

CURRICULUM VITAE

Personal Information	
Full name of the candidate	Seynabou Toure
Researcher unique identifier (ORCID, Research ID, ...)	0000-0003-0595-3452
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Education
02/10/2015 – 02/11/2019: Universite Gaston Berger (UGB), Saint-Louis, Senegal Doctorate degree in Applied Physics, option: Image Processing Thesis co-supervision and mobility at the National Institute of Applied Sciences (INSA) in Rennes (France) Thesis obtained with Very Honorable Mention with congratulations from the jury Thesis title: Coastline Detection from Very High-Resolution Satellite Imagery: Case of the Senegalese Coastline
01/10/2009 – 30/07/2012: UGB, Saint-Louis, Senegal Engineering Degree In Electronics and Telecommunications (DIETEL)
02/10/2007 – 30/07/2009: Ecole Supérieure Polytechnique (ESP), Dakar, Senegal Technical University Diploma In Electrical Engineering Option: Electronics, Electrotechnics, Automation, Industrial Computing, and Telecommunications

Professional experience
01/07/2025 – current : Postdoctoral Researcher , Aarhus University/Roskilde/Danmark: <ul style="list-style-type: none">• Monitoring waste management trends in African cities using time-series satellite imagery.• Developing advanced AI methods to improve pattern detection in satellite data.• Linking geospatial analysis with socio-economic factors of urban development in Africa.• Communicating research findings to local stakeholders in relevant African countries
01/03/2022 – 29/02/2025 : Remote Sensing Postdoctoral Researcher , Geokinesia /Barcelona/Spain: <ul style="list-style-type: none">• Geospatial data processing: Satellite images, times series• Data collection, preparation and visualization• InSAR Analysis : DInSAR, SBAS, PSI and DSInSAR• Algorithms implementation: Matlab, Python, Bash, IDL• Long Short Term Memory (LSTM) and Graph Neural Networks (GNN) for phase unwrapping errors detection• InSAR measurement points density improvement using Convolutional Neural Networks (CNN)• Project Management and Partner Acquisition in Africa (Senegal)
01/06/2014 – 31/01/2015: Telecom Engineer - Senegalese Networks and Telecommunications IT Solutions (SENSIRTEL) /Dakar/Senegal <ul style="list-style-type: none">• Voice over IP (VoIP) implementation• Open source VoIP: Asterisk (Xivo, PBX in a Flash)• Configuring softphones• Digium card settings• Integration of web solutions: ERP, CRM
01/03/2014 – 31/03/2014 : Project Management Engineer - AMS Technologies and Communication /Dakar/Senegal <ul style="list-style-type: none">• Integration of electronic queue management tools

- Video surveillance systems: access control by IP cameras, event detection, email alert
 - Electronic clocking systems: biometrics, card clocking
 - Communication systems on screen and LED panels
- Technical Team Management

01/07/2013 – 30/10/2013 : **Telecoms Engineer** - Business and Environment Intervention Center for Strategic Sites (CES), SONATEL/Dakar/Senegal

- Incident management at equipment level: BTS, BSC, router, DSLAM, UMUX, RAD Modem, etc.
- Customer intervention: ADSL, Orange TV, specialised links
- Optical fibre: equipment interconnection, gain and loss measurement
- Energy management: transformer stations, generators, inverters

01/09/2012 – 30/12/2012 : **Engineer Internship** - Core Network Performance Service and Service Platforms (PRC), SONATEL/Dakar/Senegal

- Definition of new key performance indicators (KPI) to evaluate the quality of service (QoS) of voice over IP (VoIP) on new Huawei equipment: UMG8900, MSOFTX3000
- QoS reporting: 2G and 3G
- Protocol analysis: BICC, ISUP
- Dissertation subject: " Evolution of the mobile network core to IP: which Key Performance Indicators (KPIs) to assess the voice quality of service (QoS)?" »

01/08/2010 – 30/10/2010 : **Senior Technician Internship** - File Automation Direction (DAF), Home office/Dakar/Senegal

- Computer maintenance (hardware and software)

02/05/2009 – 30/06/2009 : **Senior Technician end-of-study internship** - Service Dakar1, National Sanitation Office of Senegal (ONAS)/Dakar/Senegal

- Electrical installations for lift stations
- Transformer stations, connection cables, cabinets and control boxes
- Determination of the protections necessary for the monitoring of equipment and proposals for improvement
- Programmable controllers (Siemens S7 200, Schneider TSX Micro 3722)

Invited presentations/lectures (conferences, universities, etc.)

