**Professional Summary**

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| |  |  | | --- | --- | | A specialist is Exploratory Data Analytics (EDA) and Digital Signal Processing (DSP) with over 20 years’ experience in ranging from real-time signal analysis to segmentation and characterization of structured and unstructured data sets. Work heavily with anomaly exploitation, mitigation, and optimization to help layout system platform design requirements. Place high importance of working within team setting to get best results alternating between leadership and contributor roles.  Specific applications to EDA and DSP: | | | * Partner in designing and optimizing data base intake systems for Hadoop, MongoDB and SQL environments * Team leader connecting cross-functional teams responsible for BI/BD problem specification and ETL/Modeling problem solution, synthesis, and integration * Custom-design signal processing visualization and compression techniques for segmentation identification for GB/TB sized data sets * Data base experience includes: Health Care/ICD code record analysis, Share-Shift Analysis in Pharmaceuticals, Residential Home Surveillance, financial records. | * Patent-pending bi-directional algorithm suited for convolutional neural networks and computer vision image processing systems. * Utilize numerical engineering IDE process for fast visualization and to drive interaction between business intelligence and data analytics * Technical troubleshooter for medical, DoD, and other Industrial instrument electronic systems * Primarily use Matlab for rapid and agile upfront EDA but also experienced with R, C++, Python * Optimize machine learning neural network configurations for pattern recognition, fingerprinting, and voice recognition with patent pending technique. * Industry data experience ranges from structured digital RF and Acoustic communications to unstructured A/D recordings of biological systems |   **Education**  Ph.D., Engineering and Applied Science, University of New Orleans, 2003,*Bill J Good Physics Award*  M.A., Mathematics, Tulane University, 1995  B.A., B.Ed., SUNY Potsdam, 1992, Summa Cum Laude  A.A.S, Instrumentation Electronics, Monroe Community College, 1979  **Professional Experience**  Examples:  **James LaRue dba Jadco Signals October 2011 – Present**  **Consulting Scientist**     * Project changing visualization of chip manufacturing processing sensors * Initiate company-wide sensor to data-base quality assurance programs for SQL/MongoDB/Hadoop systems * Pattern recognition and algorithm development for home security/home comfort residential systems * Algorithm development for linking ICD9 medical codes for primary diagnosis and comorbid conditions * Data Mining of socioeconomic indicators for Share-Shift Analysis * Developed linear optimizations algorithms cost/profit analysis * Initiated research and re-design of Share-Shift Analysis program for pharmaceutical study * Help drive business intelligence and business development strategies through data insight. * Patent Pending algorithm crossing multilayer perceptron with associative memory matrices. * Applying for license for custom ECG2VIEW GUI based on novel processing application.   Lead investigator for Air Force Office of Scientific Research (AFOSR) Computer Vision program to design the first true feed-back neural network resulting in Patent Pending application modeled on associative memory. Follow on project with DARPA Innovation House. One of six teams chosen nationally for incubator program designing algorithms for real time video tracking. Achievement highlighted as Team Hybrid <http://c4i.gmu.edu/projects/innovation-house/>  In conjunction with ARL/Penn State, investigated alternative applications of optimizing bandwidth efficiency through Legendre and MLRS sequences applied to photo-acoustic imaging research study pertaining to voxel based morphometric analysis of brain MRI in context of autism.  Optimized biometric fingerprinting neural network lifting benchmark accuracy from 82% to 86%, by reducing the number of inputs.  Developed EEG/EKG Recurrence Plot algorithm utilizing speech-processing based techniques.  Led SPAWAR Summer research team focusing on neuroscience in context of EEG study of two frequency bands. Algorithm design successful for the 0-40Hz.  **Preventice Solutions-Houston January 2016 – Present**  **Algorithm Developer**  Develop noise segmentation algorithms Electrocardiograms.  **CGI, Atlanta, GA January 2014 – January 2016**  **Senior Data Scientist**  Lead Senior Data Scientist for CGI-Atlanta (2014-2016) working as consultant for business eco-system analysis and data extract, transform and load (ETL) programming through base-band approach to data portrayal; specifically maintain data plasticity in early stages of discovery.  **AFOSR/DARPA October 2011 – January 2013**  **Consultant-Machine Learning (see above)**    **Scientific Research Corporation, Charleston SC August 2008 – September 2011**  **Senior Scientist**  Lead team of software engineers for alternative communication study for real-time modeling and simulation project for channel model parameterization for integration of range dependent propagation HF path loss calculations with Navy network simulation software (AREPS-Advanced Refractive Effects Prediction System). Used Qualnet network traffic tool to assess digital communication bandwidth requirements for ocean based sensor array which integrated SPWAR provided RLP (Reliable Link Protocol) to analyze MANET performance involving land, sea, space, and air assets.  