Ian Smith

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Summary

Using the Python 3 language, I support the Machine Learning, Augmented Reality, Internet of Things and Blockchain initiatives with Pivotree's H3 development team. My applications include Natural Language Processing algorithm optimization, personalized recommendation engines, neural networks for object recognition, and threat detection.

Technical Skills

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

Applications: Machine Learning, Computer Vision, Web scraping, Natural language processing, Web apps, Mathematical and Statistical models, Business-domain research

Professional Experience

Pivotree — H3 — Ottawa, Canada
Data Scientist *August 2019 – present*
Pivotree provides the Dive machine learning platform to e-commerce ventors to automate processes in Master Data Management. Optimize machine learning algorithms for Dive - classifiers, NLP preprocessing, find-similar.

Intertek — Global Restricted Substances — Ottawa, Canada
Engineer *October 2009 – August 2019*
Intertek is a global auditing, testing, and certification service provider. Designed and implemented a machine learning platform in Python to perform risk analysis for chemical regulatory compliance. Mine and analyze data to keep up to date on enforcement and risk trends. Automate business processes. Mentor junior team members. Regularly communicate with consulting customers, Intertek teams, and the public.

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++.

AWS

AWS Certified Machine Learning — Specialty *In progress*

CRISP-DM on the AWS Stack, Machine Learning Application Development

Udacity

Data Scientist Nanodegree *2019*

Supervised learning, Unsupervised Learning, Deep Learning, Stakeholder Communication, Experimental Design, Software Engineering, ETL Pipelines, NLP Pipelines

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Selected Professional Projects

Dive-CX Personalized Recommendation

Purpose: Leverages machine learning for personalized e-commerce customer experieces. Created reinforcement learner to determine customer shopping objectives and choose from ensemble of recommenders.

Results: In progress

Technology: Python, ElasticSearch, AWS

Dive-MDM Preprocessor Logic

Purpose: Enables machine learning for e-commerce providers' Master Data Management. Optimized NLP engine, classifier algorithm, and dimensionality reduction.

Results: Increased classifier accuracy by 11%. Reduced dimensionality by factor of 20. Initaited multi-target classification model.

Technology: Python (Scikit-learn, NLTK), Jupyter Notebooks, SQL, Mongo, Supervised Machine Learning, Natural Language Processing

Material Risk Analysis Application

Purpose: Analyzes a customer's supply chain for material risks. Evaluated multi-class machine learning algorithms including Naive Bayesian Classifier, Support Vector Machine, and Random Forest to determine the types of materials used in a product based on text extracted from its design files. Renders a tabular report with recommended testing plan or design revisions, to assist a material science SME. Deployed in a Flask application using a REST API.

Results: Reduced a multi-week engineering workflow to hours. Allows customers to apply chemical testing in a targeted, cost-effective manner. 718 successful customer-projects to date.

Technology: Python (Scikit-learn, Pandas, NumPy, Flask, NLTK), Jupyter Notebooks, SQL, Javascript, Supervised Machine Learning, Statistical Analysis, Natural Language Processing, Information Theory

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 of 214 material or component types they occur.

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