

# Grace U. Nneji

ML & DL Researcher

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## Summary

Enthusiastic and ambitious software engineer with over 4 years of experience. Research background is primarily on machine learning and deep learning, with specific applications in medical image analysis, image recognition and classification. Focus on enhancing low quality images with the goal of increasing the efficiency of AI model for accurate decision making which could assist professionals in different domains.

## Education

2022: **Ph.D., Software Engineering**, *University of Electronic Science & Technology of China*, China.  
Medical image processing, Deep learning, Machine learning, Computer vision, Data analysis, AI-based disease diagnosis.

Dissertation: Identification Based on Low Quality Medical Images Using Deep Learning.

CGPA : **4.0/4.0**

2019: **M.Eng., Software Engineering**, *University of Electronic Science & Technology of China*, China.  
Data acquisition and analysis, data processing, vehicle image recognition, Image segmentation.

Thesis: Vehicle Image Recognition Using Deep Learning.

CGPA : **3.94/4.0**

2014: **B.Tech., Computer Science**, *Federal university of Technology, Owerri*, Nigeria.

Web-based Application for E-Tourism System, E-clearance management system for Graduating Students in a University Environment, Attendance Management System using Biometrics System, Android-Based Information System for Marriage Counseling.

Thesis: Web-based Application For E-Tourism System in Nigeria.

CGPA : **3.98/5.0**

## Publications

### Journal Articles

- 2022 **Grace Ugochi Nneji**, Jianhua Deng, Happy Nkanta Monday, Md Altab Hossin, Sandra Obiora, Saifun Nahar, and Jingye Cai. Covid-19 identification from low-quality computed tomography using a modified enhanced super-resolution generative adversarial network plus and siamese capsule network. **Healthcare**, volume 10, pages pp403–423. MDPI, 2022, ( **Impact Factor:2.645** ).
- 2022 **Grace Ugochi Nneji**, Jingye Cai, Happy Nkanta Monday, Md Altab Hossin, Saifun Nahar, Goodness Temofe Mgbejime, and Jianhua Deng. Fine-tuned siamese network with modified enhanced super-resolution gan plus based on low-quality chest x-ray images for covid-19 identification. **Diagnostics**, volume 12, pages 717–743. MDPI, 2022, ( **Impact Factor:3.706** ).
- 2022 **Grace Ugochi Nneji**, Jingye Cai, Jianhua Deng, Happy Nkanta Monday, Edidiong Christopher James, and Chiagoziem Chima Ukwuoma. Multi-channel based image processing scheme for pneumonia identification. **Diagnostics**, volume 12, pages 325–351. MDPI, 2022, ( **Impact Factor:3.706** ).

- 2022 **Grace Ugochi Nneji**, Jingye Cai, Jianhua Deng, Happy Nkanta Monday, Md Altab Hossin, and Saifun Nahar. Identification of diabetic retinopathy using weighted fusion deep learning based on dual-channel fundus scans. *Diagnostics*, volume 12, pages 540–559. MDPI, 2022, ( **Impact Factor:3.706** ).
- 2022 Happy Nkanta Monday, Jianping Li, **Grace Ugochi Nneji**, Saifun Nahar, Md Altab Hossin, Jehoiada Jackson, and Chukwuebuka Joseph Ejiyi. Covid-19 diagnosis from chest x-ray images using a robust multi-resolution analysis siamese neural network with super-resolution convolutional neural network. *Diagnostics*, volume 12, pages 741–766. MDPI, 2022, ( **Impact Factor:3.706** ).
- 2022 Happy Nkanta Monday, Jianping Li, **Grace Ugochi Nneji**, Saifun Nahar, Md Altab Hossin, and Jehoiada Jackson. Covid-19 pneumonia classification based on neurowavelet capsule network. *Healthcare*, volume 10, pages 422–441. MDPI, 2022, ( **Impact Factor:2.645** ).
- 2022 Happy Nkanta Monday, Jianping Li, **Grace Ugochi Nneji**, Md Altab Hossin, Saifun Nahar, Jehoiada Jackson, and Ijeoma Amuche Chikwendu. Wmr-depthwisenet: A wavelet multi-resolution depthwise separable convolutional neural network for covid-19 diagnosis. *Diagnostics*, volume 12, pages 765–788. MDPI, 2022, ( **Impact Factor:3.706** ).
- 2022 Chukwuebuka Joseph Ejiyi, Zhen Qin, Abdulhaq Adetunji Salako, Monday Nkanta Happy, **Grace Ugochi Nneji**, Chiagoziem Chima Ukwuoma, Ijeoma Amuche Chikwendu, and Ji Gen. Comparative analysis of building insurance prediction using some machine learning algorithms. *International Journal of Interactive Multimedia & Artificial Intelligence*, volume 7. Universidad International de La Rioja (UNIR), 2022, ( **Impact Factor:3.137** ).

