Dr. Nguyen Xuan Ha

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Kaggle: kaggle.com/hanxvn

Calgary, Canada

Project role **Lecturer/Data Sciencetist**

Background

• Experienced in using artificial intelligence, computer vision, and predictive analytics to optimize retail stores' revenues

• Experienced with data analytics, machine learning/deep learning in oil & gas fields and computer-vision-based systems. Consultant at Viesovpetro Digital Transformation & IT Master Plan (2024–2030). Contributed and developed a long-term Digital Transformation Master Plan with initiatives, covering surface, and corporate-level digital capabilities.

• Recognized for developing innovative solutions for downhole/surface card recognition, fillage calculation from downhole/surface information, failure recognition/prediction to reduce operation costs in artificial-lift systems

• Recognized for developing innovative solutions for computer-vision-based systems such as human behavior recognition, arch curve and foot length calculation

• Developed strong knowledge in digital signal processing, digital communications, microprocessors and testing techniques through various industrial and academic projects

• Developed excellent analytical, problem solving and trouble shooting skills through projects by providing solutions to complex problems

• Utilized quick-learning capabilities to gain the knowledge and skills required for different projects

• Reliable, hard-working, team-work, highly motivated individual with the ability to work under pressure

Experience

Machine Learning Engineer | Sep 2024 – to present

Lead Data Science Team built Orion, an AI-powered analyst developed by a team of Google veterans to revolutionize the way businesses interact with their data. Seamlessly integrating with Looker, other BI tools, and third-party data, Orion proactively hunts for insights, identifies anomalies, and recommends actions to unlock the full potential of your data.

Senior Data Scientist | Mar. 2021 to Jul 2024

Parkland Corporation, Calgary, AB, Canada

• Predictive Customer Analytics - Technical Lead

– Use artificial intelligence, computer vision, and predictive analytics to optimize Parkland retail stores' revenues

– Build various machine learning models for classification, forecasting, supply, loyalty, personalization, segmentation, etc

– Experience with different machine learning/deep learning frameworks including scikit-learn, weka, Tensorflow etc

– Work with Linux/Unix, Git, Amazon Web Services on a daily basis

– Participate in software release and sprint planning ceremonies

• Computer Vision

– Trained/retrained deep learning models for vehicle counting, people counting and license plate recognition projects

– Worked on end-to-end deploying machine learning models on edge devices such as NVIDIA Jetson Xavier, Nano, Raspberry etc.

Data Scientist | Jul. 2017 to Mar. 2021

Ambyint, Calgary, AB, Canada

• Best results for both Classification Challenge & Regression Analysis of 2019 Untapped Energy reCLAIM Data Competition (https://www.untappedenergy.ca/reclaim-2019,

https://competitions.codalab.org/competitions/21522,
https://competitions.codalab.org/competitions/21523)

• Research, develop and implement Artificial Intelligence in Oil & Gas area

– Use machine learning/deep learning technologies to recognize cards as pumpo↵, gas interference, normal, lowload,

highload, delay travel valve, hole-in-barrel etc

– Develop novel algorithms to calculate fillage from downhole/surface cards

– Recognize/Predict failures using machine learning approaches

– Troubleshoot software/programming issues (Python) and research critical problems

– Experience with different machine learning/deep learning frameworks including scikit-learn, weka, Tensorflow etc

– Work with Linux/Unix, Git, Amazon Web Services on a daily basis

– Coordinate the integration between the backend and frontend development teams

– Guarantee error free in production environment

– Participate in software release and sprint planning ceremonies

Computer Vision Engineer |Jul. 2016 to Jun. 2017

Wiivv Wearables Inc., Vancouver, BC, Canada

• Research, develop and implement a computer-vision-based system to detect foot, arch curve and foot length (and

other body parts) using images taken from mobile devices

– Use machine learning/deep learning technologies to detect/recognize foot

– Develop novel algorithms to generate accurate arch curve and foot length so a custom-fit insole can be made and designed just for a specific customer

