



Dr. ALEEM KHALIQ

HOME ADDRESS: House No. 3, Street No. 117, Sector G-13/4, Islamabad, Pakistan.

E-MAIL: aleem.khaliq@polito.it , aleem.khaliq@iiu.edu.pk **Phone:** +92-333-5701545 **Date of Birth:** 29-11-1985

Nationality: PAKISTANI

Google Scholar: <https://scholar.google.com/citations?user=OpkJH4YAAAAJ&hl=en&oi=ao>

ORCID ID: <https://orcid.org/0000-0002-9771-6595>

Education:

PhD (2016-2020)	Politecnico di Torino, Italy Title: Advancements in Multi-Temporal Remote Sensing Data Analysis Techniques for Precision Agriculture	PhD in Electrical Electronics and communications Engineering	Awarded
Masters (2008-2012)	International Islamic University, Islamabad, Pakistan	MS in Electronic Engineering	CGPA (3.75/4.00)
Bechelors (2004-2008)	International Islamic University, Islamabad, Pakistan	BS in Electronic Engineering	CGPA (3.60/4.00)

RESEARCH INTERESTS:

- Remote Sensing and applications
- Signal and Image processing
- Machine Learning
- Machine Learning on the Edge devices
- Embedded Systems
- Precision Agriculture
- UAVs and Applications

PUBLICATIONS: (Citations=97, H-index=6, Cumulative Impact factor around 20)

1. **Khaliq, A.**; Comba, L.; Biglia, A.; Ricauda Aimonino, D.; Chiaberge, M.; Gay, P. Comparison of Satellite and UAV-Based Multispectral Imagery for Vineyard Variability Assessment. *Remote Sens.* 2019, 11, 436. <https://doi.org/10.3390/rs11040436> (**Impact Factor: 4.118**)
2. Mazzia, V., **Khaliq, A.**, Salvetti, F., & Chiaberge, M. (2020). Real-Time Apple Detection System Using Embedded Systems With Hardware Accelerators: An Edge AI Application. *IEEE Access*, 8, 91029114. (**Impact Factor: 4.011**)
3. **Khaliq, A.**, Mazzia, V., & Chiaberge, M. (2019, October). Refining satellite imagery by using UAV imagery for vineyard environment: A CNN Based approach. In 2019 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor) (pp. 25-29). IEEE.
4. V. Mazzia, **A. Khaliq** and M. Chiaberge, "Improvement in land cover and crop classification based on temporal features learning using Recurrent-Convolutional Neural Network (R-CNN)", *Applied Sciences*, 2019. (**Impact Factor: 2.217**)
5. **Khaliq, A.**, Musci, M. A., & Chiaberge, M. (2018, October). Analyzing relationship between maize height and spectral indices derived from remotely sensed multispectral imagery. In 2018 IEEE Applied Imagery Pattern Recognition Workshop (AIPR) (pp. 1-5). IEEE.

6. Salvetti, F., Mazzia, V., **Khaliq, A.**, & Chiaberge, M. (2020). Multi-Image Super Resolution of Remotely Sensed Images Using Residual Attention Deep Neural Networks. *Remote Sensing*, 12(14), 2207. **(Impact Factor: 4.118)**
7. Mazzia, V., Comba, L., **Khaliq, A.**, Chiaberge, M., & Gay, P. (2020). UAV and Machine Learning Based Refinement of a Satellite-Driven Vegetation Index for Precision Agriculture. *Sensors*, 20(9), 2530. **(Impact Factor: 3.031)**
8. **A. Khaliq**, M. A. Musci and M. Chiaberge, "Understanding effects of atmospheric variables on spectral vegetation indices derived from satellite based time series of multispectral images," *2018 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, Washington, DC, USA, 2018, pp. 1-4. <https://doi.org/10.1109/AIPR.2018.8707430>
9. **A. Khaliq**, L. Peroni and M. Chiaberge, "Land cover and crop classification using multitemporal sentinel-2 images based on crops phenological cycle," *2018 IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems (EESMS)*, Salerno, Italy, 2018, pp. 1-5.
10. Irfan, M.A.; Khan, S.; Arif, A.; Khan, K.; **Khaliq, A.**; Memon, Z.A.; Ismail, M. Single Image Super Resolution Technique: An Extension to True Color Images. *Symmetry* 2019, 11, 464. **(Impact factor: 2.645)**
11. Zoto, J., Musci, M. A., **Khaliq, A.**, Chiaberge, M., & Aicardi, I. (2019, June). Automatic path planning for unmanned ground vehicle using uav imagery. In *International Conference on Robotics in Alpe-Adria Danube Region* (pp. 223-230). Springer, Cham.
12. Khan, S., Irfan, M. A., Arif, A., Ali, A., Memon, Z. A., & **Khaliq, A.** (2020). Reversible-Enhanced Stego Block Chaining Image Steganography: A Highly Efficient Data Hiding Technique. *Canadian Journal of Electrical and Computer Engineering*, 43(2), 66-72.
13. **Khaliq, A.**, Waseem, A., Munir, M. F., & Ahmad, R. (2016, January). Comparison of adaptive noise cancelers for ECG signals in wireless biotelemetry system. In *2016 International Conference on Intelligent Systems Engineering (ICISE)* (pp. 181-184). IEEE.
14. Waseem, A., **Khaliq, A.**, Ahmad, R., & Munir, M. F. (2016, January). Channel equalization for MIMOFBMC systems. In *2016 International Conference on Intelligent Systems Engineering (ICISE)* (pp. 272-277). IEEE.

