

MUHAMMAD SALEM

Urban and Regional Planning Lecturer

 **E-mail:** m.salem@kyudai.jp  **Mobile:** +20 100 8490016  **Address:** Giza, Egypt
 <https://www.linkedin.com/in/msalem3/>  https://scholar.cu.edu.eg/?q=m_salem/biocv

SUMMARY

Muhammad Salem is a dedicated lecturer at the Faculty of Urban and Regional Planning, Cairo University, **with over three years of experience post-PhD**. Specializing in **town planning, and land use management with a focus on sustainable urban development**, Muhammad has significantly contributed to the field through rigorous research and academic collaboration. **In the last five years, he has authored over 20 peer-reviewed articles** in reputable journals, reflecting his commitment to advancing urban sustainability (Google Scholar: [link](#), ORCID: [link](#)).

Muhammad actively collaborates with researchers globally, spanning diverse disciplines such as urban planning, geography, and environmental studies. In the last five years, he has published **3 articles in Q1 journals, 5 in Q2, and 5 in Q3**. Additionally, he has published **2 book chapters**.

Recognized for his contributions, Muhammad has received grants and support from esteemed institutions such as Egypt's Science and Technology Development Fund (STDF), the Robert T. Huang Entrepreneurship Center, and the Japan Society for the Promotion of Science (JSPS).

EDUCATION

10/2016~3/2021 **PhD**

Graduate School of Human-Environment Studies, Kyushu University, Japan

10/2016~9/2017 **Research**

Graduate School of Human-Environment Studies, Kyushu University, Japan

05/2009 ~4/2014 **MSc. in Urban and Regional Planning**

Faulty of Urban and Regional Planning (FURP), Cairo University, Egypt

09/2006~06/2008 **Postgraduate studies in Urban Planning**

Faulty of Urban and Regional Planning (FURP), Cairo University, Egypt

09/2001~05/2006 **BSc. in Urban and Regional Planning**

Faulty of Urban and Regional Planning (FURP), Cairo University, Egypt

Project Grade: Excellent (1st of department)

ACADEMIC TRAINING AND SCIENTIFIC COURSES

03/2022~3/2024 **Postdoctoral Fellow**

Kyushu University, Japan

07/2023~7/2023 **Remote Sensing Summer School**

University of Southern California, Los Angeles, CA, USA

02/2019~03/2019 **Entrepreneurship**

QREC Entrepreneurship Bootcamp at Boston, USA

09/2014 ~12/2014 **International Training Program**

English and Foreign Languages University, India

AWARDS

- **Top 10 Innovator:** Recognized at IGARSS 2023, California, USA, in the "Innovating for a Sustainable Future with Remote Sensing" competition.
- **Scientific Research Publication Award:** Received from Cairo University in 2021 and 2022.
- **3 rd prize:** International Competition for the urban planning and historic conservation of Opera square, Egypt
- **First prize:** Competition for planning of residential compound in Doha, Qatar.

Academic Experience

04/2021 ~ Date

Lecturer, Faculty of Urban and Regional Planning (FURP), Cairo University, Egypt

Description of Duties

Taught the following courses “Town Planning, Planning of Metropolitan Regions, Urban Geography, and National Land Use Planning”.

03/2022 ~ 03/2024

Postdoctoral Fellow, Faculty of Human-Environment Studies, Kyushu University, Japan

Description of Duties

Conducted research on sustainable urban development, leveraging advanced methodologies such as deep learning and remote sensing for urban planning analysis. Collaborated extensively with researchers and experts worldwide.

10/2016 ~ 12/2020

PhD candidate, Graduate School of Human-Environment Studies, Kyushu University, Japan

Description of Duties

Published 9 scientific research articles and participated in 5 international conferences. Focused on monitoring land use and land cover change using GIS and remote sensing and assessing progress in achieving sustainable development goals in Greater Cairo, Egypt.

07/2007 ~ 3/2021

Teaching Assistant, Faculty of Urban and Regional Planning, Cairo University, Egypt

Description of Duties

Assisted in teaching the following courses to undergraduates: Planning Theories, Urban Geography, Planning of Special Zones, Planning of Cities’ Regions.

12/2006 ~ 06/2008

Urban Researcher, Faculty of Urban and Regional Planning, Cairo University, Egypt

Description of Duties

- Analysis and research on informal settlements (slums) in North Giza city, addressing urban challenges and proposing solutions for improvement.
- Studied sea level rise scenarios and their potential impacts on the urban environment in the northern shore of the Nile Delta, Egypt, providing insights for adaptation and mitigation strategies.

