

BRENT HALONEN

26134 QUINCY STREET • LAURIUM MI 49913

📞 248-880-3733

✉ BHALONEN@PROTONMAIL.COM

🌐 BHALONEN

JULIA C++ JAVA MATHEMATICA

GIT/GITHUB LINUX MACOS LATEX

ACTIVE SECRET SECURITY CLEARANCE

EXPERIENCE

Laurium Labs

LAURIUM, MI

OWNER - LEAD SCIENTIST

NOVEMBER 2017 - PRESENT

- Supported previous work (SurePulse) with ongoing software and testing research efforts for high strain rate test machinery
- FEA analysis of dynamic events
- Aluminum squeeze casting flow analysis

Signature Research

CALUMET, MI

SOFTWARE ENGINEER (JULIA, C++)

JULY 2016 - PRESENT

- Advanced modeling and simulation work for DoD and IC customers
- Thermal solvers, ray trace rendering, and solver integration with a data pipeline
- Machine learning with object detection and pixel classification

REL Inc.

CALUMET, MI

LEAD SCIENTIST/SOFTWARE DEVELOPER

MAY 2012 - JULY 2016

- Headed up data analysis on both software development and materials research for high strain rate testing
- Responsible for initial research to determine viability of projects
- Top analyst on ARPA-E Conformable Natural Gas Tank project

Blue Care Network

SOUTHFIELD, MI

ACTUARIAL INTERN

SUMMER 2011

- Analyst of Age 26 rule transition
- Deductible seasonality effects study
- Rate Increase effects on persistency study

EDUCATION

Michigan Technological University

HOUGHTON, MI

MS in Mathematics with a concentration in Statistics

2015

Michigan Technological University

HOUGHTON, MI

BS in Mathematics, BS in Cheminformatics, minors Economics, Computer Science

2008 – 2012

PROJECTS

Sauna Model saunasim.com

MARCH 2019 - CURRENT

Worked with Leg Day Technologies

Throw steam in your browser. A lumped sum model of a wood fired stove written in Julia, with a React front end, served up on AWS!

- DifferentialEquations.jl used to solve equations, including jump steps
- Unitful.jl used to track units throughout package
- Relies on peer reviewed papers to build scientific case

SURE-Pulse relinc.net/software

JUNE 2014 - CURRENT

- Open source data processing and analysis application for material property data from a Split Hopkinson Pressure Bar
- Integrated various scientific papers into production code and test equipment design
- Processed over 5000 samples from both internal and external users
- SURE-Pulse is a vital component of a testing equipment business with millions in revenue

DIC.jl github.com/bhalonen/DIC.jl

OCTOBER 2018 - CURRENT

- Digital Image Correlation is a technique of computing displacement fields through correlating imagery, usually computing a displacement for each pixel in the original image
- Formulated an original insight into correlating a multidimensional polynomial dependent on time and image space to predict displacement
- Implemented a prototype of the algorithm in Julia using the numerical library Optim.jl, DynamicPolynomials.jl, and Interpolations.jl, though it is a WIP

MessengerAnalyze.jl github.com/bhalonen/MessengerAnalyze.jl

JULY 2016 - CURRENT

- Curious about thousands of messages sent between my wife and I during our courtship, dating, engagement, and marriage
- Downloaded Facebook archive and parsed to a queryable data format
- Built several reporting techniques and analysis tools including ML topic extraction

ADDITIONAL

Publications

BRENT HALONEN. "Rate of convergence of maximum likelihood estimators under relaxed smoothness conditions one the likelihood function." <https://digitalcommons.mtu.edu/etds/909>. Masters Report at Michigan Technological University, 2015.

CHAKRABORTY, T., MISHRA, S., LOUKUS, J., AND HALONEN, B. "Characterization of three himalayan rocks using a split hopkinson pressure bar." International Journal of Rock Mechanics and Mining Sciences 85, 112–118. 2016.