Steven C Hespeler

PhD Candidate
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SUMMARY

As a recent PhD graduate, I am respectfully seeking a postdoctoral research position with a focus on research topics pertaining to predictive analytics, Deep Learning, Big Data, data analysis/visualization, optimization, and statistics. While pursing my PhD at New Mexico State University (NMSU), I've had the opportunity to conduct research in the areas of optimization, nonlinear modeling using secondary big data sources, machine/statistical learning, and reliability engineering. Most recent topics include modeling and prediction of electrochemical energy storage application via a deep learning data driven method and material failure prediction. At NMSU I've been able to advance my technical and teaching skills in the areas of statistics, predictive modeling, programming, and technical writing by teaching classes and working on a variety of research projects. As an instructor I've had the opportunity to teach both online/in-class graduate and undergraduate level engineering courses and prepare Accreditation Board for Engineering and Technology (ABET) summaries and assessments.

Research Interests: Time-Series data, Big Data, Recurrent Neural Networks, Energy Storage, Machine Learning, Nonlinear Programming, Operations Research, Automation in Manufacturing, Reliability Engineering

EDUCATION

New Mexico State University, Las Cruces, NM

Ph.D., Industrial Engineering, *Defense Completed:* Oct 1, 2020; degree granted Dec 2020
Dissertation Title: *Online State of Charge Prediction in Next Generation Hybrid Vehicle Batteries Using Deep Recurrent Neural Networks and Continuous Model Size Control*
GPA 3.7
Advisor: Donovan Fuqua, Ph.D
Minor: Applied Statistics
Key Courses: Applied Predictive Modeling, Nonlinear Programming, Statistical Inference II, Advanced Regression Analysis, Numerical Methods

M.S., Industrial Engineering, May 2012
Topic: *Statistical Analysis of Composite Based Poly (Lactic Acid) Combined with Bio-Pigments and Resulting Optical and Mechanical Performance*
GPA: 3.95
Advisor: Delia Julieta Valles-Rosales, Ph.D
Key Courses: Statistical Inference I, Discrete Event Simulation, Reliability, Advanced Engineering Economy, Linear Programming, Advanced Quality Control, Technical Writing

Roger Williams University, Bristol, RI

B.S., Engineering (Minor in Mathematics), May 2008
Key Courses: Calculus I, II, III, Differential Equations, Statistics, Heat Transfer Fluid Mechanics
Advisor: Linda Riley, Ph.D

PUBLICATIONS

Papers Accepted:

Hespeler, S. and Fuqua, D. "Online RNN Model for SOC Prediction in Next Generation Hybrid Car Batteries", IISE Annual Conference & Expo 2020 Full Paper

Papers Submitted or In Preparation:

Hespeler, S. and Fuqua, D. "Online State of Charge Prediction in Next Generation Vehicle Batteries Using Deep Recurrent Neural Networks and Continuous Model Size Control", Paper in Final Peer Review Step. Journal of Energy and Power Technology

Hespeler, S., Fuqua, D. and Valles, D. "Convolutional Neural Network used for Multichannel Time Series Data to Predict Chili Wood-Polymer Composite Profiles", Currently in Development.

Hespeler, S. and Fuqua, D. "Predicting Capacity Fade for Monitoring Battery Degradation and End of Useful Life in a Lithium-Ion Battery", Currently in Development.

TEACHING AND RESEARCH EXPERIENCE

Research Assistant: Fall 2020-Present

Department of Civil Engineering

- Conducted independent and group research focused in Deep Learning applied to civil engineering applications

New Mexico State University
Supervisors: Ehsan Dehghan Niri, PhD

Instructor:

IE 217L - Manufacturing Processes Lab	Spring 2018
IE 375/575 - Manufacturing Processes II/ Advanced	Fall 2017
IE 590-M70 - Selected Topics	Summer 2017

Teaching Assistant:

IE 567 - Discrete Event Simulation	Spring 2013
IE 478 - Facilities Planning	Spring 2012
IE 152 - Introduction to Industrial Engineering	Fall 2011

Lab Monitor Aug 2017 to May 2018

Department of Industrial Engineering 3D Printing Lab

- Conduct experiments that abide by the NMSU lab safety rules, ensure all employees are up to date on safety training and monitor the safety of peers
- Complete requested printing jobs, maintain equipment, grow and monitor the 3D printing club
- As the master key keeper, monitor digit key codes for all students and faculty associated with labs
- Most recently led a group of graduate engineering students with a project consisting of 3D printing and control of a prosthetic hand

New Mexico State University
Supervisor: Delia Julieta Valles-Rosales, PhD

Graduate Assistant Jan 2013 to Aug 2013

Physical Science Laboratory

- Prepare literature review and technical report based on military and commercial drone technology

– Assist team with drone testing and governmental certification for private drone companies

New Mexico State University
1050 Stewart St, Las Cruces, NM 88003
Supervisor: Dennis Zacklan

Research Assistant (20 hrs/ wk) Jan 2011 to Aug 2011
Department of Industrial Engineering

– Worked on a semester long project creating a DOE, manufacturing an innovative combination of wood fiber composite samples, tensile testing of samples, and ANOVA

New Mexico State University
Supervisors: Delia Julieta Valles-Rosales, Ph.D

Research and Student Awards:

USDA Wheels of Change Engineering Research Award, Las Cruces, NM	Fall 2017
Aggie I-Corps Feasibility of Business Idea Award, Arrowhead Center, Las Cruces, NM	Apr 2016
New Mexico State University Honors Graduate	May 2012
Alpha Pi Mu, Industrial Engineering Honor Society Award	Jan 2011
E.I.T. Certification	Jan 2009
IEE/WERC Environmental Design Contest 1st Place Award	Apr 2008

SOFTWARE EXPERIENCE

Programming/Statistical:
Python:

– Environments- Spyder, Jupyter, Conda
– Packages and Libraries- TensorFlow, NumPy, Pandas, SciKit Learn, Keras, matplotlib, Seaborn, Django, IPython

Matlab, R, Minitab, C/C++ Java, Maple

Typesetting and Other:
LaTeX, Microsoft office, Markdown, Cura (and a variety of slicing and CNC software), Unigraphics NX, SoildWorks, AutoCad

PRESENTATIONS

Statistical Meetings

Hespeler, S.C. "*Novel RNN Model for SOC Prediction in Next Generation Batteries and Continuous Model Size Control* " Nov 2020
Poster Presentation, New Mexico State University, Las Cruces, NM

Hespeler, S.C. "*Implementation of Machine Learning Techniques to Predict the Prominent Factors Effecting the Life Cycle of a Flow Battery* " 1st Colloquium of Engineering and Technology, Universidad Autonoma de Ciudad Juarez, Ciudad Juarez, MX Dec 2016

Hespeler, S.C. "*An Intelligent Predictive Algorithm Utilized to Assess Influential Factors Effecting the Recharge Process of a Zinc Polyiodide Flow Battery* " 1st International Workshop on Quality and Productivity, Universidad Autonoma de Baja California, Ensendada, Baja California, MX	Oct 2016
D. Alodan, H. **Hespeler, S.C.** "*A Study of An Innovative Sustainable Blend of Materials between Red Chile Pepper Stems and Polymers* " ISERC Conference, Orlando, FL	May 2012
2nd Annual Southwest Energy Science and Engineering Symposium, El Paso, TX	Mar 2012
83rd National Technical Association Conference, Washington, D.C.	Sep 2011
Southwest Regional Technology Symposium and	Apr 2011
GRAS Conference	Mar 2011