Daniel Kolosa
Data Scientist

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Education
PhD Mechanical Engineering   Western Michigan University   09/2015 – 12/2019
Relevant Coursework: Machine Learning, Advanced Parallel Computations, Intractability and Approximation Algorithms, Continuous Systems Modeling and Simulation

MS Mechanical Engineering   Western Michigan University   09/2013 – 12/2015
Relevant Coursework: Design Optimization, Engineering Analysis, Mechatronics

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Relevant Skills
Python, Numpy, Scikit-learn, Tensorflow, Pandas, GIT, Linux/Unix**,** C/C++, Java, C#, CUDA, SQL, HTML, CSS, Javascript, Bash, Flask

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Work History
Part-Time Lecturer   Western Michigan University   09/2019 – 12/2019

- Instructed students from various academic backgrounds on the fundamental engineering concepts.
- Published weekly assignments and programming projects for students to complete in a timely manner.
- Assisted students in understanding material covered in lecture and providing copious feedback to students about classroom performance.

Graduate Research Assistant   Western Michigan University   09/2013 - 08/2019

- Developed a DARPA funded software package resulting in a well received conference presentation at AIAA SciTech 2018 and delivered production-level software according to customer specifications.
- Implemented a genetic algorithm to determine the optimal trajectory and maximize profit of a Robotic Servicing of Geosynchronous Satellites mission.
- Reduced fuel usage by 25% by creating a custom plugin to model an electric propulsion system using C# and Javascript.
- Lead and collaborated with co-workers to test and document software allowing the client to easily install and use the software package.

Software Developer, Intern   Jet Propulsion Laboratory   06/2014 - 08/2014

- Developed satellite trajectory simulation software resulting in a well received journal publication by conducting trade studies of various combinations of micro propulsion systems for satellites.
- Designed novel satellite systems using off-the-shelf parts resulting in a total cost of $80,000 per satellite.
- Parsed and cleaned a dataset of electric propulsion systems allowing for the automation of mission analysis trade studies of satellites with micro propulsion systems.

Projects
Design of an autonomous spacecraft using artificial intelligence

- Utilized project management skills, market/industry knowledge, and machine learning expertise, to develop a generalized machine learning algorithm for solving low-thrust spacecraft trajectory optimization problems.
- Integrated methodologies demonstrated in machine learning research papers to improve algorithm performance.
- Integrated the Java library Orekit, to create a simulated space environment.
- Tested the algorithm using 3 OpenAI gym environments resulting in successful training in all environments
- Utilized: Python, TensorFlow, Keras, Java, Matplotlib, Numpy, Neural Networks

Applying neural networks to model physical systems

- Created a fully-connected neural network using Python and Numpy to model the dynamics of a spacecraft.
- Using established analytical models, created a dataset of time-series trajectories to use for training and testing.
- Implemented a recurrent neural network in TensorFlow to model time-series vibration data of turbine blades reducing the cost of experimentation.
- Utilized: Python, Numpy, Tensorflow, Matplotlib

Space debris classification

- Used decision trees, and cross-validation to successfully classify the size and type of debris.
- Implemented K-means clustering to determine significant relationships between the features of the dataset
- Used pandas and matplotlib to clean and visualize relevant debris data stored in a SQLite database.
- Utilized: Python, Scikit-learn, SQLite, Pandas, Matplotlib, Decision Trees, Cross-validation, K-means Clustering

Foot pressure mapper
- Used a microcontroller programmed in C to capture and process signals from piezoelectric sensors and send over Bluetooth.
- Developed an Android app to allow the user to see where pressure was applied to a foot when standing resulting in a proper stance and decreasing foot discomfort
- Utilized: Java, C, Arduino, Git