

### CONTACT INFORMATION

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### RESEARCH INTERESTS

Computer vision and image processing, including image retrieval, shape matching, salient object detection, and machine learning. Currently, I am working on **Instance Retrieval Based on Combination of Geometric Features and Convolutional Neural Network**. Previously, I have worked on information retrieval, wireless networking, and cloud computing and security.

### EDUCATION

#### University of Jinan, China

MS Computer Science and Technology  
**CGPA:** 4.23/5.00 | **Percentage:** 87.23%  
**Advisor:** Prof. Xiuyang Zhao

**Sep 2017 – Present**

#### University of the Punjab, Pakistan

BS Computer Science  
**CGPA:** 3.32/4.00

**Oct 2013 – Jul 2017**

### PUBLICATIONS

- [1] **HASSAN, Muhammad Umair**; NIU, Dongmei; ZHAO, Xiuyang et al. "Salient Object Detection based on CNN Fusion of Two Types of Saliency Models". 2019 34<sup>th</sup> International Conference on Image and Vision Computing New Zealand (IVCNZ). doi:10.1109/ivcnz48456.2019.8960994.
- [2] **HASSAN, Muhammad Umair**; SHOHAG, Md Shakil Ahamed; NIU, Dongmei et al. "A framework for the revision of large-scale image retrieval benchmarks", Proc. SPIE 11179, Eleventh International Conference on Digital Image Processing (ICDIP 2019), 111794D (14 August 2019); <https://doi.org/10.1117/12.2539640>.
- [3] LI, Mai; ZHANG, Mingxuan; NIU, Dongmei; **HASSAN, Muhammad Umair**; ZHAO, Xiuyang; LI, Na. "Point Set Registration Based on Feature Point Constraints", The Visual Computer, pp.1-14. <https://doi.org/10.1007/s00371-019-01771-x>. (**IF:1.415**)
- [4] ZHANG, Mingxuan; **HASSAN, Muhammad Umair**; NIU, Dongmei; ZHAO, Xiuyang et al. "Shape Correspondence based Effective Combination of Linear and Quadratic Assignment Matrices", Proc. SPIE 11179, Eleventh International Conference on Digital Image Processing (ICDIP 2019), 111794E (14 August 2019); <https://doi.org/10.1117/12.2539652>.
- [5] SHOHAG, Md Shakil Ahamed; **HASSAN, Muhammad Umair**; NIU, Dongmei et al. "Graph Based Image Matching Using the Fusion of Several Kinds of Features" In Proceedings of the 2019 4th International Conference on Multimedia Systems and Signal Processing (ICMSSP 2019). ACM, New York, NY, USA, 188-193. DOI: <https://doi.org/10.1145/3330393.3330421>.
- [6] SHABIR, Muhammad Ahmad; **HASSAN, Muhammad Umair**; YU, Xiangru; LI, Jinping. "Tyre Defect Detection Based on GLCM and Gabor Filter", 22nd IEEE International Multi Topic Conference 2019 (IEEE INMIC 2019), Islamabad, Pakistan. (**Accepted**).
- [7] SHABIR, Muhammad Ahmad; **HASSAN, Muhammad Umair**; YU, Xiangru; LI, Jinping. "Extensive Techniques to Detect Defects in Tyres through Radiography", 22nd IEEE International Multi Topic Conference 2019 (IEEE INMIC 2019), Islamabad, Pakistan. (**Accepted**).
- [8] ZHANG, Mingxuan; NIU, Dongmei; **HASSAN, Muhammad Umair**; ZHAO, Xiuyang; LIU, Mingjun; ZHOU, Jin; LI, Na. "Shape Matching Based on the Combination of Three Types of Graphic Information", Computer Graphics Forum. (**Under Review**).
- [9] YAN, Anli; CHEN, Zhenxiang; **HASSAN, Muhammad Umair**; WANG, Lin; PENG, Lizhi; ZHAO, Chuan. "An Effective Detection of Mobile Malware Behavior based on Explainable Deep Neural Network", Neural Computation. (**Under Review**).
- [10] **HASSAN, Muhammad Umair** et al. "An Overview of Schema Extraction and Matching Techniques", 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control Conference (IMCEC 2018), Xi'an, China, 2018, pp. 1290-1294. doi: 10.1109/IMCEC.2018.8469502.
- [11] **HASSAN, Muhammad Umair** et al. "Web-Logs Prediction with Web Mining", 2018 2nd IEEE Advanced Information Management, Communicates, Electronic and Automation Control