GRANTS

Research Project: The Water-Energy-Food Nexus and Land Use Planning Under Climate Change in the Rapidly Urbanizing Drylands of China and Egypt

Budget: 1.5 million (Egyptian Pound) from Egypt and 1 million Yuan from China

Role: Principal Investigator (PI)

Funded by: The Science, Technology & Innovation Funding Authority (STDF) Grant, Egypt in 2024

Research Project: Monitoring land use land cover change using remote sensing and deep learning techniques

Budget: 2.4 million Japanese Yen

Role: Principal Investigator (PI)

Funded by: The Japan Society for the Promotion of Science, Japan in 2022

QREC Grant for the project: Automatic Detection of Slums using VHR Satellite Imagery

Budget: 100,000 Japanese Yen

Role: Principal Investigator (PI)

Funded by: Robert T. Huang Entrepreneurship Center at Kyushu University, Japan in 2019

SELECTED PUBLICATIONS

- **Muhammad Salem**, Naoki Tsurusaki, Xiangdong Xu, Gang Xu
Revealing the transformation of spatial structure of greater Cairo: Insights from satellite imagery and geospatial metrics, *Journal of Urban Management*, **2024**
<https://doi.org/10.1016/j.jum.2024.10.008>
- **Muhammad Salem**, Naoki Tsurusaki
Impacts of Rapid Urban Expansion on Peri-Urban Landscapes in the Global South: Insights from Landscape Metrics in Greater Cairo, *Sustainability*, **2024**
<https://doi.org/10.3390/su16062316>
- Gang Xu, Mengyan Zhu, **Muhammad Salem**, Zhibang Xu, Limin Jiao
Settlement scaling law reveals population-land tensions in 7000+ African urban agglomerations, *Habitat International*, **2023**
<https://www.sciencedirect.com/science/article/abs/pii/S01973975230>
- Ammar El-Akhdar, Emad Kenway, Taher Osman, Karim Abdrabo, **Muhammad Salem**
Alternative Use of Space as A Self-Organizing Solution by Local Society to Meet Shortage of Living Spaces in The Informal Settlements of Egypt, *Journal of Social Transformation and Regional Development*, **2023**
<https://publisher.uthm.edu.my/ojs/index.php/jstard/article/view/7738>
- **Muhammad Salem**, Naoki Tsurusaki and Ahmed Gomaa
Detection Of Earthquake-Induced Building Damages Using Remote Sensing Data and Deep Learning: A Case Study of Mashiki Town, Japan, *IGARSS 2023*
<https://doi.org/10.1109/IGARSS52108.2023.10282550>
- **Muhammad Salem**, Naoki Tsurusaki
Empowering Sustainability: Innovative Deep Learning and Remote Sensing Solutions for Urban Monitoring and Sustainable Development, **2023**
<https://doi.org/10.5109/7158006>
- **Muhammad Salem**, Arghadeep Bose, Bashir Bashir, ..and Naoki Tsurusaki
Urban Expansion Simulation Based on Various Driving Factors Using a Logistic Regression Model: Delhi as a Case Study, *Sustainability*, 13, 10805 13 (19), 10805, **2021**
<https://doi.org/10.3390/su131910805>
- Taher Osman, Emad Kenawy, **Muhammad Salem**, et al.
Voluntary Local Review Framework to Monitor and Evaluate the Progress towards Achieving Sustainable Development Goals at a City Level: Buraidah City, KSA and SDG11 as A Case Study, *Sustainability* **2021**
<https://doi.org/10.3390/su13179555>
- **Muhammad Salem**, Naoki Tsurusaki and Prasanna Divigalpitiya
Land use/land cover change detection and urban sprawl in the peri-urban area of greater Cairo since the Egyptian revolution of 2011, *Journal of Land Use Science*. Vol. 16, pp. 1-16, **2020**
<https://doi.org/10.1080/1747423X.2020.1765425>
- **Muhammad Salem**, Naoki Tsurusaki and Prasanna Divigalpitiya
Remote sensing-based detection of agricultural land losses around greater Cairo since the Egyptian revolution of 2011, *Journal of Land Use Policy*. Vol. 97, pp. 1-8, **2020**
<https://doi.org/10.1016/j.landusepol.2020.104744>
- **Muhammad Salem**, Naoki Tsurusaki, Prasanna Divigalpitiya, Taher Osman, and Emad Kenawy
Assessing Progress Towards Sustainable Development in the Urban Periphery: A Case of Greater Cairo, Egypt, *International Journal of Sustainable Development and Planning*, **2020**
<http://www.iieta.org/journals/ijsdp/paper/10.18280/ijsdp.150701>

