

## Experience

---

### Founder & Principal Engineer

Emphysic®

Minnetonka Minnesota

August 2015-Present

- **Summary:** provide Big Data engineering, applied physics, and specialized software development services.
- **Technologies:** Java 8, Jenkins, Kryo, Apache Maven, Akka, Apache Mahout, Python, MATLAB
- **Sample Project:** Myriad Data Reduction Framework
  - Secured NASA seed funding to develop a structural damage detection streaming data pipeline based on computer vision, image processing, and online learning algorithms
  - Video demonstrations available at <https://emphysic.com/myriad/>

### Software Developer

Data Science, C.H. Robinson

Eden Prairie Minnesota

April 2017-Present

- **Summary:** transition proof of concept Data Science experiments into production.
- **Technologies:** Python, Apache Spark, Apache Hive, Kafka
- **Sample Project:** Dynamic Shipping Lane Pricing
  - Implemented “lambda” architecture for batch and streaming processing
  - Optimized performance in Spark application to take 30 minutes per batch of 5,000 shipping lanes from original 3 hours

### Data Analytics Engineer

Contata Solutions

Minneapolis Minnesota

April 2015-February 2016

- **Summary:** design and implement analytics and data warehousing solutions for commercial applications.
- **Technologies:** Java 8, Scala, Jenkins, Apache Maven, Apache Storm, Apache Spark, Akka, Cassandra
- **Sample Project:** Anomaly Detection in Customer Loyalty Data
  - Proof of concept data lake built on Spark, Cassandra, and Elasticsearch for finding outliers in customer rewards program data

### Computational Physics Programmer

Computational Physics Branch, Canadian Nuclear Laboratories

Deep River Ontario

September 2013-April 2015

- **Summary:** software development and High Performance Computing (HPC) support for scientific and technical computing. Shepherd legacy software through a heavily-regulated Software Quality Assurance (SQA) process.
- **Technologies:** Java 8, Apache Maven, Python, C, C++
- **Sample Project:** WIMS Post Processor
  - Extensible GUI for automating analysis of nuclear simulation data

## NDE Engineer / Scientist

Nondestructive Evaluation (NDE) Division, Texas Research Institute

Austin Texas

October 1999-September 2013

- **Summary:** Applied Physics R&D and software development, support
- **Technologies:** Python, C, C++, LabVIEW
- **Sample Project:** Database Migration
  - Managed efforts to migrate technical literature database for the Department of Defense's Nondestructive Testing Information Analysis Center (NTIAC)

## Education

---

### Master Of Science (Physics)

Queen's University

Kingston Ontario

- Focus of research: effects of stress conditions on the magnetic behavior of flaws in steel pipelines as part of the Applied Magnetics Group. Completed final months of program concurrently with Magnetics Engineer position at Pipetronix Ltd.

### Honours Bachelor Of Science (Physics)

Lakehead University

Thunder Bay Ontario

- Four year Honours program with additional specialization in Energy and Fuel Science.

## Patents

---

### Distributed Mode System For Real Time Acoustic Emission Monitoring

- U.S. Patent 7,080,555
- Canadian Patent 2,569,143
- Japanese Patent 4,607,960

# Professional Development

---

## Advanced Java Programming Certificate

University of Illinois Office of Continuing Education

Urbana Illinois

2015

- Two 60 hour courses in algorithms and development of distributed network applications.

## Client-Side Programming Certificate

University of Illinois Office of Continuing Education

Urbana Illinois

2013

- Three 60 hour courses in client-side development with HTML5, CSS, Javascript, JSON, and Ajax.

## Java Programming Certificate

University of Illinois Office of Continuing Education

Urbana Illinois

2012

- Five 40 hour courses in Java development. Topics covered included Swing, JDBC, and multithreading.

## Python Programming Certificate

University of Illinois Office of Continuing Education

Urbana Illinois

2011

- Four 40 hour courses in test-driven Python development. Topics covered included MySQL, multiprocessing/multithreading, and unit testing.

# Links

---

## GitHub

- <https://github.com/ccoughlin>

## GitLab

- <https://gitlab.com/ccoughlin>

## LinkedIn

- <https://www.linkedin.com/in/chrisrcoughlin/>

## Web

- <https://chriscoughlin.com/>