– Troubleshoot software/programming issues (Python) and research critical problems

– Experience with different computer vision/machine learning libraries and packages including OpenCV, scikitlearn, weka, Ca↵e, Tensorflow etc

– Work with Linux/Unix, Git, Amazon Web Services on a daily basis

– Coordinate the integration between the backend and frontend development teams

– Guarantee error free in production environment

– Participate in software release and sprint planning ceremonies

Software/Algorithm Developer | Jan. 2012 to Jun. 2016

Complex System Inc., Calgary, AB, Canada

• Use machine learning/deep learning technologies to predict critical events from drilling data in the oil and gas industry

– Build a mathematical model to describe a dynamic system that generally requires an intersection of data science

and oil & gas expertise

– Develop algorithms to predict the lithology using artificial neural networks/deep learning

– Develop statistical analytical tools to fuse pore pressures from multiple analogous well data sets using multivariate

linear regression technology

– Familiar with different statistical models, supervised/unsupervised machine learning and deep learning frameworks/tools

• Research, develop and implement a computer-vision-based human behavior recognition system for Kinect sensors and single cameras

– Use machine learning/deep learning technologies to detect/recognize humans, human faces in images and video streams

– Experience with different human detection, human/motion tracking, gesture detection and other image/video processing algorithms in the literature

– Develop novel algorithms for a human behavior recognition including human detection, human/motion tracking, human behavior recognition

– Participate in a full lifecycle development of the algorithm/software including transfering from requirements to architecture, high to low level design and implementation

– Troubleshoot software/programming issues (C/C++, Matlab, Python) and research critical problems

– Use various image/video processing tools such as OpenNI, OpenCV, Point Cloud Library (PCL), MATLAB Image Processing/Computer Visions System Toolbox to test novel algorithms

– Coordinate the integration between the backend and frontend development teams

– Improve eciency and quality of the software/algorithm to guarantee the real-time feature of a monitoring system

– Lead the development team of 3 people to develop/implement novel algorithms

• Port the computer-vision-based human behavior recognition algorithm into Freescale i.MX6 development board

– Migrate Window-based programs into Freescale i.MX6 development board

– Optimize the development codes in embedded platforms to improve the rate performance from 0.5fps to 4fps

– Familiar with common embedded operating systems such as Linux, Yocto, etc

– Experience with cross-compiling and optimizing software for ARM-based embedded platforms

– Collaborate with Au-zone Technologies Inc. (www.au-zone.com) in hardware design, driver development, debugging and board bring-up

– Familiar with GStreamer (an open source multimedia framework), Qt, OpenCV, OpenGL ES, etc

• Mobile application development

– Experience in developing Android apps to stream/view live video, receive an alert message for the computervision-based human behavior recognition project

– Develop an server engine to stream live and on demand media with scalable server software

– Familiar with network/socket programming, and/or knowledge of TCP/IP

• Use Matlab to design/implement a Resource Energy Solutions (RES) software to allow users to simulate the drilling process:

– Collect/Process real-time data from a variety of sensors deployed at the well site

– Provide real-time estimates of the geological formation ahead of the drill bit to adjust drilling parameters and the drill bit itself to reduce risks, time, and costs in drilling operations

– Recognize/Predict unsafe conditions in the wellbore before causing serious consequences to increase safety for wellsite personnel

• Help customers review, evaluate and provide comprehensive comments whether or not the patents read on various standards such as LTE, W-CDMA, HSPA, Wifi (IEEE 802.11), Ethernet (IEEE 802.3), Bluetooth, ZigBee, WireFire (IEEE 1394)

Research Assistant | Sept. 2007 to Aug. 2011

University of Saskatchewan, Saskatoon, SK, Canada

• Acquired solid background and understanding of (i) modulation and demodulation techniques in digital/wireless communications systems, (ii) error control coding, (iii) digital signal processing, and (iv) hardware description languages

