

## **CAREER OBJECTIVE**

I wish to build a career in R&D where I can utilize my practical and analytical skills to advance sustainable engineering technologies.

## **WORK EXPERIENCE**

### **FORD MOTOR COMPANY (DETROIT, USA)**

#### **Lead Engineer - Hybrid Powertrain Systems Calibration**

**03/16 - Present**

- Led a team of ten engineers in the development of the controls and calibration of Ford's first high volume production hybrid pickup truck.
- Developed a calibration that balances performance, NVH, thermal management, and functional safety while ensuring best in class fuel economy and SULEV70 emissions targets were achieved.
- Performed vehicle level powertrain validation testing in all environments in both real world and wind tunnel settings ensuring all battery, electric motor, engine, and transmission requirements were met.
- System integration lead for development of the powertrain as an onboard generator.
- Developed a hardware protection strategy to prevent damage to the high voltage battery and connectors as a result of excessive current throughput over extended periods.
- Developed a refrigerant based thermal management system that balanced the cooling requirements of the high voltage battery and the vehicle cabin.
- Identified error states in the network of embedded controllers and worked with a broad array of software teams to resolve issues.
- Identified controls strategy enhancements and developed intellectual property (7 patents pending).

#### **Engine Performance Development Engineer**

**01/14 – 02/16**

- Conducted design verification and durability testing on Ford's four cylinder turbocharged Eco-boost engine architecture.
- Developed engine heat rejection maps to analyze thermal efficiency and correlate with CAE models.
- Troubleshoot and resolved issues related to engine hardware, software, calibration, facility instrumentation, and test setup.
- Designed tests and analyzed data to lead key hardware design decisions.

### **FORD MOTOR COMPANY (LONDON, UK)**

#### **Engine Systems Engineer**

**01/12 – 08/13**

- Led design reviews and cross-functional meetings to develop high volume globally manufactured three cylinder gasoline engines.
- Led a project to optimize mechanical efficiency of all rotating components in the engine.
- Validated subsystem interfaces to ensure system level and GD&T requirements were met.
- Developed a process and application to streamline, document, and improve the robustness of the subsystem design freeze process.

### **CORK INSTITUTE OF TECHNOLOGY (CORK, IRELAND)**

#### **Research Assistant – Engine modeling**

**10/10 – 05/11**

- Mathematical model derived from fundamental thermodynamic principles in order to analyze the potential of a more thermally efficient engine cycle.

- Application developed to simulate one dimensional heat transfer, engine performance and fuel economy improvements.

**EUROPEAN AERONAUTIC SPACE & DEFENCE COMPANY (NANTES, FRANCE)**

**Research – Composite Materials (Internship)**

**03/10 – 07/10**

- Performed detailed experimental analysis on the cure characteristics of an epoxy-amine resin for aerospace components using a differential scanning calorimeter.
- Developed a mathematical model to fit the curing characteristics of the experimental resin.

**EDUCATION**

**Cork Institute of Technology, Ireland**

- BEng in Mechanical Engineering (2011)
  - 4.0 GPA
  - 1st class honors degree

**AWARDS**

- 2011 European Mechanical Engineering Student of the Year - Science Engineering and Technology awards
- 2011 Undergraduate Award in "Engineering and Mechanical Sciences" category
- 2011 Cliona Magner Scholarship

**TECHNICAL COMPETENCIES**

<ul style="list-style-type: none"> <li>● Data Acquisition &amp; Analysis               <ul style="list-style-type: none"> <li>○ Matlab</li> <li>○ Microsoft Excel</li> <li>○ ATI Vision</li> <li>○ Vector CANalyzer</li> <li>○ AVL Concerto &amp; Indicom</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Engineering Design               <ul style="list-style-type: none"> <li>○ Solidworks</li> <li>○ Tolerance analysis</li> <li>○ Weight &amp; Complexity management</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Simulation               <ul style="list-style-type: none"> <li>○ Simulink</li> <li>○ 1D Heat transfer</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>● Programming               <ul style="list-style-type: none"> <li>○ Visual Basic</li> <li>○ C/C++</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Embedded Control Systems               <ul style="list-style-type: none"> <li>○ Powertrain torque arbitration</li> <li>○ Thermal monitors</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Testing &amp; Validation               <ul style="list-style-type: none"> <li>○ Durability testing</li> <li>○ Instrumentation</li> </ul> </li> </ul>

**PUBLICATIONS**

- The Undergraduate Journal of Ireland and Northern Ireland
  - “Thermodynamic Analysis, Testing and Validation of a 6 Stroke Engine concept”