TODO ~ IN PROGRESS

BRIAN P. LANDY

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Education

Rochester Institute of Technology — Rochester, NY
Master of Science in Computer Engineering, GPA: 4.0 — May 2021
Rochester Institute of Technology — Rochester, NY
Bachelor of Science in Computer Engineering, GPA: 3.83 — May 2020

Publications

- "You Only Look Back Once [YOLBO]. A Low Latency Object Tracker Based on YOLO and Optical Flow", *IEEE Access* [Published]
- "Deep Learning Methods for Sign Language Translation", *Transactions on Accessible Computing* [Accepted]

Experience

Software Engineer — August 2021 – 2022

Philips Research North America/Philips Ultrasound, Cambridge MA

- *TODO this section here*
- Gathered requirements and implemented features for mobile Ultrasound Applications on iOS and Android.
- Worked closely with research teams responsible for algorithms to be integrated into mobile platform.
- Larger responsibilities include development of API for mobile Ultrasound.

Student Researcher, RIT *Ravven Labs*, (MOOG Funded) — July 2020 – May 2021

Rochester Institute of Technology, Rochester NY

- Developed algorithm combining 2D motion and CNN based object localization methods for low latency edge tracking.
- Strategized best methods for improving framerate and reducing latency in image processing for embedded platforms.
- Performed literature searches on motion techniques and quantization aware training of neural networks inference on FPGA
- Prototyped motion and CNN model and profiled algorithm performance, ported to NVIDIA Jetson TX2.
- Worked with professor on tasks and hosted update meetings to communicate to stakeholders, was self organized etc FIX

Student Researcher, Machine Intelligence Laboratory (NSF Funded) — October 2019 – June 2020

Rochester Institute of Technology, Rochester NY

- Engaged in research effort of ablation study on several Deep Learning based Sign Language Translation models.
- Modified SOTA Deep Learning models to implement architectural changes and collect results with other input features.
- Presented weekly findings on results, developments, and concerns regarding progress of work.
- Optical Character Recognition with Seneca Bible to produce data for Deep Learning Models for language translation.
- Evaluated and selected prominent OCR models for Image to Text translation.
- Worked with Kraken OCR and Tesseract OCR to convert PDF Seneca Bible to text.

Software Engineer Intern, Patient Worn Monitoring Research and Development — May 2019 – August 2019

Philips Healthcare, Andover MA

- Built automated unit tests for software, increased code coverage and improved stability by diagnosing and solving crashes; communicated development issues and blockers to team members and committed code fixes into production.
- Used GCOV and Coverity for static code analysis and monitoring of code coverage by unit tests written with Google Test.
- Drafted IEC 62304 Compliant Documentation for all work completed.
- Assisted newer interns with tasks and provided knowledge of work environment when needed.
- Contributed through use of Microsoft TFS and am well-versed in Version Control and associated use patterns (Git).

Software Engineer Intern, Apnea and Activity Monitoring, Patient Worn Monitoring R&D — June 2018 – December 2018

Philips Healthcare, Andover MA

- Created an embedded C++ Sleep Apnea Detection feature and performed system testing/profiling.
- Wrote thread-safe, design-conscious programs in multithreaded embedded Linux environment.
- Ported Windows-based research team libraries for use in POSIX systems.
- Scripted in Python for client/server work and other utility and profiling scripts.
- Reported metrics for USB power, wireless radio bandwidth utilization (Wireshark), and CPU usage.
- Used findings to optimize code and reduce resource consumption as well as demonstrate improved performance.
- Worked in multidisciplinary environment with other engineers, designers, clinical specialists, product managers, marketing professionals, and researchers. Questions I asked team members influenced some of my goals while working on my projects.
- Constructed a client-server feature for socket-based file transfer to a python web server from the embedded C++.

- Created a fully functional demo of what a clinician could expect when reviewing patient data for diagnosis. Used Flask web framework and other web dev tools to organize project structure for presenting the patient information.
- Assembled a presentation filled with algorithm explanations, motivation for use of certain onboard technology, explanation of my own software design choices, flowcharts/data diagrams and resource utilization information.
- Laid out various next steps and improvements to make.
- Activity Monitoring of Patient via accelerometer
- Ported algorithms and evaluated performance in an embedded environment. Demonstrated impact and assessed viability.
- Laid out potential designs and inclusion plan for larger project. Recommended several next steps.

Verification Engineer Intern, Software Tools Department May 2017 – December 2017
Crestron Electronics Inc., Rockleigh NJ

- Developed automated tests with VBScript to perform UI functionality tests and confirm ideal behavior of software products.
- Used TestComplete and Jenkins to create and deploy automated tests.
- Reported bugs, overhauled old test code, added new feature tests, and created brand new tests for new products.
- Delivered an XML parser that traversed generated project files and extracted information to create a detailed database. XML was used in a test suite I overhauled, which created full projects automatically. This eliminated overhead for test case development.

