ANTONY VAN der MUDE

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DATA SCIENCE / MACHINE LEARNING / ARTIFICIAL INTELLIGENCE EXPERT

Highly knowledgeable Data Science / Machine Learning / Natural Language Processing Expert with wealth of experience developing applications for internet of things, cybersecurity, and speech recognition.

Software Development • Data Science • Machine Learning • Natural Language Processing
Speech Recognition • Artificial Intelligence • Expert Systems

PROFESSIONAL EXPERIENCE

HUMANA, Boston, Massachusetts • 12/2020 to Present - Healthcare and Insurance
Lead Cloud Engineer
Member of Digital Health and Analytics Department. Natural Language Processing, Machine Learning.
Achievements:

- Developed Natural Language Processing Speech Emotion Recognition and prosody analysis system in python using Keras to analyze voice files from Customer Service calls.
- Converted Databricks application for topic analysis using BERT to run as Microsoft Azure function.

SIGNIFY (PHILIPS LIGHTING), Burlington, Massachusetts • 11/2016 to 10/2020 Internet of Things
Data Engineer
Member of team that centralizes Data Collection and Analysis for the various business units of Philips Lighting into a center of excellence. Responsible for knowledge transfer for a number of projects, including lighting usage for home and work. Data science analysis of lighting luminaire sensor data acquistion and processing.
Achievements:

- Responsible for knowledge transfer of Java/Python code base for data collection and analysis for Hue Lighting (home), commercial products, and architectural lighting.
- Developed product recommender system for Hue lighting products using Bayesian methodology. Enabled system to provide explanation for its recommendations.
- Statistical analysis of failure points for Architectural Lighting division (lighting systems for bridges , stadiums and buildings, such as the Empire State Building).
- Developed general purpose data structure mapping software to convert layouts of building floors, rooms, sensors and devices into the company standard Normalized Building Model data structure. Software takes input from a variety of sources and converts data into standard format.

SECURITY SCORECARD, New York, New York • 9/2015 to 8/2016 - Cybersecurity
Data Analyst
Member of Data Analysis team. Wrote natural language processing and machine learning applications in Python (pandas, nltk, numpy) to identify cybersecurity targets and social engineering risks.
Achievements:

- Implemented Named Entity Recognizer to identify company targets in Hacker Chatter, map WhoIs IP addresses and parse data breach reports to extract company and specifics of breach. Achieved less than 2.5% False Positive rate on identification.
- Developed Sentiment Analysis software for Twitter and Reddit to identify possible security problems.
- Defined metrics for risk of social engineering of companies due to unusual use of company emails.
- Used DBSCAN clustering analysis to classify hacker chatter and cluster companies by security risk.
- Constructed parser to identify breakable password hints through social engineering.

KNEWTON, New York, New York 3/2014 to 7/2015 - Adaptive Educational Software
Senior Software Engineer
Member of Data Analytics/Dashboards team. Wrote Hadoop ETL programs and machine learning tools.
Achievements:

- Developed machine learning text classifier in python and C to categorize pages with educational content for possible inclusion into Knewton's educational taxonomy.
- Wrote jobs for Amazon's Elastic Map Reduce to load student interactions from Cassandra to Redshift.

ANTONY VAN der MUDE, LLC, Hackettstown, New Jersey • 1/2005 to 3/2014
Computer consulting firm for military, medical and consumer products
President
Developed applications for Military, Medical and Consumer products. Defined project requirements, Statements of Work, schedules, and budgets. Developed algorithms and software for device firmware and supporting tools, authored and ran acceptance tests, and assisted transition to manufacturing.
Achievements:

- Developed test software and statistical analysis reports for infrared camera black body calibration.
- Facilitated $18M in sales for Navy by completing software development and delivering on-schedule.
- Authored firmware for user interface for Laryngoscope, used to diagnose diseases of the larynx.

AT&T LABS, Florham Park, New Jersey • 1/1999 – 12/2004 - Research and Development

Member Technical Staff
Designed and rolled-out machine learning Algorithms, analyzed speech recognition accuracy, and delivered speech recognition and text to speech solutions for AT&T infrastructure.

