MUHAMMAD AMINU

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SHORT BIO

Muhammad Aminu is currently a postdoctoral fellow at the Department of Imaging Physics, The University of Texas, MD Anderson Cancer Center. He received the BSc degree from Kano University of Science and Technology, Wudil, thereafter he is offered a fast track to PhD at Universiti Sains Malaysia. His research mainly focused on the application of Statistics and Mathematics for data analysis problems in cancer bioinformatics.

EDUCATION

PhD, Mathematics (Machine Learning)
Universiti Sains Malaysia, Mar. 2017 – Dec. 2020
Advisor: Assoc. Professor Dr. Noor Atinah Binti Ahmad

BSc, Mathematics (**First Class Honor**)
Kano University of Science and Technology, Wudil, Nigeria, Feb. 2011 - Feb. 2015
Advisor: Professor Abdulhadi Aminu

ACADEMIC AWARDS

1. Best graduating student of the department of Mathematics, Kano University of Science and Technology, Wudil, academic session 2013/2014
2. Silver Medal award at National Mathematics Competition for University Students (NAMCUS) held at National Mathematical Centre Abuja, April 2015.

WORKING EXPERIENCE

Postdoctoral Research Fellow
Department of Imaging Physics, The University of Texas MD Anderson Cancer Center, Aug. 2021 – Present

Graduate Research Assistant
School of Mathematical Sciences, Universiti Sains Malaysia, Feb. 2018 – Jan. 2019

Graduate Research Assistant
School of Mathematical Sciences, Universiti Sains Malaysia, June 2019 – May 2020

Graduate Research Assistant
School of Mathematical Sciences, Universiti Sains Malaysia, Aug. 2020 – Dec. 2020

National Youth Service Corp Member
Department of Mathematical Sciences, Abubakar Tafawa Balewa University Bauchi, Nov. 2015 – Nov. 2016

Student Industrial Work Experience Scheme (SIWES)
Centre for Information Technology, Bayero University Kano, March 2013 – June 2013.

RESEARCH INTERESTS

My main research interests are in the field of cancer bioinformatics. Associated topics include spatial transcriptomics, single cell data analysis, multi-omics data integration, …

PUBLICATIONS

Journal Papers

1. **Muhammad Aminu**, Naval Daver, Myrna Godoy, Girish Shroff, Carol Wu, Luis Torre-Sada, Alberto Goizueta et al. "Heterogenous lung inflammation CT patterns distinguish pneumonia and immune checkpoint inhibitor pneumonitis and complement blood biomarkers in acute myeloid leukemia: proof of concept." *Frontiers in immunology* (Accepted).

2. Saad, Maliazurina B., Lingzhi Hong, **Muhammad Aminu**, Natalie I. Vokes, Pingjun Chen, Morteza Salehjahromi, Kang Qin et al. "Predicting benefit from immune checkpoint inhibitors in patients with non-small-cell lung cancer by CT-based ensemble deep learning: a retrospective study." *The Lancet Digital Health* (2023).

3. **Aminu, Muhammad**, and Noor A. Ahmad. "Effective Dimensionality Reduction Using Kernel Locality Preserving Partial Least Squares Discriminant Analysis." *Bulletin of the Malaysian Mathematical Sciences Society* 46, no. 3 (2023): 87.

4. Hong, Lingzhi, **Muhammad Aminu**, Shenduo Li, Xuetao Lu, Milena Petranovic, Maliazurina B. Saad, Pingjun Chen et al. "Efficacy and clinicogenomic correlates of response to immune checkpoint inhibitors alone or with chemotherapy in non-small cell lung cancer." *Nature communications* 14, no. 1 (2023): 695.

5. **Aminu, Muhammad**, Divya Yadav, Lingzhi Hong, Elliana Young, Paul Edelkamp Jr, Maliazurina Saad, Morteza Salehjahromi et al. "Habitat Imaging Biomarkers for Diagnosis and Prognosis in Cancer Patients Infected with COVID-19." *Cancers* 15, no. 1 (2022): 275.

6. Chen, Pingjun, Siba El Hussein, Fuyong Xing, **Muhammad Aminu**, Aparajith Kannapiran, John D. Hazle, L. Jeffrey Medeiros et al. "Chronic lymphocytic leukemia progression diagnosis with intrinsic cellular patterns via unsupervised clustering." *Cancers* 14, no. 10 (2022): 2398.