- Conference (IMCEC 2018), Xi'an, China, 2018, pp. 1295-1299. doi: 10.1109/IMCEC.2018.8469256.
- [12] MA, Yingjun; **HASSAN, Muhammad Umair**; NIU, Dongmei; ZHANG, Jinshuo; ZHAO, Xiuyang. "An Unsupervised Approach for 3D Medical Image Registration", 2019 The 7th International Conference on Information Technology (ICIT 2019), Shanghai, China. (**Accepted**).
- [13] YAN, Anli; CHEN, Zhenxiang; **HASSAN, Muhammad Umair**; WANG, Lin; ZHAO, Chuan. "Incremental Ensemble of Ensembles for Detecting Malicious Behavior", Transactions on Network Science and Engineering. (**Under Review**)
- [14] MA, Yingjun; **HASSAN, Muhammad Umair**; NIU, Dongmei; WANG, Liping. "Glandular cavity segmentation based on local correntropy-based K-means (LCK) clustering and morphological operations" In Third International Workshop on Pattern Recognition, vol. 10828, p. 108280H. International Society for Optics and Photonics, 2018. doi: 10.1117/12.2502002.
- [15] MA, Yingjun; **HASSAN, Muhammad Umair**; NIU, Dongmei; WANG, Liping. "The Segmentation of Glandular Cavity based on K-means and Mathematical Morphology" The 4th IEEE International Conference on Systems and Informatics (ICSAI 2017), Hangzhou, China, 2017. doi: 10.1109/ICSAI.2017.8248484.
- [16] SHEN, Jingya; CHEN, Zhenxiang; WANG, Shanshan; ZHU, Yuhui; **HASSAN, Muhammad Umair**. "DroidDetector: a traffic-based platform to detect android malware using machine learning" In Third International Workshop on Pattern Recognition, vol. 10828, p. 108280N. International Society for Optics and Photonics, 2018. doi: 10.1117/12.2501923.
- [17] YAN, Anli; CHEN, Zhenxiang; WANG, Lin; PENG, Lizhi; **HASSAN, Muhammad Umair**; ZHAO, Chuan. "Neural Network Rule Extraction for Real Time Traffic Behavior Identification", 2018 International Conference on Security, Pattern Analysis, and Cybernetics, Jinan, China.
- [18] **HASSAN, Muhammad Umair** et al., (2019) "MAC Protocols: A Comparative Study on Throughput Analysis and Improved Leach", International Journal of Computer Networks and Communications (IJCNC). (**Accepted**)
- [19] **HASSAN, Muhammad Umair** et al., (2019) DEAR-2: An Energy-Aware Routing Protocol with Guaranteed Delivery in Wireless Ad-hoc Networks. In: Jan M., Khan F., Alam M. (eds) Recent Trends and Advances in Wireless and IoT-enabled Networks. EAI/Springer Innovations in Communication and Computing. Springer, Cham. doi: 10.1007/978-3-319-99966-1\_20.
- [20] **HASSAN, Muhammad Umair** et al., "A Comparative Study on Frequent Link Disconnection problems in VANETs", EAI Endorsed Transactions on Energy Web and Information Technologies, Vol. 18, No. 17, April 2018. doi: 10.4108/eai.10-4-2018.154444.
- [21] **HASSAN, Muhammad Umair**; UMAIR, Muhammad; ALI, Haider. "Novel Approaches to Improve Software Quality", International Journal of Software Engineering and Its Applications, Vol. 11, No. 6, June 2017, pp. 15-24. <http://dx.doi.org/10.14257/ijseia.2017.11.6.02>.
- [22] **HASSAN, Muhammad Umair**; MUBASHIR, Muhammad; SHABIR, Muhammad Ahmad; MUHIBB ULLAH, Muhammad. "Software Quality Assurance Techniques: A Review", International Journal of Information, Business and Management, Vol.10, No.4, 2018. ISSN: 2218-046X.
- [23] SHAUKAT, Kamran; **HASSAN, Muhammad Umair**; MASOOD, Nayyer; SHAFAT, Ahmad. "Stop Words Elimination in Urdu Language using Finite State Automaton", International Journal of Asian Language Processing, Vol. 27, No. 2, 2017. ISSN: 0219-5968. pp. 21-32.
- [24] SHAUKAT, Kamran; **HASSAN, Muhammad Umair**. "Cloud Security through Encryption Techniques", Transylvanian Review, Vol. XXV, No. 15, March 2017. ISSN: 1221-1249. pp. 4037-4042.
- [25] SHAUKAT, Kamran; SHAFAT, Ahmad; **HASSAN, Muhammad Umair**. "An Efficient Stop Word Elimination Algorithm for Urdu Language", 2017 14th IEEE International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), Phuket, Thailand. doi: 10.1109/ECTICon.2017.8096386.
- [26] **HASSAN, Muhammad Umair**; MUMTAZ, Nadia. "AI in Assisting the Elderly and People with Disabilities", International Journal of Research and Engineering, [S.l.], Vol. 3, No. 8, Aug. 2016. ISSN 2348-7860. Available at: <[http://digital.ijre.org/index.php/int\\_j\\_res\\_eng/article/view/201](http://digital.ijre.org/index.php/int_j_res_eng/article/view/201)>.
- [27] SHAUKAT, Kamran; **HASSAN, Muhammad Umair**; ALI, Haider; SHAH ZAIB, Muhammad. "An Overview of Service Oriented Architecture, Cloud Computing and Azure Platform",