#### Accepted Journal Article for Publication

- 2022 **Happy Nkanta Monday and Jianping Li and Grace Ugochi Nneji and Md Altab Hossin and Saifun Nahar and Jehoiada Jackson and Ariyo Oluwasanmi**, A wavelet Convolutional Capsule Network with Modified Super Resolution Generative Adversarial Network for Fault Diagnosis and Classification, In *Complex & Intelligent Systems*, Springer Nature Publisher, (**Impact Factor: 4.927**).

#### In Conference Proceedings

- 2021 **Grace Ugochi Nneji**, Jingye Cai, Deng Jianhua, Chukwuebuka Joseph Ejiyi, Edidiong Christopher James, Goodness Temofe Mgbejime, and Ariyo Oluwasanmi. A super-resolution generative adversarial network with siamese cnn based on low quality for breast cancer identification. In *2021 4th International Conference on Pattern Recognition and Artificial Intelligence (PRAI)*, pages 218–223. IEEE, 2021.
- 2021 **Grace Ugochi Nneji**, Jingye Cai, Deng Jianhua, Ijeoma Amuche Chikwendu, Ariyo Oluwasanmi, Edidiong Christopher James, and Goodness Temofe Mgbejime. Enhancing low quality in radiograph datasets using wavelet transform convolutional neural network and generative adversarial network for covid-19 identification. In *2021 4th International Conference on Pattern Recognition and Artificial Intelligence (PRAI)*, pages 146–151. IEEE, 2021.
- 2021 **Grace Ugochi Nneji**, Jingye Cai, Jianhua Deng, Saifun Nahar, Goodness Temofe Mgbejime, Edidiong Christopher James, and Surafel Kifetew Woldeyes. A dual weighted shared capsule network for diabetic retinopathy fundus classification. In *2021 International Conference on High Performance Big Data and Intelligent Systems (HPBD&IS)*, pages 297–302. IEEE, 2021.
- 2021 **Grace Ugochi Nneji**, Jingye Cai, Jianhua Deng, Happy N Monday, Edidiong C James, Bona D Lemessa, Abel Z Yutra, Yobsan B Leta, and Saifun Nahar. Covid-19 identification using deep capsule network: A perspective of super-resolution cnn on low-quality cxr images. In *2021 the 7th International Conference on Communication and Information Processing (ICCIP)*, pages 96–102. ACM, 2021.

- 2021 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Abel Zenebe Yutra, Bona Debela Lemessa, Saifun Nahar, Edidiong Christopher James, and Amin Ul Haq. The capability of wavelet convolutional neural network for detecting cyber attack of distributed denial of service in smart grid. In *2021 18th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP)*, pages 413–418. IEEE, 2021.
- 2021 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Ariyo Oluwasanmi, Goodness Temofe Mgbejime, Chukwuebuka Joseph Ejayi, Ijeoma Amuche Chikwendu, and Edidiong Christopher James. Improved convolutional neural multi-resolution wavelet network for covid-19 pneumonia classification. In *2021 4th International Conference on Pattern Recognition and Artificial Intelligence (PRAI)*, pages 267–27. IEEE, 2021.
- 2021 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Edidiong Christopher James, Yob-san Bayisa Leta, Saifun Nahar, and Amin Ul Haq. Shared weighted continuous wavelet capsule network for electrocardiogram biometric identification. In *2021 18th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP)*, pages 419–425. IEEE, 2021.
- 2021 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Edidiong Christopher James, Ijeoma Amuche Chikwendu, Chukwuebuka Joseph Ejayi, Ariyo Oluwasanmi, and Goodness Temofe Mgbejime. The capability of multi resolution analysis: A case study of covid-19 diagnosis. In *2021 4th International Conference on Pattern Recognition and Artificial Intelligence (PRAI)*, pages 236–242. IEEE, 2021.
- 2021 Ejayi Chukwuebuka Joseph, Olusola Bamisile, **Grace Ugochi Nneji**, Qin Zhen, Ndalawa Ilakoze, and Chikwendu Ijeoma. Systematic advancement of yolo object detector for real-time detection of objects. In *2021 18th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP)*, pages 279–284. IEEE, 2021.
- 2019 Saifun Nahar, Ting Zhong, **Grace Ugochi Nneji**, Michael O Mills, and Hassan S Abubakar. Analyzing data mining and its application to smart business. In *2019 4th Technology Innovation Management and Engineering Science International Conference (TIMES-iCON)*, pages 1–5. IEEE, 2019.
- 2019 Saifun Nahar, Ting Zhong, Michael O Mills, **Grace Ugochi Nneji**, and Hassan S Abubakar. A survey on data stream mining towards the internet of things application. In *2019 4th Technology Innovation Management and Engineering Science International Conference (TIMES-iCON)*, pages 1–5. IEEE, 2019.
- 2018 **Grace Ugochi Nneji**, Jianhua Deng, Sarder S Shakher, Basil C Mbonu, and Abel Ogungbile. A collaborative learning approach for integrated time based online environment. In *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 1138–1144. IEEE, 2018.
- 2018 **Grace Ugochi Nneji**, Jianhua Deng, Sarder S Shakher, Basil C Mbonu, and Mercy C Nneji. Online collaborative approach of interactive antenatal lectures for expectant mothers. In *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 1047–1053. IEEE, 2018.
- 2018 **Grace Ugochi Nneji**, Jianhua Deng, Sarder S Shakher, David Agomuo, and Chiagoziem C Ukwuoma. A multimedia computer aided learning software. In *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 807–813. IEEE, 2018.
- 2018 **Grace Ugochi Nneji**, Jianhua Deng, Sarder S Shakher, David Agomuo, and Ifeanyi D Dike. An improved e-clearance management system for graduating students in a university environment. In *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 74–80. IEEE, 2018.