Assisted Boeing with oversight of modeling and simulation, analysis, and testing efforts on JTRS Wideband Networking Waveform and Soldier Radio Waveforms ported on surrogate hardware platforms. SDR waveform analysis was executed through Qualnet which acted as an emulator based on SPAWAR provided functional and performance requirements.  Develop briefings, status reports, formal guidelines, and implementation plans for relevant follow-on projects in the area of Intelligence, Surveillance, and Reconnaissance (ISR) data gathering for SPAWAR.  Chair AOC 2011 RDT&E Session five, Charleston, SC  **CACI, Rome, NY October 2004 – August 2008**  **Senior Scientist**  Lead research scientist for signals intelligence division at the Air Force Information Directorate specializing in communications, blind deconvolution, multipath mitigation, co-channel interference, characterizing random number generators. Customers included AFRL, RDECOM, and NRL.  **The National Academies, Washington, DC December 2003 – October 2004**  **Post-Doctorate**  Projects ranged from RF multipath mitigation to developing algorithms to expose money laundering schemes.  **Naval Research Laboratory, Stennis, MS September 2000 – December 2003**  **Graduate Student**  Underwater acoustics and submarine detection in shallow water, live underwater biological communications analysis  **Technical Skills**  Mathematical Applications: Linear Optimization, Clustering, Singular Value Decomposition, Neural Network and , Associative Memory for Pattern Recognition  Languages: Matlab (12 years), Python (two years), R (two years)  **Publications**  James LaRue1, Richard Tutwiler2, Dennison LaRue3, Exploiting the Underlying Cepstral Coefficients for Large Scale and Fine-Tuned EKG Time-Imagery Analysis, including R-R, P-R, R-T, and, R-PVC interval imaging.IEEE Applied Imagery Pattern Recognition Workshop, The Cosmos Club, Washington DC, October 2016, 1Jadco Signals,  2Professor Emeritus Applied Research Lab Penn State University/CEO LiveMotion3D LLC, 3Clemson University, Senior, Biomedical Engineering.  James LaRue, ‘True Analytics and Base Band Visualization: A Return to Tukey’s Exploratory Data Analysis’, Live Webinar for Charter Global Inc., May 2015. http://www.charterglobal.com/big-data-webinar-abstract/  James LaRue (Jadco Signals), ‘Exploiting Striatal Beat Frequency in Real and Artificial Neural Networks with Precision Signal Processing Concepts, Invited presentation for Space and Naval Warfare Center, Charleston, SC, January 2015.  James P. LaRue (Jadco Signals) and Yuriy Luzanov (AFRL-RIGC), “**Stabilizing bidirectional associative memory with principles in independent component analysis and null space**”, SPIE Defense, Security, and Sensing, 29 April - 3 May 2013, Baltimore, Maryland.  James LaRue (Jadco Signals) and Bill Copeland (HTCV Information), ‘Computer Vision Tasks: Robust discrimination of objects in clutter enabled by a novel computational model to emulate human recognition’, DARPA Innovation House, Washington, D.C., November 9, 2012.  Robert Barsanti (Citadel) and James LaRue (Scientific Research Corporation), ‘Peak to Average Power Ratio Reduction for Digital Video Broadcast T2’, IEEE Southeast Conference 2011, Nashville, TN.  James LaRue (Scientific Research Corporation), ‘Co-Operative and Pro-active Sensors’, ITEA Annual Technology Review Conference, Charleston, SC, July, 2010.  Rick Tutwiler (ARL/Penn State), Matthew S. Baran (ARL/Penn State), and James LaRue (AFRL/CACI), ‘Blind Source Separation for Digital Modulation Schemes’, Report to AFRL Information Directorate, 2008.  Adam Bojanczyk (Cornell University) and James LaRue (AFRL/CACI), ‘Singular Value Decomposition Analysis for Two Channel Signal Separation’, Report to AFRL Information Directorate, 2007.  Atindra Mitra\*, Lt. Sean Majo\*, James LaRue\*\*, Sean Young, L. Willemson\*, K. Sickles\*, ‘Distributed Architectures for Target Detection and Tracking’, MSS RADAR Symposium, May 2007. \* Wright Patterson AFB, \*\* AFRL/CACI  James Larue\*, Edmond Rusjan\*\*, Alfredo Vega\*, Adam Bojanczyk\*\*\*, ‘Multipath Detection and Characterization’, Passive Covert Radar Conference, October 2006, Syracuse, NY. \*AFRL, \*\* SUNYIT, \*\*\*Cornell University  James LaRue (National Academies) and Andrew Noga (AFRL Information Directorate), ‘FM Click Detection and Repair, Stage Two’, Signal Processing, Sensor Fusion, and Target Recognition XIV conference, Orlando, Florida. March 30, 2005. George E. Ioup, Juliette W. Ioup, James P. Larue, Natalia A. Sidorovskaia, Stan A. Kuczaj, Grayson H. Rayborn, and Christopher D. Walker, ‘Spectrogram analysis of low to mid frequency marine mammal clicks’, J. Acoust. Soc. Am. Volume 115, Issue 5, pp. 2556-2556, 2004. | |
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**Patent**

U.S. PROVISIONAL PATENT APPLICATION, EFS ID 16351917 App No. 61847685 Confir No. 4039

Receipt Date 18-Jul-2013 13:41:35 Title: J. Patrick’s Ladder A Machine Learning EnhancementTool : An Architecture for Combining Convolutional Neural Networks and Association Memory Matrices to Reduce Machine Learning Training, to Reduce Machine Execution Time, and to Produce Machine Intra-layer Connections.

(Patent Pending since August 2014 as JPAT, the Joint Proximity Association Template for multi-layer neural networks).

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AVIPE – the Audio Visual Intelligence Protocol Evaluator, for analog and binary signals. September 2016.