TRAVIS JOSEPH KESSLER

University of Massachusetts Lowell
One University Avenue, Lowell, MA 01854
travis.j.kessler@gmail.com, (978) 201-7710

Graduate student with more than 4 years of experience in academic research and open source software development. Confident in directing teammates and students as a project manager and teaching assistant. Capable of communicating across numerous scientific, engineering and business disciplines. Achievements include developing machine learning models to predict molecular properties with 34% more accuracy than historical average. Skilled in applied machine learning, data mining/pipelining, statistics, and software engineering development/management.

TECHNICAL SKILLS

Software Languages	*Software Tools*	*Software Environments*	*Working Environments*
∗ Python, C, C++	∗ TensorFlow, Keras	∗ Azure Web Services	∗ AGILE/SCRUM
∗ Javascript, HTML, CSS	∗ PyTorch, Scikit-Learn	∗ Amazon Web Services	∗ DevOps Lifecycle
∗ SQL/NoSQL	∗ MongoDB	∗ Windows Server 2012+	∗ Kanban Organization
∗ Bash/Shell	∗ Git, SVN	∗ Linux (Headless, GUI)	∗ MRPT DoJ Clearance

EDUCATION

PhD Computer Engineering – GPA 3.93
University of Massachusetts Lowell
May 2023 (Expected)

BS Computer Engineering – GPA 3.56
University of Massachusetts Lowell
May 2018

EXPERIENCE

Graduate Research/Teaching Assistant *Jan. 2019 – Present*
University of Massachusetts Lowell Energy and Combustion Research Laboratory

- Leverages predictive models, including state-of-the-art machine learning models, to advance alternative fuel research
- Investigates methods for feature selection and hyper-parameter tuning, including random forest trees, principal component analysis, genetic algorithms and artificial bee colonies
- Manages a team of undergraduate computer science/engineering students in tasks related to current research efforts
- Funded by the U.S. Department of Energy under award DE-EE0008479 as part of the Co-Optimization of Fuels & Engines (Co-Optima) project

Technical Operations/DevOps Engineer *June 2018 – Jan. 2019*
Valora Technologies

- Utilized data mining techniques to extract client-specified information from legal, financial and government documents
- Constructed data pipelines to usher client documents from intake to delivery of extracted information
- Trained newly hired DevOps engineers in data pipelining/mining workflow configuration
- Obtained Moderate Risk Public Trust (MRPT) Department of Justice (DoJ) security clearance

Undergraduate Research Assistant *June 2015 – May 2018*
University of Massachusetts Lowell Energy and Combustion Research Laboratory

- Optimized predictive models to predict chemical reaction properties based on molecular structure (QSAR/QSPR)
- Implemented optimal neural network architectures to multidimensional input and output (training) data
- Developed open source machine learning, feature extraction and hyper-parameter tuning software packages
- Published research efforts in The Journal of Open Source Software, Fuel, and the American Society of Mechanical Engineers Internal Combustion Engine Fall Conference

SELECTED AWARDS & HONORS

1st place, Symbotic Warehouse Robot Prototyping Competition	*May 2018*
Innovative Technology Solution, UMass Lowell DifferenceMaker 50K Idea Challenge	*April 2017*
1st place, Francis College of Engineering Prototyping Competition	*Dec. 2016*
UMass Lowell Francis College of Engineering Dean's Scholarship	*Sep. 2014*

PUBLICATIONS & PRESENTATIONS

P8. **Travis Kessler**, Thomas Schwartz, Hsi-Wu Wong, John Hunter Mack. "Screening Compounds for Fast Pyrolysis and Catalytic Biofuel Upgrading Using Artificial Neural Networks". *ASME Internal Combustion Engine Division Fall Technical Conference* (2019). https://doi.org/10.1115/ICEF2019-7170

P7. Sanskriti Sharma, Hernan Gelaf-Romer, **Travis Kessler**, John Hunter Mack. "ECabc: A feature tuning program focused on Artificial Neural Network hyperparameters". *Journal of Open Source Software* (2019). https://doi.org/10.21105/joss.01420

P6. John Hunter Mack, **Travis Kessler**. "A Computational Approach to Screening Alternative Fuel Candidates". *New England Energy Research Forum* (2019).

P5. **Travis Kessler**, Eric Sacia, Alexis Bell, John Hunter Mack. "Artificial neural network based predictions of cetane number for furanic biofuel additives". *Fuel*, 206, 171-179 (2017). https://doi.org/10.1016/j.fuel.2017.06.015

P4 **Travis Kessler**, Gregory Dorian, John Hunter Mack. "Application of a Rectified Linear Unit (ReLU) Based Artificial Neural Network to Cetane Number Predictions". *ASME Internal Combustion Engine Division Fall Technical Conference* (2017). https://doi.org/10.1115/icef2017-3614

P3. **Travis Kessler**, John Hunter Mack. "ECNet: Large scale machine learning projects for fuel property prediction". *Journal of Open Source Software* (2017). https://doi.org/10.21105/joss.00401

P2. **Travis Kessler**, Eric Sacia, Alexis Bell, John Hunter Mack. "Predicting the Cetane Number of Furanic Biofuel Candidates Using an Improved Artificial Neural Network Based on Molecular Structure". *ASME Internal Combustion Engine Division Fall Technical Conference* (2016). https://doi.org/10.1115/icef2016-9383

P1. **Travis Kessler**, John Hunter Mack. "Predicting Biofuel Properties with an Artificial Neural Network". *UMass Lowell Student Research and Engagement Symposium* (2016).

TECHNICAL COMMUNICATIONS

Google Scholar:	Travis Kessler
GitHub:	https://github.com/tjkessler
LinkedIn:	https://www.linkedin.com/in/traviskessler/