• Analyzed, optimized, and improved performance of wireless networks with given constraints

• Investigated performance limits and developed transmission algorithms to deliver a better performance in wireless systems

• Used Matlab/Simulink to simulate and verify the performance of various wireless systems

• Designed several digital systems using hardware description language (e.g., an 8-bit microprocessor and a trac light controller)

• Wrote SystemVerilog codes to perform testing of an 8-bit microprocessor

Research Assistant | Sept. 2005 to Aug. 2007

Korea Advanced Institute of Science and Technology, Yuseong-gu, Daejeon, Korea

• Studied H.264/AVC software encoder optimization

• Developed a temporal error concealment method for H.264/AVC

• Used C/C++ to implement various protocols in H.264/AVC software

Lecturer Jan. 2004 to Aug. 2006

Posts and Telecommunications Institute of Technology, Hochiminh City, Vietnam

• Designed and implemented an automatic answering system, an automatic grading machine, and a digital exchange

– Intended products as necessary by engineering projects or consumer requirement

– Created product or system outline and complete drawings and schematics

– Produced digital circuit design, study and simulation

– Performed fault diagnostics to verify system functionality

– Managed expenditures within boundaries of project financial plan

– Prepared technical documentation which helps in future to study further

Test Engineer | Sept. 2003 to Aug. 2005

TMA Solutions, Hochiminh City, Vietnam

• Tested an element management system for Nortel's private branch exchange: wrote testplans, testcases, then ran

testcases and reported

• Collaborated with other test teams in Nortel Canada to keep test results up-to-date

• Ensured that defects, in both software and documentation, are removed before the products are delivered the customers

EDUCATION

Ph.D., Department of Electrical & Computer Engineering Aug. 2011

University of Saskatchewan, Saskatoon, SK, Canada

M.Sc., Information and Communications Campus Aug. 2007

Korea Advanced Institute of Science and Technology, Yuseong-gu, Daejeon, Korea

B.Eng., Department of Telecommunications Jan. 2003

Posts and Telecommunications Institute of Technology, Hochiminh City, Vietnam

TECHNICAL/COMPUTER SKILLS

• Machine learning: Deep Learning, CNN, RNN, LSTM, HMM, SVM, Decision Tree, Random Forests, Neural Networks, Data Mining, Caffe, TensorFlow

• Programming languages: Python, C, C++, Matlab

• Version controls: Git, Apache Subversion (SVN)

• IDE: Visual Studio, Eclipse, Qt, PyCharm

• Development boards: Raspberry Pi, Freescale i.MX6, Beagleboard

• Others: OpenCV, Emgu CV, OpenGL, OpenGl ES, scikit-learn, weka, numpy, Amazon Web Services (AWS) ...

HONORS AND AWARDS

• Alberta Innovates Industry r&D Associates, Canada 2012-2013

• College of Engineering Graduate Student Travel Fund University of Saskatchewan, Canada 2010

• University of Saskatchewan Student Travel Award, Canada 2008-2010

• Graduate Scholarship, University of Saskatchewan, Canada 2007-2010

• Global IT Technology Program Scholarship, South Korea 2006-2007

• Posts and Telecommunications Institute of Technology Scholarship, Vietnam 1998-2003

PUBLICATIONS

Journal Papers

[J12] Ha X. Nguyen, Chan Dai Truyen Thai and Nguyen N. Tran, “OSTBC Transmission in MIMO AF Relaying with M-FSK Modulation”, EURASIP Journal on Wireless Communications and Networking, 2015:22 DOI: 10.1186/s13638-015-0247-z.

[J11] Chan Dai Truyen Thai, Jemin Lee, Ha X. Nguyen, Marion Berbineau, and Tony Q. S. Quek, “Multi-Cell MultiUser Relaying Exploiting Overheard Signals”, IEEE Wireless Communications Letters, vol. 3, pp. 401-404, August 2014.

