Daniel Davies

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1 408.455.3628

SUMMARY

Extensive experience developing complex, high performance algorithms in variety of limited-resource devices. Especially skilled at analysis of advanced, critical problems and creating feasible solutions through experimentation and physical modelling. I balance a broad knowledge of data science, machine intelligence, imaging/DSP filter design along with customer and marketing needs to produce a quality product. Interested in combining my expertise in developing intelligent sensors along with my recent UC Berkeley Master of Information and Data Science degree (8/17).

ACCOMPLISHMENTS

✦ **Big Data, Machine Learning, Pattern Recognition**
- Master of Information and Data Science, UC Berkeley, School of Information (GPA: 3.6/4.0).
- Development of pattern recognition, machine intelligence algorithms, classifiers (RandomForests, SVM, Hamming), neural nets (LSTM,RNN), genetic algorithms, state machine, segmentation, and other various statistical and non-linear DSP filters for radar, IR, security, and power grid industries.
- Designed, developed automatic threshold anomaly detector for smart grid monitor.
- Successful improvements in performance and efficiency of world class, competitive iris recognition algorithm.
- Met or exceeded Mil-spec requirements to win multiple contracts in both radar and IR target classifier design.

✦ **Imaging Characterization and Algorithm Development**
- Module Development: developed control loop solutions AE, AF, AWB (auto-focus/white balance/exposure). Developed sensor ISO characterization tools, methods.
- Created FAE/Customer Tuning Tool App, allowing quick, individualized customer development.
- Created Customer Image Quality Validation tool suite to assure customers' requirements are met (OECF, Noise, Color).
- Representative to Cell Phone Image Quality (CPIQ) consortium

✦ **Computer Security**
- Fully designed, developed, and validated embedded cryptographic library for HW assisted smart card reader.
- Biometrics algorithm development: analyze and improve algorithms for different resolution fingerprint sensors.
- High quality, cryptographic core library has been *error free* with no needed maintenance for at least 5 years after production roll out.

SKILLS

Languages: Matlab, R, Python, C, C++, ARM Assembly, SQL
Technologies: Lidar, Imaging Sensors, AWS, GPS, Softlayer, MS Office, CVS/SVN, Photoshop/Illustrator , Git/Github
Disciplines: Classifier/feature extraction design, Machine Learning, NLP, ANN (LSTM,RNN), control theory/systems, Kalman filtering, pattern recognition, image/signal processing, adaptive filtering, genetic algorithms, AI/machine intelligence, Fractal/Chaos Theory, wavelets, Camera AE/AF/AWB, Color theory, ISO spec implementations

EDUCATION

Master of Information and Data Science, University of California, Berkeley, School of Information **12/17**
Concentrating on experiment design, machine learning, statistics, time-series analysis, Tensorflow, NLP
Projects include:
- Fake News Faux Real: Using NLP and Network nodal analysis of reference links to authenticate news article sources
- Detecting Bias in News using analysis of ML Bayesian, Random Forest, Tensorflow classifier techniques along with lemmatization and entity recognition preprocessing
- Statistical Analysis of Women's Soccer twitter feeds firehose on AWS/S3

Bachelor of Science in Electrical Engineering, University of Florida, Gainesville, FL **12/81**
Specialties: Communications, systems, information theory, control theory

EXPERIENCE

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Camera Test Eng Contract, Embedded Resource Group (Yoh&Zimmerman) San Francisco Bay CA 1/21 – 12/21
Defined and developed Depth Characterization procedure along with specialized 3D printed imaging target for Lidar sensor. Made multiple studies on various characteristics of sensor including minimum detectable depth, az, el.

HW Validation Engineer III Contract, Mindlance Inc (Client: Intel) San Francisco Bay CA 6/19 – 11/20
Developed code and processes based on ISO specifications for validating image quality (noise, dynamic range, resolution) as well as Intrinsic/Extrinsic camera parameters (distortion, rotation/translation matrices) for multi camera 3D model generation. Analyses for impact of image quality and reprojection/triangulation error on results

Medical Leave 5/18 - 6/19

Sr SW Engineer; Triple Crown Consulting (Client: Samsung) 2/18 - 5/18
✦ Built tools using Python (scikit-learn/PyTorch), C++, and OpenCV to develop and analyze several SVM classification models, develop and analyze feature vectors and dimension reduction, and image analysis to assist QA to defect detection.

Research for Data Science Career 12/17 - 2/18

UC Berkeley Completion of Master's in Information & Data Science (see Education) 3/17 - 12/17

Sr Software Engineer, Sentient Energy, Burlingame CA 8/11 - 3/17
✦ Successfully designed, implemented (C/C++) single class multivariate classifier to detect anomalies in smart grid sensor.
✦ Designed, implemented set of Communicating Faulted Conductor Indicator filters in (C/C++), as well as various general DSP filters including bandpass IIR and statistical feature generators.
✦ Re-implemented C++ algorithms from floating point to fixed point Library. Designed and implemented voltage/current phase detection filter.
✦ Designed C++ unit tests and QA test suite for Agilent Arbitrary Waveform Generator to test functionality.

Sr Software Engineer Consultant, Los Gatos CA 10/10 - 8/11
✦ Algorithm and C-model development for high ISO camera imaging pipeline. Designed and developed filters in Octave and C/C++ to analyze image quality, and enhance image processing filtering, including noise reduction, sharpening, and non-linear filters.

Sr Software Engineer, Algorithm Engineer, Aoptix Technologies, Campbell CA 4/08 - 10/10
✦ Designed and validated embedded iris recognition algorithm implementation, support libraries, and test suite using embedded C and Python. Performed performance trade studies on environmental and systematic parameters and developed filters to enhance robustness and overall performance.
✦ Using IPP (Intel Performance Primitives) libraries and OpenCV, obtained 50x speed enhancement and bit-for-bit accuracy.
✦ Multivariate parameter optimization studies. performance characterization for multiple linear and non-linear filters.

ADDITIONAL EXPERIENCE

Image and Signal Processing

Sr Technical Marketing Engineer/Staff Imaging Engineer, Nethra Imaging, Cupertino CA
Application Engineer/ISP SW Engineer, ICMedia, Santa Clara CA
Applications Engineer, National Semiconductor, Santa Clara CA
Member Technical Staff, NuCORE Technologies, Sunnyvale, CA

Developed image processing pipeline and subsequent tuning apps for CMOS imaging sensor, including all aspects of image creation, color accuracy, adaptive demosaic, gamma, smooth/sharpen, bad pixel correction, AE, AF, AWB. Developed ISO (color accuracy, noise, resolution) sensor characterization tools (C++) for documentation of sensor/ISP capabilities.

Security

Principal Engineer, Wave Systems Corp (N-able Tech) Cupertino, CA

Advanced fingerprint feature detection and extraction algorithms. Designed and developed DES, SHA, RSA, and BigMath cryptographic modules (embedded C ARM7) for intelligent smart card reader system-on-chip.

Machine Learning, Computer Vision, Image and Signal Processing

Sr. Design Engineer, System Dynamics Intl, Orlando, FL
Design Engineer, Martin Marietta, Orlando, FL
Design Engineer, Texas Instruments, Dallas, TX

Successfully developed multiple adaptive linear and quadratic classifiers, non-linear and statistical algorithms for image segmentation and feature extraction, and genetic optimization in radar detection and radar/IR sensor fusion systems (F22, Apache Longbow, black).