International Journal of Computer Science and Information Security, Vol. 14 No. 7, July 2016, pp. 891-896.

**WORK  
EXPERIENCE**

**Shandong Provincial Key Laboratory of Network-Based Intelligent Computing, University of Jinan, China**      **Sep 2018 – Present**

Research Assistant, Computer Vision and Digital Image Processing

- Image Retrieval
- Object Detection
- Medical Image Segmentation
- Image Matching

**Department of Information Technology, University of the Punjab, Pakistan**      **Mar 2015 – Aug 2016**

Teacher Assistant, Database Systems & Object-Oriented Programming

**PROJECTS**

**Android: Book Corner App (Final Year Project at Undergraduate Level)**

1. User Login
2. Sign Up (Manual User)
3. Membership with Book Corner (Pro Version of Application)
4. Search Books (Category, Book Name, Author Name wise)
5. Maps module implemented

**ASP.Net: Chat Messenger Application (Semester Project at Undergraduate Level)**

1. User Login System
2. HTTP Web Services used for sending messages
3. SQL Server 2012 used for database connectivity
4. Searching module for users

**ASP.Net: Student Web Portal System (Semester Project at Undergraduate Level)**

1. User Login System
2. Students and Staff members have access to the system
3. Student Information System
4. jQuery used for animation and sliders

**ASP.Net: Online Shopping & Cart System (Semester Project at Undergraduate Level)**

1. Any member can register and view available products.
2. Only a registered member can purchase multiple products regardless of quantity.
3. There are three roles available: Visitor, User and Admin.
4. Online Shopping Master Page (Similar MasterPage for Visitor, User and Admin)

**C++: Airline Reservation System (Semester Project at Undergraduate Level)**

1. User Login System
2. Customer Management System
3. Customer Login System
4. Graphical User Interface

**ACHIEVEMENTS  
& AWARDS**

- Fully Funded Chinese Government Scholarship for Master Studies (2017-2020)
- Fully Funded Scholarship by VISTEC to participate in Machine Learning Research School (MLRS 2019), Bangkok, Thailand
- Poster Presentation at Machine Learning Research School, Bangkok, Thailand
- Delivered Oral Presentation at 22<sup>nd</sup> INMIC 2019, Islamabad, Pakistan
- Delivered Oral Presentation at 11<sup>th</sup> ICDIP 2019, Guangzhou, China
- Student Best Paper Award at IEEE IMCEC 2018, Xian, China
- 3rd Position in SISE Graduate Academic Research Competition, Jinan, China
- Delivered Oral Presentation at IEEE IMCEC 2018, Xian, China
- Delivered Oral Presentation at EAI FUTURE5V 2017, Islamabad, Pakistan

**SKILLS**

**Programming:** Python, C/C++, C#, MATLAB, Java

**Public Library:** PyTorch, Tensorflow, Keras, Caffe, OpenCV

**Environments & IDE:** Linux, Windows, Visual Studio 2015, NetBeans

**Languages & Scores:** English (fluent), IELTS 6.5 (overall), Mandarin (basic), Urdu (native)