17/03/2017: Coastline detection using very high spatial resolution satellite imagery, 1st Edition of the multidisciplinary doctoral school of UGB

Research expeditions/stays and training

09/09/2024 – 20/10/2024: **Data Science** bootcamp at CodeOp, Barcelona (Spain)

17/04/2024 – 24/05/2024: **Big Data** course at CodeOp, Barcelona (Spain)

15/03/2018 – 13/06/2018: Doctoral mobility stay carried out at INSA Rennes (France)

01/12/2016 – 31/01/2017: Doctoral mobility stay carried out at INSA Rennes (France)

27/05/2017: Remote tutoring training, at Hôtel de la Poste (Saint-Louis), Virtual University of Senegal (UVS)

21/11/2011 – 24/11/2011: Seminar on renewable energies at UGB in partnership with Universidad de La Laguna (Spain)

Organisation of national and/or international conferences

16/03/2017-17/03/2017: Scientific Days of the Doctoral Students Collective of Gaston Berger University of Saint-Louis: Local organising committee

28/06/2017- 02/07/2017: 1st West African Renewable Energy Conference COA_ER-2017 Gaston Berger University- Saint-Louis: Member of the local organising committee.

Major achievements

Project setup and Partner Acquisition in Africa (Senegal) through previous postdoctoral position

Prizes and Awards

12/07/16 : First Prize of the best presentation from the UGB Doctoral School of Sciences and Technologies and 3rd national prize of the competition "My thesis in 180 seconds" (MT180), Agence universitaire de la Francophonie, Senegal

21/05/13 : "Kaala de Sanar" prize (prize awarded to UGB valedictorians), DIETEL valedictorian category, 2011/2012 edition

Funding record

Torres Quevedo 2020: Principal Investigator, Postdoctoral Grant of 3 years

Supervision activities

07/10/2020 – 20/10/2024: Applied Physics Department/UGB/Senegal

- Master's Thesis Supervision
 - 2020/2021: Cloud segmentation using Deep Learning
 - 2022/2023: Detection of phase unwinding errors by automatic learning
 - 2023/2024: Characterization of carbon monoxide pollution in Dakar region using Sentinel-5P images
 - Management of illegal waste dumps using Deep Learning and Sentinel-2 images
- Since December 2022: Doctoral thesis (joint supervision between UGB and INSA Rennes) Ground motion early detection using deep learning and synthetic aperture radar interferometry (InSAR)
- 2019/2020: Member of the defence jury
Synthesising film grains in high-definition videos

Teaching activities

01/10/2013 – current

Université Gaston Berger (UGB), Dakar, Senegal

Image Processing course for 2nd-year Electronic and Telecommunication Engineering degree.

Logics course for 1st-year Mathematics-Physics and Computer Science Bachelor.

Université Numérique Cheikh Hamidou Kane, Dakar, Senegal

Computer Vision course for 1st-year Robotics Master.

Image Processing course for 3rd-year Robotics Bachelor.

Computer Vision course for 2nd-year of Artificial Intelligence Master.

Ecole Supérieure Multinationale des Telecommunications (ESMT), Dakar, Senegal

Image Processing course for 2nd-year Networks and Multimedia Master.

Signal Theory and Processing course for 1st-year Multimedia and Telecommunications Master.

École Supérieure de Technologie et de Management (ESTM), Dakar, Senegal

Digital Transmission course for 2nd-year Networks and Telecommunications Bachelor.

Measurement and Metrology course for 2nd-year Electrical Engineering and Renewable Energies Bachelor.

Institut Supérieur de Management (ISM), Dakar, Senegal

Fundamentals of Telecommunication and Mobile Networks for 3rd-year Software Engineering - Networks and Systems Bachelor.

Fundamentals of Telecommunication and Mobile Networks for 3rd-year Applied Computer Science in Business Management Bachelor.

Institut Polytechnique des Métiers (IPM), Dakar, Senegal

Optical Fiber course for 1st-year Computer Science Master.

Signal Theory and Processing course for 3rd-year Computer Science Bachelor.

Institut Polytechnique de Dakar (IPD) Thomas Sankara, Dakar, Senegal

Next Generation Network (NGN) course for 3rd-year Networks and Telecommunications Bachelor.

Dimensioning and Planning of Mobile Networks course for 3rd-year Networks and Telecommunications Bachelor.

Internet of Things (IoT), Wide Area Networks (WAN) course for 1st-year Networks and Telecommunications Master.

École Supérieure d'Electricité de Bâtiment et des Travaux Publics (ESEBAT), Dakar, Senegal

Numerical Methods: MATLAB course for 1st-year Civil Engineering Master.

Institutional responsibilities

05/10/2020 - Current : Master and PhD Research Project preparation at Laboratoire d'Electronique, Informatique Télécommunications et d'Energies Renouvelables (LEITER)

31/01/2019 - 01/03/2022: MDPI reviewer (Remote Sensing, IJGI, etc.).