7. **Aminu, Muhammad**, and Noor Atinah Ahmad. "Locality preserving partial least squares discriminant analysis for face recognition." *Journal of King Saud University-Computer and Information Sciences* 34, no. 2 (2022): 153-164.

8. Chen, Pingjun, **Muhammad Aminu**, Siba El Hussein, Joseph D. Khoury, and Jia Wu. "CellSpatialGraph: Integrate hierarchical phenotyping and graph modeling to characterize spatial architecture in tumor microenvironment on digital pathology." *Software impacts* 10 (2021): 100156.

9. **Aminu, Muhammad**, Noor Atinah Ahmad, and Mohd Halim Mohd Noor. "Covid-19 detection via deep neural network and occlusion sensitivity maps." *Alexandria Engineering Journal* 60, no. 5 (2021): 4829-4855.

10. **Aminu, Muhammad**, and Noor Atinah Ahmad. "Complex chemical data classification and discrimination using locality preserving partial least squares discriminant analysis." *ACS omega* 5, no. 41 (2020): 26601-26610.

11. **Aminu, Muhammad**, and Noor Atinah Ahmad. "New variants of global-local partial least squares discriminant analysis for appearance-based face recognition." *IEEE Access* 8 (2020): 166703-166720.

12. **Aminu, Muhammad**, Noor Atinah Ahmad, and Norhashidah Awang. "Extended Locality Preserving Partial Least Squares with Class Information."

13. Yakubu, D. G., **M. Aminu**, P. Tumba, and M. Abdulhameed. "An efficient family of second derivative Runge-Kutta collocation methods for oscillatory systems." *Journal of the Nigerian Mathematical Society* 37, no. 2 (2018): 111-138.

14. Aminu, Abdulhadi, **Muhammad Aminu**, and M. Z. Ringim. "Permanent of a Rhotrix." *Afrika Matematika* 28 (2017): 481-491.

Conference Papers

1. **Aminu, Muhammad**, Natalie I. Vokes, Maliazurina B. Saad, Hui Li, Lingzhi Hong, Mohamed S. Mohamed, John Boom*, et al.* "Abstract 4393: Tumor Volumetric Analysis to Correlate Disease Burden with Response to Dual Immune Checkpoint Blockade in Metastatic Nsclc." *Cancer Research* 83, no. 7_Supplement (2023): 4393-93.

2. Chen, Pingjun, Frank Rojas, Xin Hu, Junya Fujimoto, Alejandra Serrano, Bo Zhu, Lingzhi Hong*, et al.* "Abstract 5443: Pathomics Reveals the Molecular and Immune Evolution from Lung Preneoplasia to Invasive Adenocarcinoma." *Cancer Research* 83, no. 7_Supplement (2023): 5443-43.

3. Hong, Lingzhi, **Muhammad Aminu**, Xuetao Lu, Maliazurina B. Saad, Pingjun Chen, Waree Rinsurongkawong, Amy Spelman*, et al.* "Abstract 964: Genomic and Clinical Predictors of Early Disease Progression and Chemoimmunotherapy Benefit in Advanced Nsclc." *Cancer Research* 83, no. 7_Supplement (2023): 964-64.

4. Zhu, Bo, Jian-Rong Li, Hong Chen, Pingjun Chen, Junya Fujimoto, Yanhua Tian, **Muhammad Aminu**, *et al.* "Abstract 6513: Single Cell and Spatial Profiling Reveal Molecular and Immune Evolution from Precancers to Invasive Lung Adenocarcinomas in Genetic and Carcinogen-Induced Mouse Models." *Cancer Research* 83, no. 7_Supplement (2023): 6513-13.

5. Chen, Pingjun, Maliazurina B. Saad, Frank R. Rojas, Morteza Salehjahromi, **Muhammad Aminu**, Rukhmini Bandyopadhyay, Lingzhi Hong et al. "Cellular Architecture on Whole Slide Images Allows the Prediction of Survival in Lung Adenocarcinoma." In *International Workshop on Computational Mathematics Modeling in Cancer Analysis*, pp. 1-10. Cham: Springer Nature Switzerland, 2022.

6. Hong, Lingzhi, Waree Rinsurongkawong, Maliazurina B Saad, Pingjun Chen, **Muhammad Aminu**, Amy R. Spelman, Marcelo Vailati Negrao*, et al.* "Real-World Effectiveness of Immune Checkpoint Inhibitors Alone or in Combination with Chemotherapy in Metastatic Non–Small Cell Lung Cancer." *Journal of Clinical Oncology* 40, no. 16_suppl (2022): 9055-55.

