) Experiences and Prospects. IPSI Bgd Transactions on Internet Research, Vol. 18, No. 2, July 2022, pp. 70-76. ISSN 1820 - 4503
- Zaka, B. and Maurer, Hermann; Web Sites Need Much More User-Driven Interactivity. IPSI Bgd Transactions on Internet Research, Vol. 18, No. 2, July 2022, pp. 64-69. ISSN 1820 - 4503
- Maurer H., Zaka B., Eisenberger S. (2021) Passively Acquiring Information Must End. In: EuroSPI 2021. Communications in Computer and Information Science, vol 1442. Springer, Cham. https://doi.org/10.1007/978-3-030-85521-5_11
- Zaka, B. (2020) Digital Transformation: Prioritizing Data Localization. SOUTHVIEWS by South Centre No. 206, 25 September 2020. <https://www.southcentre.int/southviews-no-206-25-september-2020>
- Zaka, B., Maurer, H., and Delilovic, N. (2020). Investigating Interaction Activities in Digital Libraries: The Networked Interactive Digital Books Project. IPSI Bgd Transactions on Internet Research Journal, Volume 16 (1) ISSN 1820 - 4503, January 2020.
- Maurer, H., Delilovic, N. & Zaka, B. (2019). Libraries of Interactive Books as Powerful Tool for Information Communication. In J. Theo Bastiaens (Ed.), Proceedings of EdMedia + Innovate Learning (pp. 1353-1359). Amsterdam, Netherlands: Association for the Advancement of Computing in Education (AACE). Retrieved August 14, 2019 from <https://www.learntechlib.org/primary/p/210270/>
- Ellahi, A., Zaka, B., & Sultan, F. (2017). A Study of Supplementing Conventional Business Education with Digital Games. Journal of Educational Technology & Society, Vol. 20 (3), 195–206. ISSN 1436-4522 (online) and 1176-3647 (print)
- Ellahi, A., Sultan, F., Zaka B. (2016) Digital Game Based Learning in Business Management Education: A Step from Entertainment to Digital Literacy. European Journal of Business and Management Vol.8, No.22 2016 ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
- Ellahi A. & Zaka B., (2015). Analysis of Higher Education Policy Frameworks for Open and Distance Education in Pakistan. Sage Publications Inc. Evaluation Review, April 2015 Vol. 39(2) 255-277 DOI:10.1177/0193841X15570046 erx.sagepub.com
- Qureshi, M. F, Shah S. M. A & Zaka, B. (2014). Towards providing better Distance Education: A roadmap for universities, Journal of Strategy and Performance Management, Volume 2, Issue 2, pages 67-78, ISSN 2308-7730.
- Nawaz, M., Hussain F., & Zaka B., (2013). Review of E-Learning Methodologies in Pakistan. World Applied Sciences Journal 28 (4): 425-439, 2013 ISSN 1818-4952 DOI: 10.5829/idosi.wasj.2013.28.04.1788
- Nawaz, M., Hussain F., & Zaka B., (2013). Quality Assurance in E-Learning: Study of E-Learning Practices in Pakistan. World Applied Sciences Journal 28 (2): 236-249, 2013 ISSN 1818-4952 DOI: 10.5829/idosi.wasj.2013.28.02.1790