- 2018 **Grace Ugochi Nneji**, Jianhua Deng, Basil C Mbonu, Mercy C Nneji, and Eziefuna E Onyinye. Android-based information system for marriage counseling. In *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 978–984. IEEE, 2018.
- 2018 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Chiagoziem C. Ukwuoma, Ifeanyi D. Dike, and Richard I. Nneji. Design of an improved cost effective electronic locking system. *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 493–499. IEEE, 2018.
- 2018 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Chiagoziem C. Ukwuoma, David Agomuo, and Richard I. Nneji. Ensuring data governance and enhancing data security in a private cloud environment. *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 1018–1024. IEEE, 2018.
- 2018 Happy Nkanta Monday, Jian Ping Li, **Grace Ugochi Nneji**, Ifeanyi D. Dike, David Agomuo, and Abel Ogungbile. Enhanced attendance management system: A biometrics system of identification based on fingerprint. *2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, pages 500–505. IEEE, 2018.

## Research Experience

### University of Electronic Science and Technology of China

Sept., 2019 – present **Doctoral Research Assistant: UESTC Digital Information System Processing Laboratory.**

- Developed a novel super-resolution generative learning model for enhancing medical image quality for the identification of COVID-19.
- Developed a multi-channel fusion scheme for the identification of Pneumonia using chest x-ray Images.
- Developed an algorithm for identifying diabetic retinopathy using weighted fusion deep learning based on dual-channel fundus scans.
- Developed a joint framework of super-resolution model and deep neural network for the enhancement and identification of the low quality of breast cancer images.
- Developed a dual weighted shared capsule network for diabetic retinopathy fundus classification.
- Mentor and supervise International students in the development of machine learning frameworks, paper publication and thesis writing.
- Present academic seminars and practical workshops on neural networks framework and implementation.

Advisor : **Prof. Cai Jingye**, Professor, School of Information & Software Engineering, University of Electronic Science and Technology of China ([Personal Web-page](#))

Sept., 2017 – 2019 **Graduate Assistant: Chinese Academy of Engineering Physics & UESTC Computer Vision Joint Lab.**

- Developed a framework for vehicle image recognition achieving an accuracy of 97.12%.
- Data analysis and data visualization
- Developed a framework for image segmentation
- Developed an e-clearance management system for graduating students in university environment.
- Developed an android chat application

Advisor : **Dr. Jianhua Deng**, Associate Professor, School of Information & Software Engineering, University of Electronic Science and Technology of China

## Journal Peer-Review

Journal of Medical Internet Research.

JMIR medical Informatics.

JMIR Research Protocol.

Open Science Journal.

Journal of Pharmaceutical Research International.

## Certificates (In Progress)

- 2022 TensorFlow Developer Certificate - TensorFlow
- 2022 Google Data Analytics Certificate - Google

## Academic Achievements & Recognitions

- 2019-2020 1st Prize of Academic Achievement.
- 2017-2018 UESTC Excellent Outstanding International Student.
- 2017-2018 1st Prize of Academic Achievement.
- 2017-2018 3rd Prize of Excellent Performance.

## Scholarship

- 2019–2022 Recipient of the **Chinese Government Scholarship** for Doctoral Research Program, awarded by **The Chinese Scholarship Council**.
- 2017–2019 Recipient of the **University Partial Scholarship** for Masters' Research Program, awarded by **University of Electronic Science and Technology of China (UESTC)**.

## Computer skills

- Machine Learning: Deep learning, Computer vision, Machine learning, Image processing, Supervised learning, Unsupervised learning
- Tools & Libraries: OpenCV, Kivy, Matplotlib, Keras, Numpy, Scikit-learn, Pandas

Programming Python, Latex

## Selected Position of Responsibility

- January 2019 **Academic Guest Speaker**, School of Information and Software Engineering, UESTC
- March 2019 **Academic Mentor**, International Student Union, UESTC
- June 2019 **Welfare**, International Student Union Electoral Committee, UESTC
- January 2021 **Distinguished Judge**, USAD CHINA 2021
- April 2021 **Academic Judge**, Science and Technology Course Interpretation, UESTC
- May 2021 **Special Organizer**, International Student union (ISU) Experience, 2021, UESTC
- May 2021 - Present **Team Lead**, Tianjiao Community Service and Development, Chengdu, Sichuan

## Referees

### Prof. Jingye Cai

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University of Electronic Science  
and Technology of China  
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### Dr. Yongbin Yu

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