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SKILLS

Machine Learning:
- Regression
- Support Vector Machines
- Random Forests
- Gradient Boosting
- KNN Algorithms
- Artificial Neural Nets (ANN)

Programming:
- Python (Data Science Stack)
  - Numpy
  - Sklearn
  - SQlite
  - Beautiful Soup
  - Pandas
  - Scipy
  - Keras
  - Tensorflow
- Octave
- Matlab
- SQL

Other:
- Project management
- Sensor development
- Microsoft Office
- Web scraping
- CAD design
- FEM simulation
- Additive manufacturing

WORK EXPERIENCE

Post-Doctoral Researcher **May 2017 – Present**
TF Health Corporation *Tempe, Az*
- Developed a CNN (Convolutional Neural Network) based quality control system using Python (Keras/Tensorflow)
- Developed a simple GUI and script to take a set of data, generate a multivariate calibration, give relevant statistical analysis, and generate a QR code image of calibration parameters using Python
- Performed experimental design and statistical analysis to evaluate system performance in Python
- Applied statistical analysis methods to develop a multiple regression method for sensor calibration in Python
- Modeled, built, and validated an improved low-cost flow meter using computational fluid dynamics

Graduate Research Assistant **May 2013 – May 2017**
Arizona State University *Tempe, Az*
- Developed and scripted a signal processing algorithm for highly ordered data in Matlab
- Optimized designs, algorithms, and production processes to minimize variance and error in Matlab
- Characterized sensor coatings and other related materials

Intern **May 2012 – May 2013**
TF Health Corporation *Tempe, Az*
- Built the sensor coating production process still used for the flagship product
- Modeled and wrote the sensing algorithms still used in the current flagship product in Matlab

EDUCATION

Ph.D. Chemical Engineering **May 2017**
Arizona State University *Tempe, Az*
- 8 Publications (5 primary, 3 secondary)
- 5 Travel grant awards and 1 fellowship award

BSE. Chemical Engineering **May 2013**
Arizona State University *Tempe, Az*
- President of the Chem-E-Car Club in 2012-2013

PERSONAL PROJECTS

- **Kaggle Competitor**: LANL Earthquake prediction, scored in top 50% of competitors (so far)
- **Web Scraping**: Scraped Nature in order to see trends in word usage over time. Created an animated bar graph comparison to show trends from 1880 to now.

PUBLICATIONS

- Liu, N. Y., Deng, Y., Tsow, F., **Bridgeman, D**., Xian, X., Dean, J. J., ... & Forzani, E. (2018). Evaluation of a Thermal-Based Flow Meter for Assessment of Mobile Resting Metabolic Rate Measures. *Journal of Sensors*, *2018*.
- **Bridgeman, D.**, Tsow, F., Xian, X., Chang, Q., Liu, Y., & Forzani, E. (2017). Thermochemical Humidity Detection in Harsh or Non-Steady Environments. Sensors, 17(6), 1196.
- **Bridgeman, D.**, Tsow, F., Xian, X., & Forzani, E. (2015). A new differential pressure flow meter for measurement of human breath flow: Simulation and experimental investigation. *AIChE Journal*.
- Xian, X., Quach, A., **Bridgeman, D**., Tsow, F., & Forzani, E. (2015). Personalized Indirect Calorimeter for Energy Expenditure (EE) Measurement. *Glob J Obes Diabetes Metab Syndr*.
- **Bridgeman, D**., Corral, J., Quach, A., Xian, X., & Forzani, E. (2014). Colorimetric humidity sensor based on liquid composite materials for the monitoring of food and pharmaceuticals. *Langmuir*, *30*(35), 10785-10791.
- Zhao, D., Xian, X., Terrera, M., Krishnan, R., Miller, D., **Bridgeman, D**., ... & Tao, N. (2014). A pocket-sized metabolic analyzer for assessment of resting energy expenditure. *Clinical Nutrition*, *33*(2), 341-347.
- **D. Bridgeman**, D. Zhao, F. Tsow, X.J. Xian, and E. Forzani, "Chemical Bio-Sensing with Mobile Technologies - *A Non-Invasive and Inexpensive Capnography Device for the Monitoring of COPD and Other Pulmonary Diseases*", Proceedings of IEEE Engineering in Medicine and Biology Society (EMBS), 2015. (Conference Proceeding)
- **Bridgeman, D**., Zhao, D., Tsow, F., Xian, X. J., & Forzani, E. S. (2014, October). A non-invasive and inexpensive capnography device for the monitoring of COPD and other pulmonary diseases. In *Healthcare Innovation Conference (HIC), 2014 IEEE* (pp. 1-4). IEEE. (Conference Proceeding)