Achievements:

- Developed data tuning techniques to bring groundbreaking "How May I Help You" customer service speech recognition from 80% to 98% accuracy by tuning ML models and doing performance analysis.
- Enhanced AT&T network capabilities through key contributions to speech recognition and text to speech software including long haul switches and local data centers.
- Facilitated successful development of machine learning models supporting outside customers for natural language Understanding applications for AT&T Speech Recognition products.

BELL TELEPHONE LABS, Holmdel, New Jersey • 9/1991 – 12/1998 - Research and Development

Member of Technical Staff
Part of research and development team for maintaining the user experience of the Bell Telephone system. Built speech recognition and artificial intelligence prototypes for new AT&T services, conducted studies demonstrating accuracy and effectiveness. Provided advanced computer expertise and capabilities bolstering on-time project completion and performed statistical analysis on studies and data collection tasks.

Achievements:

- Developed software for gathering and analyzing data to optimize user experience that slashed need for computer automated call-processing infrastructure for phone system by 20%.
- Created and implemented essential tools for World Traveler automated voice messaging for international customers by developing maintenance and reporting tools for data processing servers.
- Facilitated launch of speech recognition and natural language application packages, bringing AT&T to leadership position in industry, through development of pioneering prototypes of new services.

COOPERS AND LYBRAND, New York, New York • 7/1988 – 3/1991 – Auditing and Accounting **Supervisor**
Developed and maintained Artificial Intelligence software to support of audit work. Wrote software for a variety of auditing applications, including audit risk, hospital billing, and income tax.

Achievements:

- Project leader and head developer on Machine Learning system for data conversion from financial auditing packages. Written in C using C-Scape and OPS-83.
- Part of team that fielded audit risk advisor system. Converted expert system shell from LISP and ART on Symbolics to C on IBM PC. Wrote top-level user interface code to access inference engine.
- Developed and implemented user interface graphics language for software toolkit used in auditor's workbench. Code interfaced to Oracle using yacc.
- Documented expert system for tax analysis written in Common LISP. Software was required for every income tax submission done by any accountant in the firm. Acted as firm's subject matter expert for system.

EDUCATION

Master of Science in Computer Science
Rutgers University – New Brunswick, New Jersey
Bachelor of Science in Physics
Case Western Reserve University – Cleveland, Ohio

PUBLICATIONS / PATENTS

A Proposed Information-based Modality for the Treatment of Cancer,
Biosystems Volume 211, January 2022, 104587 https://doi.org/10.1016/j.biosystems.2021.104587
Structure Encoding in DNA, Journal of Theoretical Biology, Vol. 492, 7 May 2020, 110205
https://doi.org/10.1016/j.jtbi.2020.110205
Causally Active Metaphysical Realism, Quantum Speculations (supplement to the International Journal of Quantum Foundations), Volume 1, Number 1, October 2019, Pages 1-31 https://ijqf.org/archives/5704
Patent #8,463,565B1 "LED flashlight with battery life indicator", Ralph Osterhout, Michael J. Keating, Antony Van der Mude.
Patents #7,933,766, 7,620,550, 7,295,981 "Method for building a natural language understanding model for a spoken dialog system", Narendra Gupta, Mazin Rahim, Gokhan Tur and Antony Van der Mude.
On the Inference of Stochastic Regular Grammars, Information and Control, Volume 38, Issue 3, September 1978, Pages 310-32 https://doi.org/10.1016/S0019-9958(78)90106-7

TECHNICAL SKILLS

Machine Learning: Deep Learning, BERT, Boosting, Support Vector Machines, k-Nearest Neighbor, DBSCAN, Bayesian Analysis
Natural Language: Adaboost, Named Entity Extraction, Parsing, Text Normalization
Other: Computer algorithms, Computer firmware, SQL and Oracle databases, UNIX internals
Languages: Python, C, Java, C++, C#, Perl, LISP

PROFESSIONAL ORGANIZATIONS / AFFILIATIONS

ACM – Association for Computing Machinery
IEEE – Institute for Electrical and Electronic Engineers
AAAI – American Association for Artificial Intelligence