- Kappe, F., Zaka, B., & Steurer, M. E. (2009). Automatically Detecting Points of Interest and Social Networks from Positions of Avatars in a Virtual World. International Conference on Advances in Social Networks Analysis and Mining, IEEE DOI: 10.1109/ASONAM.2009.66
- Kulathuramaiyer, N., & Zaka, B. (2009). Integrated Multimodal Copy-Paste Checking. Journal of Software (JSW), Vol. 4, No. 6, August 2009, ISSN 1796-217X
- Zaka, B., Steurer, M. E., & Kappe, F. (2009). Framework for Extending Plagiarism Detection in Virtual Worlds. In proceedings of Third International Conference on Research Challenges in Information Science, IEEE DOI: 10.1109/RCIS.2009.5089268
- Zaka, B. (2009). Empowering plagiarism detection with a web services enabled collaborative network. Journal of Information Science and Engineering, Vol. 25, No. 5, September 2009, ISSN: 1016-2364
- Zaka, B., Safran, C., & Kappe, F. (2009). Use of similarity detection techniques for adaptive news content delivery and user profiling. Book Chapter: Advances in Semantic Media Adaptation and Personalization, Volume 2, CRC press, ISBN: 978-1-4200-7664-6, <http://www.crcnetbase.com/doi/abs/10.1201/9781420076653-c11>
- Zaka, B., & Safran, C. (2008). Emerging Web Based Learning Systems and Scalability Issues. In proceedings of International Conference on Information Technology in Education, CSSE Dec. 2008 Wuhan China, Pp.889-892, DOI: 10.1109/CSSE.2008.187
- Safran, C., & Zaka, B. (2008). A Geospatial Wiki for m-Learning. In proceedings of International Conference on Information Technology in Education, CSSE Dec. 2008 Wuhan China, Pp.109-112, DOI: 10.1109/CSSE.2008.188
- Zaka, B., Kulathuramaiyer, N., Balke, T., & Maurer, H. (2008). Topic-Centered Aggregation of Presentations for Learning Object Repurposing. Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Nov. 2008 Nevada USA, Published by AACE, Pp. 3335-3342, Online: <https://www.learntechlib.org/p/30141/>
- Kulathuramaiyer, N., Zaka, B., & Helic, D. (2008). Integrated Copy-Paste Checking: Design and Services. In proceedings of Eighth IEEE International Conference on Advanced Learning Technologies, ICALT July 2008. Pp.519-523, DOI: 10.1109/ICALT.2008.312
- Zaka, B., Safran, C., & Kappe, F. (2007). Personalized Interactive Newscast (PINC): Towards a Multimodal Interface for Personalized News. In proceedings of Second International Workshop on Semantic Media Adaptation and Personalization, SMAP 2007 London UK, Pp. 56-61, ISBN: 0-7695-3040-0, IEEE DOI: 10.1109/SMAP.2007.36
- Zaka, B., & Maurer, H. (2007). Service Oriented Information Supply Model for Knowledge Workers. In proceedings of 7th International Conference on Knowledge Management, i-KNOW Sep. 2007 Graz Austria, Pp. 432-439.
- Maurer, H., & Zaka, B. (2007). Plagiarism – a problem and how to fight it. Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications, EdMedia 2007 Vancouver Canada, Published by AACE, 4451-4458, <https://www.learntechlib.org/p/26021/>
- Maurer, H., Kappe, F., & Zaka, B. (2006). Plagiarism- a Survey. Journal of Universal Computer Science, Volume 12, Issue 8, Pp. 1050-1084, ISSN 0948-695x, DOI: 10.3217/jucs-012-08-1050
- Zaka, B., Safran, C., & Kappe, F. (2006). A blended learning approach in the news domain. Proceedings Book: Current Developments in Technology-Assisted Education, Published by FORMATEX, Badajoz, Spain Pp. 1027-1031, ISBN 84-690-2472-8

Non refereed publications

- [NID Unser Manual](#) (2023)
- [NID Administration Manual](#) (2023)
- [NID Presentation/Specifications](#) (2024)
- General [AEIOU/NID/General Explanation of Ideas \(English Version\)](#): Jan. 2020
- Digital transformation with a careful approach towards data localization: Published in leading national newspapers; April 2020
- Establishment of COMSATS Internet and Data Center: A move towards comprehensive G-Cloud. Type: Project proposal For COMSATS Headquarters / Ministry of Science and Technology Pakistan; March 2020
- Center for AI Development: (Promoting AI adoption for positive economic and social impacts); Research Note 2019
- Information and Communication Technologies led reforms in agriculture sector of Pakistan; Research report for MoS; 2019
- Tapping in the potentials of knowledge economy: Revamping IT and Business Processes Outsourcing industry, A information paper for consumption of concerned ministries of Govt. of Pakistan; July 2019
- DIGISKILLS Training Project (DSTP): Approach, Technology, Methodology & Work Plan; Technical Proposal; Dec. 2020
- Scheme, regulatory framework, progress and Future plans of CIIT Virtual Campus. Report for Director CIIT Virtual Campus; 2015
- Quality Assurance Manual for distance education program: COMSATS Institute of Information Technology Quality Assurance Manual; August 2014
- Technical Guideline for COMSATS Virtual Campus, COMSATS Virtual Campus; July, 2012

References:

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