

# Template for adverting PhD project on FindAPhD.com

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<b>Department</b>	School of Engineering and the Built Environment
<b>Supervisors</b>	DoS: Dr Keng Goh, Dr Nazmi Sellami, Dr Firdaus Muhammad Sukki
<b>Funding Status</b>	Funded PhD Project (Worldwide)
<b>Application Deadline</b>	14/04/2022
<b>Project Title</b>	Digital twin for battery health monitoring

## PROJECT DESCRIPTION

The electrification process in many industry sectors, from ground transport to aviation, has led to increase in demand of battery used. The demand of battery has led to a number battery developments within the School of Engineering and the Built Environment (SEBE):-

- a) Electrical car battery thermal management
- b) Development of battery separator using nano cellulous

Traditional engineering application employs software and digitised equipment though the lifecycle of process, which normally leads to huge data being produced. The data are used to develop static model for verification and validation of the system operation. Such process lacks the live monitoring/simulation during the system run-time. Simulation solution such as use of computational fluid dynamics (CFD) modelling has difficulty to scale up production and processes due to the significant computational expense and run time for complex simulation.

The aims of this project is to investigate technique such as digital twin to move away from the conventional method, focuses on virtual representation that synchronise with the battery system operation. This work will also focus on data acquisition on the battery system, as well as designing, developing and implementing an effective digital twin system, primarily for battery health monitoring and also diagnosing potential fault in the system. As part of the research, published literatures will be explored in a number of key areas and not limited to sensor technology, battery technology, wireless communication, information management and data science techniques.

This project aims for candidate with background knowledge and skillsets in the aforementioned literature topics and practical nature activity involving sensor instrumentation, data collecting/management/analysis, electrical & electronic knowledge.

## Academic qualifications

A first degree (at least a 2.1) ideally in [Click here to enter text](#). with a good fundamental knowledge of battery, data science technique, software simulation and practical implementation experience.

## English language requirement

IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. [Full details of the University's policy](#) are available online.

## Essential attributes:

- Experience of fundamental data acquisition, modelling and simulation
- Competent in battery technology and properties
- Knowledge of electrical and electronic engineering
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

## Desirable attributes:

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<b>Indicative Bibliography</b>	M Liu et al, Review of digital twin about concepts, technologies and industrial applications
<b>Funding notes</b>	This project may be funded by a scholarship of the School of Engineering and Built and Environment. Please see <a href="#">School-funded PhD scholarships - RESEARCH AND INNOVATION (napier.ac.uk)</a> for information on the scholarships and how to apply for them.”
<b>Enquiries</b>	For informal enquiries about this PhD project, please contact Dr Keng Goh, email: <a href="mailto:k.goh@napier.ac.uk">k.goh@napier.ac.uk</a> )
<b>Web page</b>	<a href="https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process">https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process</a>

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