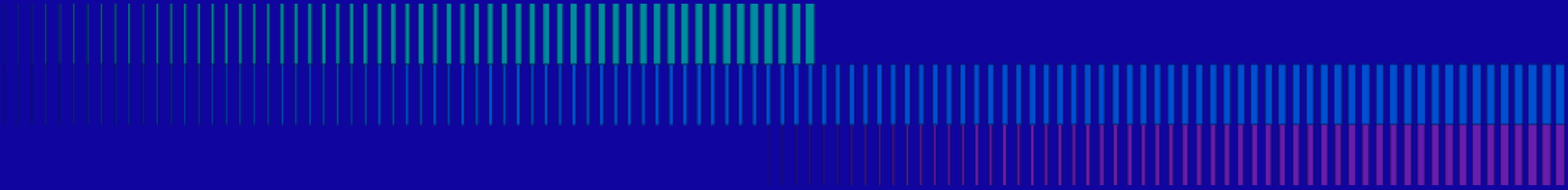
ROLLS-ROYCE DATA MINE PROJECT

2025-26 Academic Year



ROLLS-ROYCE OVERVIEW

Civil Aviation

We’re a major manufacturer of aero engines for large commercial aircraft, regional jet and business aviation.

Power Systems

We’re a leading provider of high-speed reciprocating engines, complete propulsion systems and distributed energy solutions.

Defense

We’re a market leader in aero engines for military transport and patrol aircraft, as well as combat and helicopters.

AEROSPACE DATA SYNTHESIZER

- **Project background:** This project addresses the need of the aerospace propulsion system Prognostics & Health Management (PHM) team to have access to synthetic data, which mimics the characteristics of actual fleet data, that the team can use to share with external research entities like universities to help explore and develop novel prognostic algorithms. Currently, the team lacks the ability to do meaningful exploration in this area with external partners due to export and International Traffic in Arms Regulations (ITAR) restriction on the data available, which restricts their ability to share data needed for such research.
- **Project description:** The proposed Synthetic Data Generator project would develop a software system that can generate "real looking" fleet data for the aerospace propulsion system while being "anonymized" in a way that protects the programs Intellectual Property (IP) and export requirements. This software system / solution will be designed and prototyped by a team of engineering students that are part of the Purdue Data Mine using tools compatible with the Rolls-Royce (RR) IT ecosystem, this will involve developing in python 3 using standard PyPI approved libraries and standard Machine Learning python libraries, using Oracle DB or equivalent relational DB and ISO approved flow-charting tools and standard Microsoft and pdf file formats to document the work and system-architecture.
- **Project scope & outcomes:** The requirements for this project will be formally developed by the students, with guidance from the RR PHM team. The project scope would include developing this solution using the approved tools, supported by clear and comprehensive documentation that reflects the agreed-upon requirements with the RR team. The ultimate goal is to produce a feasible and innovative approach that aligns with the real-world industry needs. This collaboration will provide both practical experience about real-world data for the students and meaningful exploration of a potential solution for the RR team.

Citizenship Status: US Citizens only