Abdullah Mohamed Al-Kabbany

Contact information:

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Education:

Master's Student in The Department of Biomedical Engineering, National Taiwan University, Taipei, Taiwan.
September 2024 - present
Overall GPA: 4.11

BSc of Mechanical Design and Production Engineering, Minia University, Minia, Egypt.
September 2017 - July 2022
Overall Grade: Excellent with Honors (92.09%).
Rank: First.

The Science of the Solar System course, Offered via Coursera by The California Institute of Technology.

Experience:

Teaching Assistant at the Department of Production Engineering and Mechanical Design, Faculty of Engineering, Minia University, Minia, Egypt.

April 2023 - present

- Helped in the instruction of courses related to engineering dynamics as well as engineering drawing.
- Graded students performance throughout the courses.
- Conducted research in the Nanotribology lab.

Research Apprentice at the Nanotribology lab in Minia University.

January 2019 - Present.

- Conducted original research on Triboelectric Nanogenerators and other topics.
- Operated many different testing devices in the lab.
- Participated in the writing of some scientific papers.

Volunteer at the hardware team, IEEE Minia University Student Branch.

October 2017 – April 2020.

- Directed the making of a line following robot.
- Designed a remote-controlled robot with a gripper.
- Improved the rulebooks of many different competitions held by the Student Branch.

Publications:

[1] H. Kim, A. Pal, J. Cho, **A. M. Al-Kabbany**, K. Kaswan, R. Joshi, S. Na, J. Lee, K. Choi, M. Kim, D. Choi, Z. -H. Lin, "Thermochromic Fiber-Based Self-Powered Detection System for Maritime Oil Spill Monitoring and Fire Safety Applications," Nano Energy, vol. 147, p. 111569, 2026.

[2] **A. M. Al-Kabbany**, "Characteristics of a kapton triboelectric nanogenerator-based touch button's voltage output," Nano Energy, vol. 114, p. 108620, 2023.

[3] A. S. Ali, **A. M. Al-Kabbany**, Z. AH, W. Y. Ali, and A. K. Ameer, "Role of triboelectrification in the friction of sliding surfaces," Journal of the Egyptian Society of Tribology, vol. 21, no. 3, pp. 1–11, 2024.

[4] A. S. Ali, **A. M. Al-Kabbany**, Z. AH, W. Y. Ali, and K. M. Atia, "Friction and wear of scratched polymeric composites," Journal of the Egyptian Society of Tribology, vol. 21, no. 3, pp. 42–54, 2024.

[5] **A. M. Al-Kabbany**, M. M. Youssef, and W. Y. Ali, "Effect of additives on the tribological behavior of glycerin-motor oil blends," Journal of the Egyptian Society of Tribology, vol. 21, no. 2, pp. 120–128, 2024.

[6] **A. M. Al-Kabbany** and W. Y. Ali, "Effect of the contact force on voltage output of a triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 19, no. 3, pp. 1–9, 2022.

[7] Zeinab A. H., **A. M. Al-Kabbany**, and W. Y. Ali. "Application of triboelectric nanogenerator to control door lock." Journal of the Egyptian Society of Tribology, vol. 22, no. 4, pp. 20-34, 2025.

[8] A. S. Ali, Zeinab A. H., **A. M. Al-Kabbany**, W. Y. Ali, A. K. Ameer. "Frictional Behavior of the Sliding of Composite Resin on Teeth." Journal of the Egyptian Society of Tribology, vol. 22, no .4, pp. 35-47, 2025.

[9] A. S. Ali, Zeinab A. H., **A. M. Al-Kabbany**, W. Y. Ali, and H. Abdu. "Effect of salt water on the friction and electrostatic charge generated from sliding of rubber on artificial turf," Journal of the Egyptian Society of Tribology, vol. 22, no. 3, pp. 12-22, 2025.

[10] A. S. Ali, Zeinab A. H., **A. M. Al-Kabbany**, W. Y. Ali, and A. Rashed, "Arm rotating sensor based on triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 22, no. 2, pp.61-70, 2025.

[11] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. K. Ameer. "Electrostatic charge generated from contact/separation and sliding of foot on insole of polypropylene shoes in hospitals," Journal of the Egyptian Society of Tribology, vol. 22, no. 2, pp. 1-10, 2025.

[12] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. K. Ameer, "Bidirectional direct current triboelectric nanogenerator for electronic skin," Journal of the Egyptian Society of Tribology, vol. 22, no. 1, pp. 11–22, 2025.