7. Saad, Maliazurina B, Lingzhi Hong, **Muhammad Aminu**, Natalie I Vokes, Pingjun Chen, Carol C Wu, Waree Rinsurongkawong*, et al.* "Deep Learning Signature from Chest Ct and Association with Immunotherapy Outcomes in Egfr/Alk-Negative Nsclc." *Journal of Clinical Oncology* 40, no. 16_suppl (2022): 9061-61.

8. Chen, Pingjun, **Muhammad Aminu**, Siba El Hussein, Joseph D. Khoury, and Jia Wu. "Hierarchical phenotyping and graph modeling of spatial architecture in lymphoid neoplasms." In *Medical Image Computing and Computer Assisted Intervention–MICCAI 2021: 24th International Conference, Strasbourg, France, September 27–October 1, 2021, Proceedings, Part VIII 24*, pp. 164-174. Springer International Publishing, 2021.

9. **Amin, Muhammad**, and Noor Atinah Ahmad. "Uncorrelated Discriminant Projection Based on Maximum Margin Criterion and Its Kernelized Extension." In *Journal of Physics: Conference Series*, vol. 1529, no. 5, p. 052070. IOP Publishing, 2020.

10. **Aminu, Muhammad**, Noor Atinah Ahmad, and Norhashidah Awang. "Feature extraction and classification for spoken letter recognition using locality preserving partial least squares discriminant analysis." In *AIP Conference Proceedings*, vol. 2184, no. 1. AIP Publishing, 2019.

11. **Aminu, Muhammad**, and Noor Atinah Ahmad. "Feature extraction using discriminant graph laplacian principal component analysis with application to biomedical datasets." In *Journal of Physics: Conference Series*, vol. 1372, no. 1, p. 012002. IOP Publishing, 2019.

12. **Aminu, Muhammad**, Noor Atinah Ahmad, and Norhashidah Awang. "A modified locality preserving partial least squares for classification problems." In *AIP Conference Proceedings*, vol. 2013, no. 1. AIP Publishing, 2018.

PROFESSIONAL MEMBERSHIPS

American Society of Clinical Oncology (ASCO)
Member   2022 - Present

RECOGNITION (PEER REVIEW)

Pattern Recognition, Expert Systems with Applications, Information Sciences, Lung Cancer, Computers in Biology and Medicine, Biomedical Engineering Advances, ICT Express.

PROJECTS

1. **Aminu Muhammad**, *"CovidNet: A Deep Neural Network for the Automated Detection of Covid-19 from Chest X-ray Images"*. (**Matlab GUI**)
2. **Aminu Muhammad**, *"Textual Documents Clustering and Classification using Locality Preserving PLS"*. (**Matlab GUI**)

TRAININGS and WORKSHOPS

1. **Pathway to independence: Preparing the K99/R00 and understanding the NIH review process.** Organized by Gulf Coastt Consortia and Rice University. 7th September 2022
2. *Summer School On Combinatorial Design and Data Sciences.* Organized by Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung. 7th – 11th September 2020.
3. *Both Camp on Data Analytics: Data Science Using R.* Organized by Innodatatics and ExcelR Malaysia. 5th Jan – 3rd Feb 2019.
4. *Learn Neural Networks Using Matlab Programming.* Hosted by Udemy (E-Learning Service). 14th Feb 2019.
5. *Python Programming Track*. Hosted by DataCamp (E-Learning Service). December 2019.
6. *Basic Data Analysis Using R-Software*. Organized by School of Mathematical Sciences, Universiti Sains Malaysia. 20th December 2018.
7. *Data Science and Bio-Inspired Algorithms: A Practical Introduction*. Organized by School of Computer Sciences, Universiti Sains Malaysia. 16th – 17th August 2018.
8. *SEAMS SCHOOL 2018 On Dynamical Systems and Bifurcation Analysis*. Held at School of Mathematical Sciences, Universiti Sains Malaysia. 6th -13th August 2018.
9. *Basic R software*. Organized by school of Mathematical Sciences, Universiti Sains Malaysia. 29th March 2018.
10. *Basic Microsoft Excel*. Organized by School of Mathematical Sciences, Universiti Sains Malaysia. 22nd March 2018.
11. *Wolfram Mathematica Seminar* held at School of Mathematical Sciences, Universiti Sains Malaysia. 23rd May 2017.
12. *Wolfram Mathematica Workshop* held at School of Mathematical Sciences, Universiti Sains Malaysia. 23rd May 2017.