Membership in scientific societies/networks/associations

25/01/2019 – current: Member of the Organization for Women in Science for the Developing World (Owsd: Organization for Women in Science for the Developing World)

07/10/2010-20/07/2011: General Secretary General of the Cell of Engineers and Engineering-students in Electronics and Telecommunications (CIEL-Telecom), UGB

05/10/2003-29/07/2004: President of the English Club of the Middle School (CEM) of Grand Yoff, Dakar

Major collaborations

Collaborate through UGB with Researchers from INSA (France) - My thesis fits into this framework as well as a thesis that I currently supervise.

Language skills

FRENCH (Native)

ENGLISH (Fluent)

SPANISH (Basic)

Referees (x3)

• Prof. Kidiyo Kpalma, Institut National des Sciences Appliquees, 20, av. des Buttes de Coesmes, Rennes 35708, France, Kidiyo.Kpalma@insa-rennes.fr

• Prof. Amadou Seidou Maiga, LEITER, Université Gaston Berger, Saint-Louis, Senegal, amadou-seidou.maiga@ugb.edu.sn

• Prof. Papa Alioune Fall, UFR Science Appliquée et Tehnologie, Université Gaston Berger, Saint-Louis, Senegal, papa-alioune.fall@ugb.edu.sn

Publications (peer-reviewed journals & conference proceedings, monographs, books, book chapters, etc.)

Seynabou Toure, Oluwaseyi Dasho, Souleye Wade, Oumar Diop, Kidiyo Kpalma, Amadou S. Maiga, Sentinel-1-Based Mapping of Swelling-Shrinkage in Clayey Soils Using SAR Interferometry : A Case Study in Urban Center of Diamniadio, Senegal, The Egyptian Journal of Remote Sensing and Space Sciences (under review)

Seynabou Toure, Souleye Wade, Oumar Diop, Kidiyo Kpalma, Amadou S. Maiga, Sentinel-1-Based Mapping of Swelling-Shrinkage in Clayey Soils Using Small BASeline Subset (SBAS) SAR Interferometry : A Case Study in Urban Center of Diamniadio, Senegal, 14th AARSE conference (AARSE 2024) Abidjan, Côte d'Ivoire du 26 au 30 Novembre 2024

Idi B. SANI, Seynabou TOURE, Xiaoran JIANG, Oumar DIOP, Kidiyo KPALMA, A Deep Learning approach to improve Synthetic Aperture Radar Interferometry (InSAR) phase unwrapping, International Interdisciplinary Workshop, December 05-06, 2024, ESP (Dakar, Senegal)

Idi B. SANI, Seynabou TOURE, Xiaoran JIANG, Oumar DIOP, Kidiyo KPALMA, Deep Learning-based ground motion detection and worldwide inventory using Synthetic Aperture Radar Interferometry (InSAR) , 2iE Doctoriales, December 12-13, 2024, 2iE (Ouagadougou, Burkina Faso)

Idi B. SANI, Seynabou TOURE, Xiaoran JIANG, Oumar DIOP, Kidiyo KPALMA , A Deep Learning Approach for Synthetic Aperture Radar Interferometry (InSAR) phase Unwrapping improvement, 6th West African Physical Society Congress, December 16-19, 2024, SOAPHYS (Niamey, Niger), <https://www.soaphys.org/journal/>

Idi B. SANI, Xiaoran JIANG, Seynabou TOURE, Oumar DIOP, Kidiyo KPALMA, Spatio-Temporal Refinement for InSAR Phase Unwrapping Using Untrained Neural Networks, (accepted to the EUSIPCO 2025)

Oumar DIOP, Thierno NDIAYE, Seynabou TOURE, Kidiyo KPALMA, Amadou SEIDOU MAIGA. Segmentation de nuages en imagerie satellitale par l'utilisation d'algorithmes d'apprentissage profond. Proceedings 4th West African Physical Society Congress, Lome 2022.

Toure, S.; Diop, O.; Kpalma, K.; Maiga, A.S. Shoreline Detection using Optical Remote Sensing: A Review. ISPRS Int. J. Geo-Inf. 2019, 8, 75., <https://doi.org/10.3390/ijgi8020075>

Seynabou Toure, Oumar Diop, Kidiyo Kpalma , Amadou S. Maiga, Best-performing Color Space for Land-sea Segmentation, 41st International Conference on Telecommunications and Signal Processing (TSP) (IEEE Conference Record #43564), 4-6 July 2018, Athens, Greece, <https://doi.org/10.1109/TSP.2018.844143>,

S. Toure, O. Diop, K. Kpalma, A. S. Maiga, Coastline Detection Using Fusion of Over Segmentation and Distance Regularization Level Set Evolution, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLII-3/W4, 2018, <https://doi.org/10.5194/isprs-archives-XLII-3-W4-513-2018>