- **Muhammad Salem**, Naoki Tsurusaki, Prasanna Divigalpitiya and Emad Kenawy
An Effective Framework for Monitoring and Measuring the Progress towards Sustainable Development in the Peri-Urban Areas of the Greater Cairo Region, Egypt, World Journal. Vol. 1, pp. 1-19, **2020**
<https://doi.org/10.3390/world1010001>

- **Muhammad Salem**, Naoki Tsurusaki, Ahmed Eissa, and Taher Osman
Detection of Slums from Very High-Resolution Satellite Images Using Machine Learning Algorithms: A Case Study of Fustat Area in Cairo, Egypt, Engineering & Sciences, pp. 219-224, **2020**
<https://doi.org/10.5109/4102491>

- **Muhammad Salem**, Naoki Tsurusaki and Prasanna Divigalpitiya
Analyzing the Driving Factors Causing Urban Expansion in the Peri-Urban Areas Using Logistic Regression: A Case Study of the Greater Cairo Region, Infrastructures Journal, Vol. 1, pp. 1-14, **2019**
<https://doi.org/10.3390/infrastructures4010004>

- Omar Hamdy, S Zhao, HA El-atty, Ayman Ragab, **Muhammad Salem**
Urban Areas Management in Developing Countries: Analysis the Urban Areas Crossed with Risk of Storm Water Drains, Aswan-Egypt, Int. Jou. of Urban and Civil Engin., **2020**
<https://publications.waset.org/10011110/pdf>

- Taher Osman, Prasanna Divigalpitiya, Mustafa M. Osman, Emad Kenawy, **Muhammad Salem**
Quantifying the Relationship between the Built Environment Attributes and Urban Sustainability Potentials for Housing Areas, Buildings Journal. Vol. 6, pp. 1-19, **2016**
<https://doi.org/10.3390/buildings6030039>

- **Muhammad Salem**
Peri-urban dynamics and land-use planning for the Greater Cairo Region in Egypt (book chapter) in Sustainable Development, Vol. 1 pp. 109–119, **2015**
<https://doi.org/10.2495/SD150101>

- **Muhammad Salem**
Landscape Fragmentation in Peri-Urban Greater Cairo as a Result of Uncontrolled Urban Sprawl (book chapter) in Remote Sensing and GIS in Peri-Urban Research: Perspectives on Global Change, Sustainability and Resilience. (2024). Elsevier Science.
<https://www.sciencedirect.com/science/article/abs/pii/B9780443158322000095>

Papers & Presentations at International Conferences

- Deep Learning Approach for Modelling Land Use/Land Cover Change Using Remote Sensing Techniques, presented at the 2nd Inter. Symposium on Earth Science and Technology, **Japan** Nov. 2021
- Dynamic Urbanization of Peri-Urban Areas Around Greater Cairo in Egypt, presented at the 3rd International Land Use Symposium on "Land use changes: Trends and projections", **France**, Dec. 2019
- Lessons Learned from Co-Operative Housing Projects in The Developed Countries: Japan as a Case Study, presented at the 3rd International conference for cooperative housing, **Egypt**, Dec. 2019
- Urban Growth Modelling Scenarios for Peri-urban Areas in Greater Cairo Region, Egypt, presented at 15th Inter. Conference on Computers in Urban Planning and Urban Management, **Australia**, July 2017
- A new map for urban development in Egypt, depending on mega projects of renewable energy, presented at British University in Cairo, **Egypt**, May 2016.
- Simulation of land-use change scenarios by integrating Markov chain, cellular automata and logistic regression models, International conference of sustainable mega projects, **Egypt**, May 2016.
- The development of deteriorating districts of historical value in Metropolitan Cities, presented at international conference Municipal Management and Urban Development for sustainability in Arab Cities, UN Habitat, **Kuwait**, May 2012

