



# Mostafa Rushdi

Research Assistant Prof.  
Data Scientist  
Aerospace Engineering

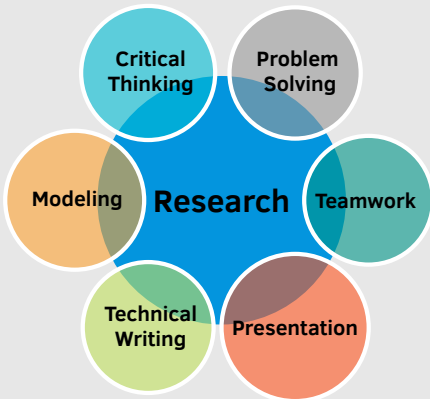
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## Publications



## Skills

### Overview



### ML/DL libraries

- sci-kit learn
- TensorFlow
- Keras
- streamlit

### Visualization

- Scinceplots
- seaborn
- matplotlib
- plotly
- Tableau

## Summary

Highly motivated, energetic, fast learner, and results-oriented researcher with a strong background in mathematics, statistical analysis, machine learning, and data visualization. Equipped with a solid foundation in programming and data manipulation, adept at utilizing Python, and SQL to extract, transform, and analyze complex datasets. Skilled in developing predictive models for data-driven decisions and optimizing processes. Proven ability to communicate technical concepts effectively to both experts and non-experts and students alike. Experienced in leading and collaborating within interdisciplinary teams to deliver data-driven solutions. Seeking opportunities to leverage my skills and expertise to tackle challenging problems and make a meaningful impact on society.

- Data Science
- Machine Learning
- Deep Learning
- Visualization

- python
- R
- SQL
- MATLAB® / Simulink
- LaTeX

## Professional Experience

- 5.2022-present **Research Assistant Professor** RIAM, Kyushu University, Japan  
Applying data science to different fields.
- 3.2021-4.2022 **Postdoctoral Researcher** RIAM, Kyushu University, Japan  
Working on several projects related to renewable energy using ML/DL methods.
- 4.2019-7.2019 **Intern, Airborne wind energy company** Kitepower, Delft, Netherlands  
Working with the company team on dynamic modeling and control of a rigid vertical take-off landing aircraft and simulation of the power cycle aiming to maximize the generated electricity.
- 4.2015-10.2017 **Teaching Assistant** Future University, Cairo, Egypt  
Assisted in teaching several courses by leading lectures, discussion sessions, lab experiments, and managing groups and projects
- 2012 **Intern, Aeronautical Engineering Labs** EgyptAir, Cairo, Egypt  
Trained on systems of the commercial passenger jet Airbus 320. Attended workshops on: "Turbofan Engine Overhaul". Tested and validated oxygen cylinders, landing gears, and escape slides.

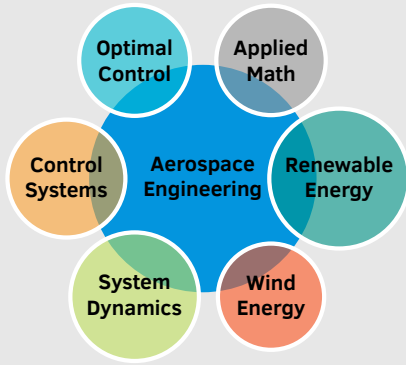
## Education

- 10.2017-03.2021 **Ph.D., Airborne Wind Energy Systems** Kyushu University, Japan  
*Thesis: "AirborneWind Energy Systems: Flight Data Analysis Using System Identification and Machine Learning, and Control of Launching."*
- 10.2014-09.2017 **M.Sc., Aeronautical & Aerospace Engineering** Cairo University, Egypt  
*Thesis: "Optimal Aircraft Evasion Trajectory: Analysis and Simulation of the Target-Attacker and the Target-Attacker-Defender Problems."*
- 09.2008-07.2013 **B.Sc., Aeronautical & Aerospace Engineering** Cairo University, Egypt  
*Graduation Project: "Micro-Flapping Air vehicle"*

## Online Courses

- 2021 **Deep Learning Specialization** Coursera, DeepLearning.AI, Stanford Uni.  
Structuring ML projects - Tuning - NN - CNN - RNN
- 2023 **Google Data Analytics Professional Certificate** Coursera, Google  
(8 courses) SQL, R, Tableau

## Other Interests



## Languages

Arabic (Native Tongue)

English (Professional Work Ability)

Japanese (Basic Level)

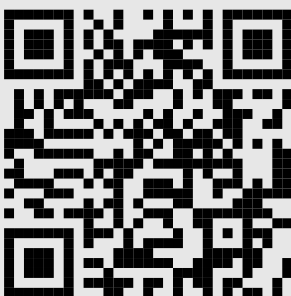
## Funds/Awards

- **Q-PIT Support Program** (1.5 M¥)  
Energy Systems and Management
- **Scholarship for Ph.D.**  
from Japanese Government (MEXT).
- **KU Fund for an internship**  
for 3 months at TU Delft.
- **Top Mechanical Project Award**  
for CANSAT project, by the EED.

## References

- **Prof. Shigeo Yoshida**  
RIAM, Kyushu University  
yoshidas@riam.kyushu-u.ac.jp
- **Prof. Roland Schmehl**  
AE, TU Delft  
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## Hobbies



Check my website  
for more details

## Projects

RA Prof.

### Wind and Loads Evaluation/Prediction of WT



- Collaborated with a researcher from Hitachi company to develop a surrogate model for predicting the wind and loads of a wind turbine using ML/DL techniques.
- Developed a user-friendly GUI using "streamlit" to facilitate easy sharing, access to the model, and validation using met mast data, to ensure the model's reliability and accuracy.

ML LR DL NN streamlit python

RA Prof.

### ML with CFD applications

- Working on cutting-edge research that aims to create a new generation of numerical finite volume schemes that replace the high-order functions and linear and quadratic interpolation that are currently used as industry standards with new, more complex nonlinear schemes that use machine learning to reduce the reliance on mesh resolution.
- This strategy also seeks to get past the requirement for flow field smoothness in currently implemented techniques, which makes it very challenging to accurately solve discontinuous functions and non-smooth field functions.

DL NN CNN python

Post-Doc

### Floating Offshore Wind Turbine (FOWT)

- Analyzed LFM raw data collected over 6 years for 34 Typhoons passed by Japan using the Extreme Value Analysis (EVA) with Gumbel distribution to calculate the Expected Extreme Wind Speed (EEWS) for certain wind direction changes during storms.
- This is important information for FOWT farms, as it is a single-point moored system.

Data Analysis Statistics python pandas Dask

Post-Doc

### Wind Solar Tower (WST)



- Several data entities were collected using sensors mounted on the WST system. According to my data analysis, something wasn't logical. So, I contacted the data collector operator, and a mistake in the connection has been found.
- After ensuring the reliability of the data, I applied ML/DL algorithms to predict thermal updraft and wind turbine output for the cases of "no wind turbine" and "with wind turbine", respectively.

Data Analysis Data Cleaning ML DL CNN python

PhD

### Kite Power System (KPS)



- Collaborating with a team to build a KPS including a Kite Control Unit (KCU) to control the kite maneuver. Collected data like kite orientation and position, and truck velocity. Made a design of experiment (DoE) of several flight tests. I performed sensitivity analysis which agreed with model-based sensitivity analysis.
- I applied ML/DL algorithms and the neural network was promising to model and predict the tether force.

Data Collection Data Analysis ML DL python