OMAR ABID

Machine Learning | Data Scientist | Computer Vision

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SUMMARY

A machine learning professional with four years combined academic industry experience with a special interest in computer vision. Seeking a full-time position as a Data Scientist or Machine Learning Engineer with a company that leverages artificial intelligence for their business solutions. Creative, action-oriented problem solver who thrives on coming up with innovative solutions to complex technical problems. Collaborative work ethic and dynamic presentation skills.

EDUCATION

Master of Science (MSc) in Computer Science **2018**

York University, Toronto, ON, Canada

- Thesis topic on applying computer vision techniques using advances in computational neuroscience and artificial intelligence
- Cumulative GPA: A

Relevant Project: Designed and implemented a hand tracking and hand gesture classification system as an adjunct to a computer mouse:

- Applied low level image processing algorithms (e.g. color segmentation, HOG, SIFT feature extraction) for reliably segmenting hand from background
- Applied Kalman Filter for smooth tracking leading to a system robust to camera sensor noise
- Real time gesture classification with a CNN allowing the user to interact with the computer

Relevant Courses: Data Mining, Advanced Topics in Computer Vision, Design and Analysis of Algorithms, Software Design, Data Structures

Honors Bachelor of Science (H.BSc) in Biophysics **2014**

York University, Toronto, ON, Canada

Relevant Courses: Multivariate and vector calculus, linear algebra, experimental physics with data analysis, statistics, electronics

SKILLS & KNOWLEDGE

Machine Learning Algorithms: Neural Networks, SVMs, kNNs, Decision Trees, Logistic Regression, Autoencoders
Big data: SQL, BigQuery, DataFlow
Cloud Services: GCP, AWS, Azure
Languages: C/C++, Java, Android, MATLAB, R, Python, Bash (Linux shell)
Competitions: Top 10% in Kaggle - Human Protein Analysis

Computer Vision: Experience with OpenCV and ROS. 2D object detection, segmentation and tracking. 3D object detection with SfM & SLAM
Machine Learning Libraries: Tensorflow, PyTorch, scikit-learn, NumPy, Pandas
Predictive modeling: deep learning, CNNs, supervised and unsupervised classification, Bayesian statistics

EXPERIENCE

Data Scientist at Watopedia (DIFC, Dubai, U.A.E) April 2018 – February 2019

Co-ordinated a team of developers for designing and programming a variety of software algorithms in the security sector with accuracy and performance metrics on par with state-of-the art systems. Lead software developer and data scientist implemented several proof of concept machine learning models leading to substantial growth of the company.

- Designed and developed a data processing pipeline for collecting, cleaning and augmenting large datasets.
- Designed, developed and maintained software packages resulting in rapid development of machine learning models

- *Surveillance system:* Automatic object detection and real time notification of threats (suspicious behaviors and objects of interest) in security critical environments. Improved effectiveness of clients by allowing quick searching of surveillance video by object type, color, location or time
- *Face Recognition System:* Developed a robust face recognition pipeline in Python using Tensorflow. Resulted in a state-of-the art system that provided real-time security deployment to company clients. Also engineered an algorithm to add new, previously unseen faces to the SQL database for seamlessly updating identities
- *Weapons Detection System:* Programmed and tuned machine learning models in Kera's using different base CNN architectures (e.g. SSD, Faster R-CNN, YOLOv3) to iteratively tune and select the best model leading to a robust and reliable system for weapon detection (benchmark: mAP @.75: 60, performance: 100 fps)
- *Vehicle and License Plate Recognition System:* Preliminary development of a license plate recognition pipeline allowing clients to easily record statistics of vehicles in a controlled environment (benchmark: License plate detection AP @ 0.75: 71, License plate accuracy: 95%, Performance: 30 fps)

Graduate Research & Teaching Assistant at York University (Toronto, ON) 2013 – 2018

Graduate Research Assistant (May 2015 – August 2018):

- Improved the efficiency and eliminated bugs on a lab developed neural network simulator implemented in C++ resulting in a more stable system for experimental research purposes

Teaching Assistant (January 2016 – April 2017):

Invigilated and graded exams and labs for first to third year undergraduate computer science students. Worked with robotics, mobile app development and software design. Directed the labs and office hours for the following courses:

- EECS 1570: *Introduction to Computing*
- EECS 3311: *Software Design*
- EECS 3101: *Programming Language Fundamentals*

Electrophysiology Lab (October 2013 – April 2014):

Planned the design and developed an electronic for current-voltage measurements leading to a system which could reliably measure biological cells electrical potential for research purposes

Attention Learning Lab (April 2013 – August 2014):

Analyzed EEG data of Macaque monkeys using MATLAB's Statistics and Machine Learning Toolbox. An SVM model was developed that indicated differences in EEG activations under different task conditions leading to key research insights for future work in the lab.

Software Developer Associate (November 2012 – April 2013):

Recommended and collaborated on the design and implement software interface and communication systems for York University's Rover Team using C++ and Python.

PUBLICATIONS

Sengupta, R., Abid, O., Bachoo, A., & Tsotsos, J. (2017). Attentional blink as a product of attentional control signals: A computational investigation. Journal of Vision, 17(10), 1197-1197.