# Mary Elizabeth Breen-Lyles

PROGRAMMER - ENGINEER - RESEARCHER

## SUMMARY

Fast-learning, methodical worker with 3 years development experience and substantial coding/software experience from a diverse set of engineering and research applications in both academic and professional settings. 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.

## PROJECTS

### Extensible Amazon Web Scraper (2020)
- Built a modular, well-documented web scraper for harvesting Amazon product data at managed intervals, storing data and comprehensive logs in Redis and within an ELK stack, utilizing EC2 instances for parallel processing
- Python, Selenium ChromeDriver, Redis (in-memory DB, queue), Celery (asynchronous tasks), ELK stack, Pipenv, Github

### Vendor Velocity Free Tools (2019)
- Created 2 front end web tools leveraging Amazon's Product Advertising API that Amazon vendors could use to improve their marketing strategies.
- PHP, Javascript, CSS, HTML, PipEnv, GitHub. Utilized jsGrid to neatly display data to the user.

### MindMap - Web Application (in development)
- Full stack development of a useful web application for intuitively taking and organizing notes
- Python and Flask, MariaDB (SQL), Jinja, HTML, CSS, Javascript, and ReactJS for UI design
- Best practices: PipEnv (dependency management), GitHub (version control), and Flyway (database migrations)

## WORK EXPERIENCE

### 2019
**Freelance Web Developer,** Self
Chicago, IL (July 2019 - present)
- Communicate effectively and harmoniously to maintain positive client relationships
- Draw up thorough contract documents with detailed descriptions for project plans/estimates
- Independently build web tools and applications for multiple clients while managing both business and technical aspects of the projects, always delivering high-quality production code

### 2018
**Graduate Research Assistant,** Northern Illinois University
DeKalb, IL (January 2018 - August 2019)
- Designed/executed molecular simulations across distributed systems to demonstrate effectiveness of polymer grafting at enhancing mechanical properties of a cellulose nanofiller
- Worked with Tcl Scripting and Python for data analysis, and 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 proton accelerator via machining and configurational planning for new/existing instrumentation
- Extensive work on electromagnet (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)
- Wrote programs in LabVIEW to pass data from sensors on a diesel engine to computers
- Developed LabVIEW programs for pressure transducers, accelerometers, and flow meters on a jet turbine engine
- Gained experience in sensor calibration, instrumentation, advanced data acquisition and programming

### 2015
**Sustainability Fellow,** Beloit College
Beloit, WI (September 2015 - May 2016)
- Wrote program to compute thermodynamic properties of new campus building
- Developed rigorous model using thermal FEA to predict HVAC needs
- Presented at 2016 Student Symposium and to Beloit College Board of Trustees

## CONTACT

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## EDUCATION

**M.S. MECHANICAL ENGINEERING**
*Northern Illinois University*
August 2019 (GPA 3.9)

**B.S. PHYSICS**
*Beloit College*
May 2017 (GPA 3.9)
Course work in Data Structures
and Algorithms / OO Programming

## HONORS

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

**Walter S. Haven Physics Prize** (2017)
Granted in honor of excellent work with the Physics Department's accelerator.

**Departmental Honors** (awarded May 2017)
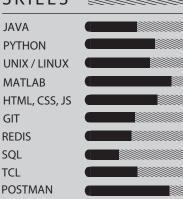Awarded by Physics Dept of Beloit College

**Phi Beta Kappa Member** (inducted May 2017)
Oldest and one of the most prestigious academic honor societies in the US

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

## SKILLS

- JAVA
- PYTHON
- UNIX / LINUX
- MATLAB
- HTML, CSS, JS
- GIT
- REDIS
- SQL
- TCL
- POSTMAN
- PHP
- REACT