International Workshops

- Approaches to limiting urban sprawl: policies, planning, and governance at Université Paris Diderot, **France, 2019**
- International Symposium on Sciences Behind Decision-making Process for Conservation and Sustainable Use of the Oceans, Tokyo, **Japan, 2018**
- International Workshop “Collaborative master planning and place making module”, at Misr University of Science and Technology (MUST) & October High Institute (OHI), **Egypt, 2016**
- International Workshop “Integrated Different Scales of Urban Development”, organized by regional branch of Metropolis Institute in Cairo, **Egypt, 2015**
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CONSULTING EXPERIENCE

12/2020 ~ Date

Consultant and Advisor

Description of Duties

- **Urban Expansion Simulation:** Conducted urban expansion simulations for **Delhi, India**, using logistic regression models to forecast future growth patterns.
- **Monitoring Agricultural Land Changes:** Analyzed transformations in agricultural land surrounding **Oran, Algeria**, focusing on the impact of urban expansion on farming areas.
- **Sustainable Development Goals (SDGs) Assessment:** Monitored and evaluated progress toward achieving SDGs in **Buraydah, Saudi Arabia**, offering insights for policy adjustments and improvements.
- **Settlement Scaling Law Analysis:** Researched population and land-use tensions **across more than 7,000 urban settlements in Africa**, identifying key trends and challenges.
- **Earthquake Damage Detection:** Used remote sensing data and deep learning techniques to detect and assess building damage from earthquakes in **Mashiki town, Japan**
- **Spatial Structure Analysis of Greater Cairo:** Investigated the transformation of **Greater Cairo's** spatial structure using satellite imagery and geospatial metrics, providing critical insights into urban development dynamics

12/2021 ~ 3/2022

Urban Expert and Quality Assurance Expert, AAW Consulting Engineers, Cairo, Egypt

Description of Duties

Project: Capacity Building for Urban Infrastructure Development Project (CBUID) in Alexandria and Bahira governorates, Egypt in cooperation with the German Agency for International Cooperation (GIZ) office in Egypt.

Ensured that plans and designs met standards and regulations, evaluated the quality of urban development projects, and provided feedback for improvement of outputs submitted to GIZ office in Egypt.

02/2016 ~ 07/2016

Team Leader & Urban Planner (Remote), International urban design competition in Kenya

Description of Duties

Prepared Urban Design for CBD of Nakuru city in Kenya as Transit Oriented Development (TOD), including urban analysis and master planning.

08/2014 ~ 06/2015

Urban Development Expert & Project Coordinator, CEG international, Doha, Qatar

Description of Duties

• Prepared technical reports for the Qatar National Housing Strategy "QNHS" and coordinated with urban and infrastructure experts.

08/2015 ~ 08/2016

Urban & Regional Planning Expert, General Organization of Physical Planning, Ministry of

Housing, Egypt

Description of Duties

- Prepared strategic master plans for Etsa, Aosem and Belqas cities in Egypt, including regional studies, wrote technical reports and engaged in stakeholder meetings.
- Updating the development vision of the Greater Cairo Region.

5/2014 ~ 9/2014

Urban Development Expert, EGEC - Engineering House of Expertise, Egypt

Description of Duties

- Conducted studies on development priorities of Mekka's slums in Saudi Arabia
- Conducted studies on development priority of roads' projects in Mekka, Saudi Arabia.

07/2009 ~ 05/2014

Manger of Urban Planning Dept., Cube Consultants, Cairo, Egypt

Description of Duties

Managed urban planning department and led teams on projects such as:

- Participatory Strategic Planning for Esna City, and development for "Esna Temple Area", Luxor.
- Development of Golden Triangle in Luxor city, Luxor Governorate.
- Strategic Vision for the development of Fostat Area, Cairo.
- Planning studies & GIS analysis for Giza Strategic Master Plan.
- International Competition for the urban design and harmony and historic conservation of Opera and Ataba squares, Cairo, Egypt (3 rd prize)
- The development of the cemeteries area in downtown Cairo.
- G.I.S. Analysis for Conceptual Master Plan of Alexandria Medical City.
- Planning studies & GIS analysis for Al-Hayat City and Saqqara Avenue, Helwan.

