Andrew Chandler Jones
AndrewCJones98@gmail.com
(925) 784 0029

Research Interests:

Statistical Machine Learning Theory, Explainable Artificial Intelligence, Algorithm Design and Analysis, Optimization Methods, Quantum Computation

Experience:

- **Lawrence Berkeley National Lab**, *Scientific Engineering Associate*   July 2022 - Present
  - Developed and implemented algorithms for gamma-ray spectroscopic anomaly detection and identification
    - Artificial Neural Networks (TensorFlow/Keras)
    - Nonnegative Matrix Factorization (NumPy)
  - Developed a Monte-Carlo simulated urban gamma-ray radiation search dataset
  - Improved computational efficiency of existing algorithms, enabling real-time analysis of gamma-ray spectral data collected from mobile detector systems
- **Butlr***, Machine Learning Scientist*   July 2020 - March 2022
  - Researched and developed neural network-based methods for object detection in low-resolution, time-series images (TensorFlow/Keras)
  - Developed a transformer-based generative adversarial network for generation of realistic low-resolution thermal image data (PyTorch)
  - Designed efficient algorithms to increase the accuracy of existing detection methods

Education:

University of California, Berkeley (2016 - 2020), BA in Applied Mathematics (Concentration in Computer Science)

Publications and Presentations:

- A.C. Jones, M.S. Bandstra, S. Faaland, Y. Lai, R.J. Cooper, *An Adaptive Approach to Spectroscopic Anomaly Detection and Isotope Identification*, 9 November 2023, IEEE Nuclear Science Symposium and Medical Imaging Conference
- A.C. Jones, M.S. Bandstra, J.M. Ghawaly, Jr., Y.S. Lai, T.H.Y. Joshi, B.J. Quiter, *Characterizing the Performance of Spectroscopic Anomaly Detection and Identification Algorithms with a Synthetic Urban Search Dataset*, 8 November 2023, IEEE Nuclear Science Symposium and Medical Imaging Conference
- M. S. Bandstra, D. E. Archer, J. D. Daughhetee, J. M. Ghawaly, Jr., A.C. Jones, T. H. Y. Joshi, A. Nachtsheim, A. D. Nicholson, D. E. Peplow, N. Prins, B. J. Quiter *Modeling the Performance of Gamma-ray Source Detection and Identification Algorithms using Spectral Distinctiveness and Similarity Metrics*, 6 November 2023, IEEE Nuclear Science Symposium and Medical Imaging Conference
- M.S. Bandstra, J.C. Curtis, J.M. Ghawaly Jr, A.C. Jones, T.H.Y. Joshi, *Explaining machine-learning models for gamma-ray detection and identification.* 20 June 2023, PLoS ONE 18(6): e0286829. https://doi.org/10.1371/journal.pone.0286829
- D.Y. Parkinson, J.I. Pacold, M. Gross; T.D. McDougall, A.C. Jones, J. Bows; I. Hamilton; D.E. Smiles, S. De Santis, A. Ratti, D.E. Pelt, J. Sethian, H. Barnard; J. Peterson, A. Ramirez-Hong, A. MacDowell, D. K. Shuh, *Achieving fast high-resolution 3D imaging by combining synchrotron x-ray microCT, advanced algorithms, and high performance data management,* 8 June 2018 doi: 10.1117/12.2307272

Teaching Experience:

Mathematics Tutor at UC Berkeley Student Learning Center (Jan 2018 - May 2020)