Jacob Senecal

Education

M.S. Computer Science, Aug 2017 to Present
Montana State University – GPA 3.97

B.S. Mechanical Engineering, Aug 2013 to Dec 2016
Montana State University – GPA 3.95

Experience

Research Assistant
Numerical Intelligent Systems Laboratory • Aug 2017 – Present
- Developing data analysis and hyper-spectral imaging techniques to assess the health of large volumes of produce (fruits, vegetables, etc.)
- Investigating the interpretability of neural networks when applied to hyperspectral data

Software Engineer
Blackmore Sensors & Analytics • June 2018 – August 2018
- Designed and implemented a machine learning model to extract features from large lidar datasets
- Built software to automate lidar sensor calibration on automotive systems
- Implemented an extended Kalman filter for an embedded navigation system

R&D Engineer
Los Alamos National Laboratory • Jan 2017 – Aug 2017
- Produced data analysis tools for intelligent detection of features within large datasets from continuously monitored, real-time manufacturing operations
- Created laser-ultrasound diagnostic system for $60,000 lower cost than previously used commercial system

Research Fellow
Los Alamos National Laboratory • June 2016 – Aug 2016
- Developed material damage model to predict failure in qualification testing
- Performed data acquisition, and signal processing to validate the new model

Design Engineer
AUVSI Robosub Competition • Jan 2016 – Dec 2016
- Invented robotic arm capable of opening doors and picking up objects
- Integrated design with computer vision, and electrical system

Research Assistant
Montana State University • Jan 2015 – Dec 2016
- Analyzed performance of new algorithm for simulation of multiphase flow problems
- Programmed 3D flow solver with uncertainty quantification

Systems Engineer / Site Foreman
Engineers Without Borders • Aug 2014 – Dec 2016

- Implemented water supply and filtration system for school of 500 students
- Served in Kenya as site foreman while project was under construction
- Solved logistics problems on the ground in Kenya

Skills

Programming – Python, Java, C++, Matlab, SQL, LabVIEW, Fortran
Machine Learning – Tensorflow, PyTorch, Scikit-Learn
Web Development – HTML, CSS, Javascript
Systems – Mac OS, Linux, Windows, Microsoft Office
CAD – SolidWorks, ANSYS, AutoCad

Publications

Owkes, M., Cauble, E., **Senecal**, J., Currie, A. (2018). "Importance of Curvature Evaluation Scale for Predictive Simulations of Dynamic Gas-Liquid Interfaces", *Journal of Computational Physics*

Senecal, J., Jarque, A., Flynn, E. (2017). "Compact Laser Ultrasound System for Non-Destructive Evaluation", 11th Meeting of the International Workshop on Structural Health Monitoring, Palo Alto, CA.

Prisbrey, M., **Senecal**, J., Sethi, M., Haynes, C., Taylor, S. (2017). "Equating Severity in Qualification Testing", 35th Meeting of the International Modal Analysis Conference, Garden Grove, CA.

Senecal, J., Owkes, M. (2016). "Optimal Scale for Curvature Calculations in Multi-Phase Flows", 69th Meeting of the APS Division of Fluid Dynamics, Portland, OR.

Study Abroad

Chonbuk National University
Jeonju, South Korea • May 2017

- Studied cyber-physical systems and structural health monitoring techniques

Service & Leadership

Pi Tau Sigma Engineering Honor Society, Vice President
Jan 2016 - Dec 2016

- Organized engineering outreach events within the local community

Engineering Ambassador
Aug 2015 - Dec 2016

- Elected by Montana State faculty to represent the College of Engineering to potential donors, advisory board members, and prospective students