Ian Smith

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Summary

I provide technical leadership to an engineering team in the domain of supply chain risk analysis within Intertek's Kanata office which enables the Global Restricted Substances (GRS) group. I have built solutions for Business process automation, data pipelines, web-based tools for supply chain risk assessment, and scraping web repositories to obtain research data I interpret the results of the findings and communicate directly to stakeholders — customers, my internal organization, and the public.

Technical Skills

Technologies: Python (Pandas, Requests, Scikit-learn, NumPy, Flask, matplotlib, Plotly), SQL, Java, Javascript, R, Jupyter Notebooks

Applications: Data pipelines and ETL, Web scraping, Machine learning, Natural language processing, Web apps, Mathematical and Statistical models, Business-domain research

Professional Experience

Intertek — Global Restricted Substances — Ottawa, Canada
Engineer *October 2009 – present*
Intertek is a global auditing, testing, and certification service provider. Designed and implemented a configurable risk analysis platform for worldwide chemical regulatory compliance. Mine and analyze data to keep up to date on enforcement and risk trends. Automate business processes. Mentor junior team members.

Ageus Solutions — Ottawa, Canada
Engineer *January 2005 – October 2009*
Ageus Solutions was a successful independent consulting startup which was integrated into Intertek Health and Environmental after acquisition. One of the founders of the company. Served on board of Directors and as a corporate officer. Responsible for legal due diligence during M&A. Designed core analytical services and directed team of regulatory researchers.

Nortel Networks — Optical Components — Ottawa, Canada
IC Designer *June 2000 – December 2004*
The former Nortel Optical Components Group designed and fabricated GaAs ICs for use in optical long haul equipment. Analyzed integrated circuits and discrete semiconductor devices for root-cause of failure. Assembled and ran laboratory at minimal cost during downsizing. Experimentally demonstrated recurring failure mechanisms. Advised manufacturing operations to implement corrective action.

Education

Carleton University — Ottawa, Canada
Bachelor of Computer Science, Honors *2018*
With High Distinction. Data management, AI, and software engineering. Web and mobile application development. Computer Vision. Awarded Senate Medal for Outstanding Academic Achievement

University of Manitoba — Winnipeg, Canada
B.Sc. (Electrical Engineering) *1999*
Focused on microelectronics and VLSI design. Acquired proficiency in IC design tools, statistics and mathematics, and C++.

Udacity
Data Scientist Nanodegree *2019*
Supervised learning, Unsupervised Learning, Deep Learning, Stakeholder Communication, Experimental Design, Software Engineering, ETL Pipelines, NLP Pipelines

Selected Professional Projects

Material Risk Analysis Application

Purpose: Analyze a client's supply chain for material risks. Bayesian Classifier algorithm determines the types of materials based on text. Renders a tabular report with recommended testing plan or design revisions, to assist a material science SME. For a complex product, this allows a client to apply chemical testing in a cost-effective manner. Deployed in a Flask application.

Results: Reduced a multi-week engineering workflow to hours. 718 successful customer-projects to date.

Technology: Python, SQL, Javascript

Material Risk Knowledge Base

Purpose: Periodically mines product recall and litigation repositories to obtain up-to-date chemical infraction data set. Cleans and transforms raw HTML and XML, processes free text, and stores results in SQL repository.

Results: Intertek maintains an industry-leading knowledge base on current uses of 723 regulated chemicals, and in which materials or products they occur.

Technology: Python (Pandas, Requests, NLTK), Java, SQL

ETL Pipelines

Purpose: Automates customers' product design encodings and results of conformity assessments from various sources. Maps schemas, cleans data, stores in engineering SQL database.

Results: Intertek is able to accept product conformity data from in-house sources, third-party service providers, or customers, and deliver a consistent, repeatable analysis product.

Technology: Python, SQL

Personal or Academic Projects

Carleton University Honors Project

Purpose: Uses Natural Language Processing to extract product structure and composition from free text obtained from industrial designs. Implemented in C++.

Results: Portions of this project were suitable for deployment in an industrial setting, as part of Intertek's Risk Analysis Application. The project was awarded a grade of A+.

Technology: C++, Machine Learning, Natural Language Processing, NLTK API. Built NLP from scratch in C++

TSX Value Anaylzer

Purpose: Built to investigate fundamental analysis at a time when "value invesing" was out of style and "value stocks" were depressed in price. It uses a regression learner trained on fundamentals, and predicts five-year returns of candidate investments. The Shiny framework provides the user with a GUI.

Results: Application performs well in real-world situations. Selected candidates exceeded the S&P/TSX Composite Index one-year return by 4.6% for 2018

Technology: R, SQL, Javascript

Udacity Deep-Learning Project

Purpose: Classify the Oxford "Flowers" dataset by species using a convolutional neural network.

Technology: Pytorch, Deep neural networks, Computer vision

Udacity Supervised Learning Project

Purpose: Evaluated Random Forest, Adaboost, Bayesian Classifiers in scikit-learn using the California Census dataset.

Technology: Python, Jupyter Notebooks, scikit-learn