John F. Hughes

Technical Skills

Hardware:
Metrology: Scanning electron microscope, x-ray diffraction/fluorescence, atomic force microscopy, Leica microscopy, profilometry, semiconductor parameter analyzers
Processes: Physical vapor deposition (e.g. sputtering), low-pressure chemical vapor deposition, high-energy ion implantation, photolithography, thermal processing (e.g. wet/dry oxide growth, sintering), wet chemical etching, surface mount technology
Software:
Languages: Python (intermediate), SQL (intermediate), C++ (limited working proficiency)
Environments: Jupyter Notebook, Google Colab, PyCharm, CodeLite
Libraries: tensorflow/keras, scikit-learn, pandas, numpy, matplotlib, seaborn (Python)

Work Experience

L3Harris Technologies — **San Diego, CA**

Space Materials & Process Engineer II — **Aug 2019 – Present**

- Leads manufacturing/process engineering efforts for three spaceflight product lines, including handling device non-conformances, training assemblers, and ensuring spaceflight materials meet NASA standards.
- Designs tools using SolidWorks and 3-D printed them for use on main spaceflight manufacturing line.
- Develops Python scripts to automate compilation of hundreds of lines of data regarding materials and processes for deliverable hardware and have successfully cut time to compile lists by 80%.

Optical Process Engineer II — **Jan 2018 – Aug 2019**

- Developed and optimized fiber-optics processing via design of experiments and achieved 95% process yield for low-loss optical couplers
- Performed destructive testing (e.g. stress, temperature cycling) on both materials and manufactured products to analyze optical functionality in harsh conditions.
- Utilized machine learning algorithms (e.g. k-nearest neighbors, k-means clustering, multilayer perceptron) via scikit-learn to classify microscopic images for IR&D efforts and achieved a model accuracy of 98%.

Northrop Grumman Corporation — **Baltimore, MD**

Technical Engineering Intern — **May 2016 – Aug 2016**

- Developed design of experiments to determine optimal processing conditions of a chemical-mechanical planarization process and was able to mitigate device non-uniformity by 50%.
- Diagnosed problematic photolithography processing of silicon wafers through root-cause analysis of thermal processing modules and relieved backup of over 50 wafers.
- Analyzed devices (e.g. I-V characterization, thin-film profilometry) to ensure wafers in emerging processes were within specifications.

Education

Rochester Institute of Technology — **Rochester, NY**

M.S., Microelectronic Engineering, August 2017
Thesis: Sensitivity Enhancement of Metal-Oxide Chemical Sensors for Detection of Volatile Organic Compounds

- Optimized thin-film indium tin oxide material to increase its chemical sensitivity to ethanol by 32.5% through variations in film thickness, material structure, and device operating temperature.
- Developed and optimized robust chemical processes to create chemical sensors.

B.S., Chemical Engineering, May 2015

Independent Projects

Data Science Project Portfolio

- Developed website in Python using Django as a framework to showcase personal programming projects completed in pursuits of learning programming and data science fundamentals (website: johnfhughes.net).

* personal data omitted from this copy