

# Kaveh Akbari

[Kaveh\\_Akbari@yahoo.com](mailto:Kaveh_Akbari@yahoo.com) | +1 (614) 254-9878

## Summary

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Data scientist with 2 years of experience on data processing, predictive modeling and pattern recognition in large-scale datasets. Strong background in Operations Research, Mathematics and Statistics gives me an advantage in understanding of Machine Learning techniques and Statistical learning methods.

## EDUCATION

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### The Ohio State University

Columbus, OH

#### **Master of Operations Research; Minor in Mathematics and Statistics**

Jan 2017 – Aug 2018

#### **Project Supported (NSF): U.S. Army Training and Doctrine Command (TRADOC) Analysis Center**

Monterey,

CA/Columbus, OH

Aug 2016 – Sep 2017

- Many malware scanners and/or intrusion detection systems fail to take context into account. A cyber context-based classifier and charter application is developed in shiny package of R (+1000 lines). The probability of an alert is a true concern and is predicted using Logistic Regression based on the context. The app also creates demerit charts (control charts) with some extra features that detects abnormalities in the scanned computers.

#### **Tensor completion problem for high-dimensional cyber vulnerability data**

- Periodic scans of known vulnerabilities in the hosts contain up to 50% missing data. A tensor completion approach is implemented to predict these missing values through statistical learning in a big dataset (500 hosts, 500 type of vulnerabilities, 3 month). The results showed high sensitivity (~89%), specificity (~99%) and around 95% of the hosts were predicted with less than 50% error.

#### **Sequential investment planning of a building's energy system**

- Investment planning models plan for a fixed horizon and often suggest buying machineries in advance. We implemented a Reinforcement Learning method from Machine Learning techniques to develop a framework that gives the ability of sequential investment planning under uncertainty.

#### **Papers:**

- Allen, T. T.; Sui, Z.; and Akbari, K. "Exploratory Text Data Analysis for Quality Hypothesis Generation". Submitted to Journal of Quality Technology.

### Tehran University

Tehran, Iran

#### **Master of Industrial and Systems Engineering**

Aug 2012 – Jan 2015

#### **Investment planning of an energy system under uncertainty using Robust Optimization (RO)**

- Developed a mixed-integer robust optimization model that helps make decisions under inherent uncertainty and lack of data. The results suggested that demand and price uncertainties are not a decisive factor in investment planning of a building's energy system.

#### **Restructuring in the US electricity market and its efficiency – Panel Data analysis**

- Implementing a Panel Data analysis (multidimensional regression) to study whether the restructuring was effective.

#### **Papers:**

- More papers are available at google scholar: <https://scholar.google.com/citations?user=KD25mzTNezUC&hl=en>

### Tabriz University

Tabriz, Iran

#### **Bachelor of Industrial Engineering**

Aug 2008 – Jan 2012

#### **Selecting the best electricity transmission route from Urmia power plant to Balanj station - A MADM approach**

- Defining attributes and implementing Multi-Attribute Decision Making (MADM) approach to choose the best transmission line with three different methods.

#### **Papers:**

- VS. Nahaei, K. Akbari, H. Shahmoradi, P. Rasool Amini., Selecting best electricity transmission route from Urmia power plant to Balanj station – A MADM approach, in Proceedings of the 9th International Industrial Engineering Conference, Tehran Iran, 2013.

## SKILLS & INTERESTS

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**Machine Learning:** Reinforcement learning, Supervised Learning (SVM, Regression), Unsupervised learning (Clustering), Anomaly detection

**Statistics:** Regression, Statistical learning

**Operations Research:** Integer programming, Linear and Nonlinear programming, High-dimensional data analytics

**Management sciences:** Scheduling, maintenance and inventory planning, supply chain, simulation and quality control

**Leadership:** Elected student chapter president of OSU INFORMS, group leader in the SEAL Laboratory

**Computer:** R and Shiny package; MATLAB, VBA; GAMS

**Language:** English (fluent), Persian (native), Arabic (basic), Azeri (fluent)