# Mary Elizabeth Breen-Lyles

ENGINEER - RESEARCHER - PROGRAMMER

## CONTACT


(920) 370 - 1896

mary.breenlyles@gmail.com

www.marybreenlyles.com

721 N 1st Street Unit C
DeKalb, IL 60115


## ACCOMPLISHMENTS

**Co-author of ASME Publication** (2017)
Performance of Supercharged Engine Fueled with CTI Binary Mixture at Different Injection Pressures

**Walter S. Haven Physics Prize** (2017)
Awarded to students in physics who complete outstanding research projects. Granted specifically in honor of excellent work with the Physics Department's accelerator.

**Departmental Honors** (awarded May 2017)

**Phi Beta Kappa Member** (inducted May 2017)

**Presidential Scholarship** (2014-2017)
Beloit College's prestigious honor awarded for exceptional academic achievement.

## SKILLS

- MACHINING
- WELDING
- SOLDERING
- JAVA
- PYTHON
- UNIX / LINUX
- MATLAB
- HPC CLUSTERS
- CFD
- LabVIEW
- TCL
- LAMMPS
- SQL

## SUMMARY


Fast-learning, critically-thinking, conscientious worker with substantial design and programming experience from a wide breadth of engineering and research applications. Maintains strong mathematical aptitude and a passion for problem-solving. Fantastic communicator and tenacious team member with an appetite for learning and enthusiasm for achieving project goals.


## EDUCATION

**M.S. Mechanical Engineering,** Northern Illinois University (August 2019) - GPA: 3.9

- Certificate of Graduate Study: Thermal, Fluid, and Energy Systems
- Thesis Title: Direct Polymer Grafting as a Method of Preserving the Mechanical Properties of Cellulose Nanocrystals in the Presence of Moisture
- Took courses in CFD simulation, and thermodynamic systems

**B.S. Physics,** Beloit College (May 2017) - GPA: 3.9

## WORK EXPERIENCE

2018

**Graduate Research Assistant,** Northern Illinois University
DeKalb, IL (January 2018 - present)

- Executed dynamic molecular computations across distributed systems
  Worked with Tcl Scripting and Python to analyze output data
- Used MAKE to compile LAMMPS from C++ source code
- Utilized Unix/ Linux as both my development and runtime environment
- Interacted extensively with a remote Linux HPC cluster

2017

**Research Assistant,** Beloit College
Beloit, WI (August 2016 - May 2017)

- Repaired handmade proton accelerator via machining and configurational planning for new/existing instrumentation
- Designed and wired a new power supply switching system for the accelerator and machined a box to house it
- Worked extensively on the electromagnet including the cooling system, Faraday cup implementation, electrical load and bending angle calculations
- Tuned magnet based on initial predictions and later testing. Used MATLAB, thermal imaging, and thermocouple, voltmeter, ammeter data for analysis

2016

**Undergraduate Research Fellow,** Georgia Southern University
Statesboro, GA (June 2016 - August 2016)

- Developed LabVIEW programs for pressure transducers, accelerometers, and flow meters on a jet turbine and diesel engine to transfer, process, and analyze the engine data
- Machined and/or welded new pieces for a diesel engine to help with safety or to aid in data acquisition
- Designed, machined, and soldered new signal amplifier for a pressure transducer
- Gained substantial experience in sensor calibration, instrumentation, advanced data acquisition, programming, and machining

2015

**Sustainability Fellow,** Beloit College
Beloit, WI (September 2015 - May 2016)

- Wrote program to compute thermodynamic properties of new campus building
- Developed in-depth model using thermal FEA to predict HVAC needs
- Presented at 2016 Student Symposium and to Beloit College Board of Trustees