Kavin Manickaraj

Engineer with 7 years of experience with energy efficiency and renewables

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Education

- **Georgia Institute of Technology** Atlanta, GA
  M.S. Mechanical Engineering; High Honors *Aug 2011 - May 2015*
  B.S. Mechanical Engineering; Highest Honors; Co-op Program *Aug 2006 - May 2011*

Skills

- **Computer Languages**: Python, MATLAB, SQL, Javascript, C++
- **Machine Learning Frameworks**: Scikit-learn, Tensorflow, Keras, XGBoost
- **Data Analysis**: Python libraries including: Pandas, SciPy, Matplotlib, Seaborn; Microsoft Excel; OriginPro
- **Engineering Tools**: AutoCAD, SolidWorks, COMSOL, Gambit, LabView
- **Thin-film manufacturing**: Electron-Beam, Ion-Assisted, and Chemical Vapor Deposition; Molecular Beam Epitaxy; RF/DC sputtering; Photolithography

Experience

- **Senior Project Manager** *Tribal Energy, Atlanta, GA* *May 2018 - Nov 2018*
  - Worked with the Native American Venture Fund to start a solar distribution company that partners with Native American Tribes to strategically implement utility-scale solar projects.
  - Assisted with developing necessary work-flows between international solar manufacturers, U.S. Customs and Border Protection, and domestic customers.
- **Project Engineer for Research & Incubation** *Southface, Atlanta, GA* *Aug 2015 - May 2018*
  - Led a Building America/DOE research grant focused on next-generation smart ventilation and its effect on indoor air quality.
  - Built and developed low-cost indoor air quality sensors on a C++ platform, partnered with an industry specialist to scale them with mesh-network protocols, and utilized MATLAB and OriginPro to analyze collected data.
  - Co-authored a white paper investigating solar production and financing for non-profit organizations in Georgia.
  - Developed solar electricity rate calculators for small commercial buildings under various Georgia EMC tariffs.
  - Performed ASHRAE Level II energy audits for small commercial buildings
  - Created and tested building performance and energy code calculators built on an Excel platform.
- **Graduate Research Assistant** *Georgia Tech Research Institute, Atlanta, GA* *Jan 2012 - May 2015*
  - Developed copper zinc tin sulfide (CZTS) solar cells in planar and three-dimensional configurations using various deposition techniques to be tested in both terrestrial and space environments.
    - Cells were tested on-board the International Space Station beginning January 2016 and returned May 2018.
  - Developed CdTe quantum dot (QD) nanocomposites for radiation detection purposes as an alternative to conventional single-crystal scintillators by incorporating QDs in silica sol-gels and polymer matrices.
- **Process Engineer** *Internship - Twin Creeks Technologies, San Jose, CA* *May 2011 - Aug 2011*
  - Investigated issues within a proprietary amorphous silicon (a-Si) growth process preventing expected efficiency gains of "heterojunction with intrinsic layer" (HIT) solar cells, and directly improved the manufacturing process.

Certificates

- **Coursera**: Machine Learning
- **Deeplearning.ai**: Neural Networks and Deep Learning, Improving Deep Neural Networks, Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models

Publications

- K. Manickaraj, B. K. Wagner, and Z. Kang, "Radiation detection with CdTe quantum dots in sol-gel glass and polymer nanocomposites," Proc. SPIE, vol. 8725, p. 87252L–87252L–7, 2013.
- M. Redmond, K. Manickaraj, O. Sullivan, S. Mukhopadhyay, and S. Kumar, "Hotspot cooling in stacked chips using thermoelectric coolers," IEEE Trans. Components, Packag. Manuf. Technol., vol. 3, no. 5, pp. 759–767, 2013.