Skills

Software

- **Languages:** C/C++, Python, Java, VHDL/Verilog, MATLAB, Assembly, VBScript, C#, LabView.
- Strong programming and debugging skills.
- Algorithms, data structures and time complexity. Multi-threaded and thread-safe programming, Object Oriented Programming, Web Sockets, limited resource programming, and software design principles.
- Embedded Systems programming with C/C++ and Assembly. FreeRTOS, Interrupts, PWM, ADC/DAC signal conversions, multithreaded environments (POSIX), communication protocols, library integration, and porting.
- Unity for Augmented Reality App development, visualizations, and some fun.
- Knowledge of IEC62304 standard for Compliant Software and Documentation.

Computer Vision and Machine Learning

- TensorFlow/Keras, PyTorch, darknet, CUDA development, OpenCV (Python/C++), NumPy, CuPy, Scikit-learn, Matplotlib.
- Capable of writing clean vectorized code with an emphasis on edge deployment of algorithms and resource constrained computing.
- Deep Learning, Object detection and localization, motion processing algorithms, stereo vision and disparity, image processing, machine learning fundamentals, transfer learning, custom model development, data pre-processing and augmentation.
- In depth development on, and profiling of, NVIDIA Jetson TX2.
- Academic following of trends in field and novel developments; able to read and reproduce methods and results from papers, learn new frameworks/tools, and troubleshoot effectively.
- Several year's experience with reproducing research work and developing and debugging code bases for complex algorithms.

Hardware

- VHDL/Verilog implementation of digital circuits. Verified with simulations and deployment to an FPGA.
- Model Based design and HLS with Simulink.
- Computer Organization Concepts: Performance, ISA implementation, CPU design, Memory Systems, Datapath Design.
- Signal Conditioning with circuits, Analog to Digital Conversions and Digital Signals Processing and Filtering.
- ARM development, embedded Linux, Atmel Microprocessors, FPGAs, Oscilloscopes, Multimeters, Power Supplies, various sensors/actuators and protocols, filter design, amplifier design, DSP, signal conditioning.
- Most development work is with STM32 line of products and toolchains.

Projects

- Augmented Reality Surgery Trainer – C#, MRToolKit, Unity | Microsoft HoloLens surgery simulator for training.
- RIT DCGAN – Python, PyTorch | Deep convolutional generative adversarial network to produce images of RIT campus, formal IEEE paper.
- Healthnet – Python, Django | web application in Python and Django framework to manage multi-hospital networks that allowed patients, doctors, nurses, and administrators to interact with the system. Practiced agility.
- Lerp – Java | Math expression compiler that parsed expressions, created trees of operations and variables, and converted that to set of executable machine instructions. Instructions were handled by a simulated machine class.
- FPGA Designs VHDL, Modelsim, Vivado | Designed and tested digital circuits including a dynamic ALU capable of resizing for any even N-bit operands, a Static RAM module with a built-in memory controller, and a full Vending Machine FSM.
- LED Light Controller – C++ | Built controller and driver for a strip of LEDs over SPI. With an STM32 microcontroller, I wrote a state machine to control several selectable routines. Made an input interface of buttons and knobs with an I2C OLED display for the user.
- Guess the number – C/ASM written game that included PIT interrupts, user input interrupts and data structures.

TODO:

LINKEDINS GOOGLE SCHOLAR
UPDATE PUBLICATIONS SECTIONS
SIMPLIFY, REDUCE AND PRUNE SECTIONS
LOOK AT MOST PARSEABLE RESUME FORMAT
NEW SECTION INFO
-DART FLUTTER, GRPC, API DESIGN,SSL, CHECK PERSONAL DOCUMENT
FIX UP MARGINS AND BULLET POINT SPACINGS
TOOLS LIST SINGLE ELEMENT NAMES ONLY
ONE LINERS FOR ALL, NO MULTI LINE
COMBINE AND MULTI SECTION MACHINE INTELLIGENCE LAB
MENTION TOOLS USED IN WORK SECTIONS
COMPRESS SECTIONS
REMOVE DEAD INFO (MAKE ROOM FOR MORE NEW STUFF)
HIGHLIGHT TOOLS AND KEY WORDS
REDUCE REDUCE REDUCE

Rochester Institute of Technology, Rochester NY August 2019 – May 2020
Teaching Assistant, Digital Signal Processing (6hrs/Week)

- Graded and returned assignments within an agreed upon time window.
- Answered questions from students and administered help on projects and assignments.

Rochester Institute of Technology, Rochester NY January 2020 – June 2020
Student Researcher, Machine Intelligence Laboratory

- Engaged in research effort of ablation study on several Deep Learning based Sign Language Translation models.
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Rochester Institute of Technology, Rochester NY October 2019 – December 2019
Student Researcher, Machine Intelligence Laboratory, *NSF funded work*

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