[J10] Ha X. Nguyen, Nguyen N. Tran and Hai T. Nguyen, “Performance Analysis of Adaptive Decode-and-Forward Relaying in Noncoherent Cooperative Networks”, EURASIP Journal on Wireless Communications and Networking, 2013:281 doi:10.1186/1687-1499-2013-281.

[J9] Ha X. Nguyen, Ha H. Nguyen, and Tho Le-Ngoc, “Amplify-and-Forward Relaying with M-FSK Modulation and Coherent Detection”, IEEE Transactions on Communications, vol. 60, pp. 1555-1562, June 2012.

[J8] Ha X. Nguyen and Ha H. Nguyen, “Selection Combining for Noncoherent Decode-and-Forward Relay Networks”, EURASIP Journal of Wireless Communications and Networking, 2011 2011:106. doi:10.1186/1687-1499-2011-106.

[J7] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Throughput Maximization in Non-Coherent Cooperative Networks”, IET Communications, vol. 5, no. 16, pp. 2386-2396, November 2011.

[J6] Ha X. Nguyen and Ha H. Nguyen, “Adaptive Relaying in Noncoherent Cooperative Networks”, IEEE Transactions on Signal Processing, vol. 58, pp. 3938-3945, July 2010.

[J5] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Signal Transmission with Unequal Error Protection in Relay Selection Networks”, IET Communications, vol. 4, pp. 1624-1635, September 2010.

[J4] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Signal Transmission with Unequal Error Protection in Wireless Relay Networks”, IEEE Transactions on Vehicular Technology, vol. 59, pp. 2166-2178, June 2010.

[J3] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Diversity Analysis of Relay Selection Schemes for Two-Way Wireless Relay Networks”, Springer Wireless Personal Communications, to appear.

[J2] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Optimization of Linear Dispersion Codes for Two-Way Wireless Relay Networks”, IEICE Transactions on Fundamentals of

Electronics, Communications and Computer Sciences, vol. E93-A, pp. 656-659, March 2010.

[J1] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Optimization of Linear Dispersion Codes for Wireless Relay Networks”, IEEE Signal Processing Letters, vol. 16, pp. 366-369, May 2009.

Conference Papers

[C7] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, ”Wireless Relay Networks with Alamouti Space-Time Code and M-FSK Modulation”, in Proc. The Fourth International Conference on Communications and Electronics (ICCE’12), Hue, Vietnam, August 2012.

[C6] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Noncoherent Amplify-and-Forward Relaying with Implicit Channel Estimation”, in Proc. IEEE Globecom-Wireless Communications Symposium, Houston, Texas, USA, December 2011.

[C5] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Signal Transmission with Unequal Error Protection in Relay Selection Networks”, in Proc. IEEE International Conference on Communications (ICC)-Wireless Communications Symposium, Cape Town, South Africa, May 2010.

[C4] Ha X. Nguyen and Ha H. Nguyen, “Adaptive Noncoherent Communications in Wireless Relay Networks”, in Proc. IEEE Wireless Communications and Network Conference (WCNC), Sydney, Australia, April 2010.

[C3] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Signal Transmission with Unequal Error Protection in Wireless Relay Networks”, in Proc. IEEE Globecom-Wireless Communications Symposium, Honolulu, HAWAII, USA, NovemberDecember 2009.

[C2] Ha X. Nguyen, Ha H. Nguyen and Tho Le-Ngoc, “Diversity-Embedded Space-Time Codes with Sigma Mapping of QAM Constellations”, in Proc. IEEE Vehicular Technology Conference (VTC), Calgary, AB, Canada, September

2008.

[C1] Nguyen Xuan Ha, Muchurl Kim, “A Temporal Error Concealment for Interleaving Mode of FMO in H.264/AVC”, in Proc. MSA’07/WORLDCOMP’07, Las Vegas, Nevada, USA, June 25-28, 2007.