05/2008 ~ 06/2019

Senior Urban Planner, Engineering Consulting & Services - Diao Consult, Cairo, Egypt

Description of Duties

Worked on detailed plans, strategic planning, and master planning for various projects, such as:

- Detailed plan for Sadaka Housing- Aswan City Extension.
- Strategic planning of Belqas City, Dakahlia Governorate.
- Master plan of lake area, Dream Land, 6th October City (Area of 36 Fadden).
- Master Plan of Avenues –Egypt (hyper market), in partnership with Elshaya Group

12/2006 ~ 06/2008

Urban Researcher, Faculty of Urban and Regional Planning, Cairo University, Egypt

Description of Duties

- Developed strategic master plans for over 15 villages in Sharkia, Sinai, and Elwadi Elgded Governorates, aiming to enhance infrastructure and urban development in these villages.
- Collaborated with the United Nations Development Programme (UNDP) to formulate strategic visions for Ismailia and Sharkia Governorates, aligning with sustainable development goals.
- Studied sea level rise scenarios and their potential impacts on the urban environment in the northern shore of the Nile Delta, Egypt, providing insights for adaptation and mitigation strategies.

HONORS

2020: Japan Society for the Promotion of Science Fellowship, Japan.

2018: Kyushu University Grant for international students.

2016: PhD scholarship for 4 years funded by the Egyptian government.

2015: International Training Programme funded by the Indian Government.

2010: Certificate of appreciation from CUBE Architects & Consultants.

2009: First prize for designing the logo of Quality Assurance Unit.

2008: Second prize at chess competition from Cairo University staff club.

2001,2003 & 2005: Consistent high academic performance in undergraduate studies

TECHNICAL SKILLS

- **GIS:** Excellent proficiency in ARCGIS PRO and ArcMap.
- **Office Suite:** Proficient in Microsoft Office™ tools.
- **Reference Management:** Competent in using Mendeley and EndNote software.
- **CAD:** Advanced skills in AUTOCAD for producing drawings and maps.
- **Statistical Analysis:** Familiar with Statistical Package for the Social Sciences (SPSS).
- **Design:** Proficient in Adobe Photoshop.

COMMUNITY SERVICE

- **Former president of the Egyptian Student Association in Japan (ESAJ-k)**
- **Development Project Volunteer** Project: Development of poorest villages in Luxor Governorate, Egypt
- **Vision Preparation Volunteer** REMAL Foundation for Urban Development (Non-Profit NGO)

ACADEMIC ACIVITIES

- **Review Editor at** *Frontiers in Sustainable Cities*
- **Guest Editor:** Lead Editorial Board for the research topic "Land-Use Management in Peri-urban Areas" (<https://www.frontiersin.org/research-topics/57879/land-use-management-in-peri-urban-areas>).
- **Member of Organizing Committee at International Conferences in Egypt and Japan**
- **Reviewer for Q1 and Q2 Academic Journals:**

Cities, Habitat International, Land Use Policy, Scientific Reports, Nature Communications, Geocarto International, Land, International Journal of Urban Sustainable Development, Humanities & Social Sciences Communications, European Journal of Remote Sensing, Remote Sensing, ISPRS international journal of geo-information, Geo-Spatial Information Science, SN Applied Sciences, Applied Geomatics, Environmental Monitoring and Assessment and Sustainability.

MEMBERSHIPS

- Fellow of the Japan Society for the Promotion of Science (JSPS).
- The JSPS Alumni Association in Egypt (JSPSAAE)
- Member of IEEE Geoscience and Remote Sensing Society, USA.
- Certified Expert at General Organization of Physical Planning (GOPP), Egypt.
- Organizing committee member for conference "Contingency Planning and Adaptive Urbanism"
- Member of the Egyptian Engineer's Syndicate - Architecture Branch.
- Member of Egyptian Student Association in Japan and former President (2019-2020)

References

Prof. Naoki Tsurusaki

Associate Professor, Faculty of Human-Environment Studies, Kyushu University, Japan
tsurusaki.naoki.127@m.kyushu-u.ac.jp

Tel: +81 907297 0672

Joe Ravetz

Future Cities Lead, Manchester Urban Institute, School of Environment Education & Development
Manchester University, Oxford Rd, M13 9PL, UK

joe.ravetz@manchester.ac.uk

Tel: +44 (0)7719 233115

Emad Kenawy

School of Civil Engineering and Built Environment

Faculty of Engineering and Technology, Liverpool John Moores University, UK

P-mail: Emad.Hemdani@gmail.com, E.H.Kenawy@ljmu.ac.uk

Tel: +44 (0) 7472798383