Work Experience:

- **Lab Technician (2006-2009 IIU, Islamabad)**
 - Laboratory equipment maintenance
 - Assist lab instructor during labs
 - Indigenous Laboratory trainers designing
- **Lab Engineer (2009 to date IIU, Islamabad)**
 - Laboratory experiments demonstration (Microcontrollers, Electronic Circuit Design, Machine learning, Communication Systems, Digital logic design, Embedded Systems)
 - Courses taught (Signal and image processing for remote sensing (Graduate course), Instrumentation and measurement, C language programming, Microcontrollers, Electronic Circuit Design, Machine learning, Communication Systems, Digital logic design, Embedded Systems)
 - Supervised/co supervised more than 30 Final year projects of Undergrad students

TECHNICAL/SOFTWARE SKILLS:

- Languages: Assembly, C, C++, MATLAB, Python, Arduino and raspberry pi.
- Software: QGIS for remote sensing data analysis, SNAP toolbox for multispectral satellite data analysis, Anaconda environments for Python,

Participated in Foreign Conferences as presenter:

- USA Washington-DC

Khaliq, M. A. Musci and M. Chiaberge, "Understanding effects of atmospheric variables on spectral vegetation indices derived from satellite based time series of multispectral images," *2018 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)*, Washington, DC, USA, 2018, pp. 14. <https://doi.org/10.1109/AIPR.2018.8707430>

Khaliq, A., Musci, M. A., & Chiaberge, M. (2018, October). Analyzing relationship between maize height and spectral indices derived from remotely sensed multispectral imagery. In *2018 IEEE Applied Imagery Pattern Recognition Workshop (AIPR)* (pp. 1-5). IEEE.

- Italy (Salerno and Naples)

Khaliq, L. Peroni and M. Chiaberge, "Land cover and crop classification using multitemporal sentinel-2 images based on crops phenological cycle," *2018 IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems (EESMS)*, Salerno, Italy, 2018, pp. 1-5. **Khaliq, A.**, Mazzia, V., & Chiaberge, M. (2019, October). Refining satellite imagery by using UAV imagery for vineyard environment: A CNN Based approach. In *2019 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor)* (pp. 2529). IEEE

- Germany (Kaiserslautern)

Zoto, J., Musci, M. A., **Khaliq, A.**, Chiaberge, M., & Aicardi, I. (2019, June). Automatic path planning for unmanned ground vehicle using uav imagery. In *International Conference on Robotics in Alpe-Adria Danube Region* (pp. 223-230). Springer, Cham

Memberships:

- IEEE Membership (Student): 94475551
- Pakistan Engineering Council Registration Number: 10197
- IEEE Geoscience and Remote Sensing Society Membership
- Active Member of Polito Inter-departmental Center for Service Robotics (PIC4SeR), Italy

Organizational Skills:

- Supervised and co supervised more than 20 undergraduate final year projects and two Master thesis.
- Submitted a project proposal as PI for "ENABLING GRANTS (SMALL) TO STUDENTS AND FACULTY FOR COVID-19"
- Led teams in several engineering competitions.
- Served as Member of technical events (Open house undergrad projects, Engineering exhibitions, programming events) in universities.

Communication and interpersonal skills:

- Good communication skills gained from my job experience.
- Developed critical thinking working with experts on various projects during my postgraduate studies
- Improved my interpersonal skills working with foreign students and colleagues on several projects in interdisciplinary research center during my doctoral studies.

Recommendations:

- PhD Advisor: Prof. Marcello Chiaberge
<http://www.det.polito.it/personale/scheda/%28nominativo%29/marcello.chiaberge>
- Adjunct Professor at Politecnico di Torino (Dr. Lorenzo Comba)
[https://www.dauin.polito.it/personale/scheda/\(nominativo\)/lorenzo.comba](https://www.dauin.polito.it/personale/scheda/(nominativo)/lorenzo.comba)