Alex Pawlowski

Contact Information

LinkedIn: alexpawlowski
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Expertise Powertrain Technology, Data Visualization, Mechanical and Thermal Modeling, Project Management

Education

University of Tennessee — **December 2019**
M.S. in Mechanical Engineering — GPA: 4.0
Thesis: *Heat Transfer of 316L-A356 Interpentetrating Hybrid Materials*

University of Virginia — **May 2014**
B.S. in Mechanical Engineering — GPA: 3.2
B.S. in Engineering Science - Materials Science

Experience

University of Tennessee - Knoxville and Oak Ridge National Laboratory — **Jun 2014 - Dec 2019**
Graduate Research Assistant — Knoxville, TN

- Developed a new manufacturing technique combining metal additive manufacturing and casting to produce a metal-metal composite to study bimetallic joining for transportation applications
- Assisted in the design and experiment of neutron imaging of fuel injector spray to understand soot formation in gasoline direct injected engines
- Collated and presented research to DOE on opportunities for additive manufacturing in end-use parts to increase vehicle efficiency
- Created a framework to estimate sales-weighted engine attributes of the vehicle fleet between 2000 and 2014 to project strategies needed to comply with 2025 CAFE targets. (SAE 2015-01-0972)
- Coursework in Intelligent Transportation Systems, vehicle controls, CAN bus messaging

Toyota Motors North America, Energy and Environmental Research — **May - Aug 2013**
Intern — Washington, DC

- Designed a graphic user interface module in Visual Basic for staff to interact with the inputs of an external vehicle choice simulation model
- Cleaned and imported 25,000+ records of vehicle fuel economy data from 1978 - 2011 to provide an accurate interface to study trends in fuel economy compliance.
- Compared the compliance difficulty to meet 2025 fuel economy targets if Toyota US sold Toyota EU fleet and sales mix instead of existing US fleet
- Aggregated historic sales data to estimate the average fuel economy and attributes of the on-road vehicle fleet for a given year
- Calculated the cumulative fuel savings of all hybrid vehicles on the road for each year through 2016 for use by Toyota to market 15 years of selling hybrids.

Virginia Department of Transportation, Planning and Land Development — **May 2011 - May 2013**
Intern — Suffolk, VA

- Redesigned MS Access database system with 3 automated reports, 5 redeveloped forms, and a filing system for 153 plans
- Completed 4 days of HOV data collection; compiled data into a report to analyze 7 years.

Leadership

Secretary KnoxDevs - umbrella organization of software developers in Knoxville	2018 - Present
Organizer KnoxData - Data Science Meetup - Knoxville, TN	2016 - Present
Organizer Knox3dp - 3D Printing and CAD Meetup - Knoxville, TN	2016 - Present
Marketing Pipeline: Vols for Women in STEM, University of Tennessee	2015 - 2017
co-President Virginia Baja (SAE Baja), University of Virginia	2013 - 2014
CTO Student Council, University of Virginia	2012 - 2014
Lead Transportation - Subcommittee on Sustainability, University of Virginia	2011 - 2014

Software Experience

Solidworks	Abaqus	Visual Basic	C++	Matlab
Simulink	FreeCAD	CAN	GREET	Python
tidyverse	numpy	pandas	Git	Docker

Noteable Projects

Knoxville City Hackathon - an open data hackathon with 92 participants, with 4 projects moving forward to be used in Knoxville

Sustaining Bioenergy plan to sustainably harvest woody biomass for renewable power.

myCPP Web interface using R Shiny to interact with EPA's Clean Power Plan in 2015.

KnoxDevs Website redevelop KnoxDevs's website using jekyll to allow community pull requests

Urban Transportation for Kenya formed an urban mobility centric plan for Kenya's largest cities

Select Publications 69 Citations

Moustafa, AR; Dinwiddie, RB; **Pawlowski, AE**; Splitter, D A; Shyam, A; Cordero, ZC; "Mesostructure and porosity effects on the thermal conductivity of additively manufactured interpenetrating phase composites",Additive Manufacturing,22,223-229, 2018

Pawlowski, AE; Cordero, ZC; French, M R; Muth, TR; Carver, JK; Dinwiddie, RB; Elliott, AM; Shyam, A; Splitter, DA; ,"Damage-tolerant metallic composites via melt infiltration of additively manufactured preforms",*Materials & Design*,127,346-351, 2017

Pawlowski, AE; Splitter, DA; Muth, TR; Shyam, A; Carver, K; Dinwiddie, RB; Elliott, AM; Cordero, ZC; French, M; ,"Producing Hybrid Metal Composites by Combining Additive Manufacturing and Casting",*Advanced Materials and Processes*,175,7, 2017

French, MR; III Yarberry, WA; **Pawlowski, AE**; Shyam, A; Splitter, DA; Elliott, AM; Carver, JK; Cordero, ZC; ,"Hypervelocity Impact of Additively Manufactured A356/316L Interpenetrating Phase Composites", 2017

Splitter, DA; **Pawlowski, AE**; Wagner, R; ,"A historical analysis of the co-evolution of gasoline octane number and spark-ignition engines",*Frontiers in Mechanical Engineering*,1,16, 2016

Pawlowski, AE; Splitter, DA; ,"SI Engine Trends: A Historical Analysis with Future Projections",*SAE 2015 World Congress & Exhibition*,20, Detroit, MI ,April 2015

Select Posters Presentations

Invited Presentation "Additive manufacturing of interpenetrating phase composites with exceptional damage-tolerance" MS&T Pittsburg, PA October 2017

Presentation "SI Engine Trends: A Historical Analysis with Future Projections", SAE 2015 World Congress & Exhibition Detroit, MI April 2015