

## GENIUS Platform: findinG thE hidden aircraft faUltS Platform

**Project Description:** Modern aircrafts are excessively instrumented with thousands of sensors, which measure the activity of each aircraft part (component). An important role for these sensors is to monitor the health of the aircraft. We focus on two types of messages generated from the sensors: maintenance messages (MMSGs) and flight deck effects (FDEs). In a typical flight, hundreds of maintenance messages may be generated and occasionally a flight deck effect will be reported because of certain event. When a flight deck effect is reported, the hidden cause of the FDE must be determined, but necessarily addressed, before the aircraft is allowed to fly again leading to an unscheduled interruption.

Since vector representation concept proves its success in solving many real-world problems from variety of applications. Therefore, in this project, we will build a novel platform, we called it GENIUS, for predicting an FDE from MMSGs and vice versa. The GENIUS platform will have many models build on top of it. The main advantage of GENIUS platform is to unify all prediction models together and ease using. We will evaluate the GENIUS platform on synthetic dataset as well as on historical dataset from the Boeing Airplane Health Management (AHM) tool.

**Duties/Activities:** The Intern will work on an existing code for GENIUS and gets supervision from mentors in aggregating the code and build a Graphical User Interface (GUI). Then, the intern will test the developed code on synthetic and real data sets.

**Required Skills:** Understand of how to build GUIs. Have good scripting language skills such as Python, R, or MATLAB. Have basic knowledge of machine learning algorithms.

**Preferred Intern Academic Level:** Bachelor degree.

**Learning Opportunities:** Learn how to do transfer a research outcome to a product and working with a group of scientists. In addition, have an opportunity to work on real data set from Boeing.

**Expected Team Size:** 3

### Mentor

Name: Mohamed Elshrif

email: [melshrif@hbku.edu.qa](mailto:melshrif@hbku.edu.qa)