[13] A. S. Ali, Z. AH, **A. M. Al-Kabbany**, W. Y. Ali, and H. M. Abdu, "Proper materials for the friction surfaces of the triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 22, no. 1, pp. 23–33, 2025.

[14] E. MA, **A. M. Al-Kabbany**, M. K. Mohamed, W. Y. Ali, and A. S. Ali, "Decreasing the electrostatic charge generated on the surface of polymeric textiles," Journal of the Egyptian Society of Tribology, vol. 21, no. 4, pp. 14–23, 2024.

[15] E. MA, **A. M. Al-Kabbany**, M. M. Youssef, W. Y. Ali, and A. S. Ali, "Proper selection of floor materials in hospitals," Journal of the Egyptian Society of Tribology, vol. 21, no. 4, pp. 1–13, 2024.

[16] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. K. Ameer, "Influence of the thickness of the friction surfaces on the performance of the triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 21, no. 4, pp. 59–70, 2024.

[17] **A. M. Al-Kabbany**, Z. AH, and W. Y. Ali, “Development of a chess board with self-powered move recognition,” Journal of the Egyptian Society of Tribology, vol. 21, no. 3, pp. 96–105, 2024.

[18] **A. M. Al-Kabbany**, M. K. Mohamed, E. MA, M. M. Youssef, and W. Y. Ali, “Electrostatic charges generated on the surface of eye drapes during surgery,” Journal of the Egyptian Society of Tribology, vol. 21, no. 3, pp. 21–29, 2024.

[19] **A. M. Al-Kabbany**, M. K. Mohamed, M. M. Youssef, E. MA, and W. Y. Ali, “Proper selection of foot insole for slippers,” Journal of the Egyptian Society of Tribology, vol. 21, no. 3, pp. 12–20, 2024.

[20] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. M. Atia, “Development of direct current triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 21, no. 2, pp. 1–14, 2024.

[21] A. Rashed, **A. M. Al-Kabbany**, W. Y. Ali, and A. K. Ameer, “Factors affecting the coefficient of friction in a direct current triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 21, no. 2, pp. 53–61, 2024.

[22] M. H. El-Shazly, **A. M. Al-Kabbany**, W. Y. Ali, A. S. Ali, and A. K. Ameer, “Influence of magnetic field on the performance of the triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 21, no. 1, pp. 12–23, 2024.

[23] M. A. Massoud, A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and M. H. El-Shazly, “Development of electronic skin based on bidirectional direct current triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 21, no. 1, pp. 134–144, 2024.

[24] M. H. El-Shazly, **A. M. Al-Kabbany**, W. Y. Ali, A. S. Ali, and M. A. Massoud, “Effect of the direction of the magnetic field lines on the voltage output of a triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 20, no. 4, pp. 65–76, 2023.

[25] M. A. Massoud, A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and M. H. El-Shazly, “Electronic skin based on direct current triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 20, no. 4, pp. 44–53, 2023.

[26] N. Elzayady, **A. M. Al-Kabbany**, W. Y. Ali, A. S. Ali, and K. Hamdy, “Enhancing the performance of the triboelectric nanogenerator,” Journal of the Egyptian Society of Tribology, vol. 20, no. 4, pp. 77–87, 2023.

[27] A. Rashed, **A. M. Al-Kabbany**, A. H. Zeinab, K. A. Youness, W. Y. Ali, and A. K. Ameer, "Wind speed sensor based on triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 20, no. 4, pp. 106–116, 2023.

[28] M. H. El-Shazly, **A. M. Al-Kabbany**, W. Y. Ali, A. S. Ali, and M. A. Massoud, "Effect of magnetic field on the voltage output of triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 20, no. 3, pp. 85–94, 2023.

[29] **A. M. Al-Kabbany**, Ali A S, and Rashed A, "Effect of calcium carbonate content on the surface voltage generated by rocks," Journal of the Egyptian Society of Tribology, vol. 20, no. 3, pp. 75–84, 2023.

[30] **A. M. Al-Kabbany**, "Proper material selection for a triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 20, no. 2, pp. 57–65, 2023.

[31] **A. M. Al-Kabbany** and W. Y. Ali, "Contact and separation of Kapton and polymethylmethacrylate triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 19, no. 4, pp. 63–74, 2022.

[32] A. K. Ameer, **A. M. Al-Kabbany**, W. Y. Ali, and K. Hamdy, "Influence of surface roughness on the output voltage of a triboelectric nanogenerator," Journal of the Egyptian Society of Tribology, vol. 19, no. 3, pp. 45–52, 2022.

