Chris Coughlin

https://www.linkedin.com/in/chrisrcoughlin

https://www.chriscoughlin.com/

https://github.com/ccoughlin

Experience

Software Engineer
Data Science, C.H. Robinson
Eden Prairie, MN
April 2017-Present

- Research, develop, and integrate Data Science applications into the larger C.H. Robinson IT ecosystem. Develop new techniques and technologies, transition proof of concept code into production.
- *Sample Projects:*
  - **Document Classification** – identify shipping documents from scanned images. In production, examines more than 30,000 images a day and is 80% accurate.
    - Keywords: tensorflow, falcon, Python, Docker, REST, image classification, image processing, machine vision, machine learning
  - **Signature Detection** – determine whether a consignee has signed a shipping document.
    - Keywords: tensorflow, falcon, Python, Docker, REST, object recognition, image processing, machine vision, machine learning
  - **Document Data Extraction** – extract fields such as invoice total from scanned documents.
    - Keywords: Python, Elasticsearch, REST, OCR, networkx, graph, edit distance, fuzzy matching, clustering, semi-supervised learning, unsupervised learning, case-based reasoning, data extraction

Founder
Emphysic
Plymouth, MN
August 2015-Present

- Provide data engineering, data science, applied physics services.
- *Sample Project*:
  - **Myriad Data Reduction Framework** – NASA-funded effort to develop a machine learning pipeline for automatically detecting structural damage in aircraft. Demonstration video available from https://emphysic.com/myriad/ .
    - Keywords: Java, Akka, Mahout, Jenkins, Maven, distributed, image processing, machine vision, machine learning

Data Analytics Engineer
Contata Solutions
Minneapolis MN

April 2015-February 2016

- Design and implement analytics, data pipeline and data warehousing solutions for commercial applications.
- *Sample Project*:
  - **Anomaly Detection in Customer Loyalty Data** – proof of concept for finding outliers in customer rewards card program data
    - Keywords: Spark, Cassandra, Elasticsearch, clustering, anomaly / outlier detection, unsupervised learning, machine learning

Computational Physics Programmer

Computational Physics, Canadian Nuclear Laboratories
Deep River ON
September 2013-April 2015

- Technical and high-performance computing support.
- *Sample Project:*
  - **WIMS Post Processor** – extensible application for automatic analysis of nuclear reactor simulation data
    - Keywords: Python, pandas, NumPy, data extraction

NDE Engineer / Scientist

Nondestructive Evaluation (NDE), Texas Research Institute
Austin TX
October 1999-September 2013

- Applied physics research and development, software development, project and team management.
- *Sample Project:*
  - **Large Area Health Monitoring Processor** – developed a statistical approach to assessing the structural integrity of air vehicles in real time during flight and predicting future health / recommending course of action to mitigate. Wrote the software implementation and created a custom Linux distribution for the hardware. Co-inventor on patent.
    - Keywords: Python, C, C++, Linux, time series, data acquisition, data analysis
  - **Acoustic Event Location** – developed an algorithm to locate the source of an acoustic event in composite structures.
    - Keywords: Python, C, C++, time series, data acquisition, data analysis

Magnetics Engineer

Pipetronix Ltd.
Toronto ON
August 1998-October 1999

- Applied magnetics and physics research and development.
- *Sample Project:*
  - **Modeling of Ambient Magnetic Field** – developed a model of the behavior of the magnetic field around an in-line inspection tool as it moved through the pipeline, used to determine the bias in sensor readings as a function of velocity.
    - Keywords: time series, data acquisition, data analysis

Education

Master of Science (Physics)

Queen's University

Kingston ON

1996-1998

- Focus of research: effects of mechanical stress on the magnetic behavior of cracks and pitting in steel pipelines. Completed final months of program concurrently with Magnetics Engineer position at Pipetronix Ltd.

Honours Bachelor of Science (Physics)

Lakehead University

Thunder Bay ON

1992-1996

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

Professional Development

Machine Learning Crash Course

Google

https://developers.google.com/machine-learning/crash-course/

2018

- Fifteen hour introduction to deep learning and TensorFlow.

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.

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