[33] A. S. Ali, **A. M. Al-Kabbany**, and W. Y. Ali, "Voltage generated from triboelectrification of rabbit fur and polymeric materials," Journal of the Egyptian Society of Tribology, vol. 19, no. 3, pp. 10–18, 2022.

[34] **A. M. Al-Kabbany**, W. Y. Ali, and A. S. Ali, "Propsed materials for face masks," Journal of the Egyptian Society of Tribology, vol. 18, no. 3, pp. 35–41, 2021.

[35] **A. M. Al-Kabbany**, W. Y. Ali, and A. S. Ali, "Proper selection materials of face shields, eyeglasses and goggles," Journal of the Egyptian Society of Tribology, vol. 18, no. 3, pp. 42–51, 2021.

[36] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. H. Badran, "Triboelectrified materials of facemask to resist covid-19," Journal of the Egyptian Society of Tribology, vol. 18, no. 1, pp. 51–62, 2021.

[37] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and R. A. Ibrahem, "Proper material selection of medical safety goggles," Journal of the Egyptian Society of Tribology, vol. 18, no. 2, pp. 1–14, 2021.

[38] A. S. Ali, **A. M. Al-Kabbany**, W. Y. Ali, and A. M. Samy, "Reducing the electrostatic charge generated from sliding of rubber on polyethylene artificial turf," Journal of the Egyptian Society of Tribology, vol. 17, no. 2, pp. 40–49, 2020.

[39] **A. M. Al-Kabbany** and W. Y. Ali, "Reducing the electrostatic charge of polyester by blending by polyamide strings," Journal of the Egyptian Society of Tribology, vol. 16, no. 4, pp. 36–44, 2019.

Unpublished Manuscripts:

- "Lubrication as a Method of Separating the Charge Collecting Electrode and the Triboelectric Layer in a Direct Current Triboelectric Nanogenerator" Under review at **Energy Technology**
  Position: First author.
- "Contact Electrification–Based Enantioselective Recognition of Chiral Amino Acids through Stereospecific Interfacial Electron Transfer" Under review at the **Journal of the American Chemical Society**.
  Position: Fifth author.
- "Using One-Way ANOVA in Investigating the Effects of Heat-Treatment Approaches on Hot-Work Tool Steel X40CrMoV5-1" Submitted to **Materialwissenschaft und Werkstofftechnik**.
  Position: Fifth author.

Conferences and Competitions:

- Net Zero Tech International Contest, Taipei, Taiwan, (2025).
- International Conference on Smart Sensors, Hsinchu, Taiwan, (2025).

Refereeing:

- Nature Communications
- Tribology International
- Journal of the Egyptian Society of Tribology
- Egyptian Youth Innovators Competition, Organized by the Egyptian Ministry of Education.

Editorial Positions:

- Editor, Journal of the Egyptian Society of Tribology

Projects:

- Graduation Project: “Optimal Design of a Kapton-PMMA Contact-and-Separation Triboelectric Nanogenerator”.
- Line Following Robot.
- Remote-Controlled Robot with a Gripper.
- 2.5-Inch refractor telescope.
- Tension Test done as a part of lab activities in the Mechanics of Materials course.

Courses Taught (Training sessions only):

- Robotics and Machinery (PD422) – Minia University
- Theory of Machines (PD221) – Minia University
- Principles of Metrology in Production (PD223) - Minia University
- Properties of Materials and Their Testing (PD114) - Minia University
- Mechanics of Machines (PD115) - Minia University
- Engineering Drawing (PD015) - Minia University

Awards:

- Taiwan Scholarship, Taiwanese Ministry of Education, 2024 – 2026.
- Outstanding Poster Presentation, International Conference on Smart Sensors, Hsinchu, Taiwan, 2025.
- Scientific Publication Award, Minia University, 2024.
- Environmental Research Competition, Minia University, Third place. November 2018.

Skills:

Languages:

- Egyptian Arabic: Native
- Standard Arabic: Fluent
- English: Fluent (Scored 111 points in the TOEFL iBT test)
- Mandarin Chinese: Beginner

Programming Languages: C, C++, Javascript, HTML, CSS, Python.

Software: Solidworks (Certified Solidworks Associate in Mechanical Design), Autocad Mechanical, FreeCad, LibreCad, Fusion 360, Arduino IDE, Eclipse, Codeblocks, Word, Excel and Powerpoint, LabView.

Hardware: Arduino, Surface Roughness Tester, Friction Tester, Surface Voltmeter, Optical Microscope, Electrospinning, Electrometer, NI Data Acquisition.