SABER ABDOLI

ABDOLISAM@GMAIL.COM, PHONE: 469-233-0142

EDUCATION

PH.D. | DEC. 2016 | SAINT LOUIS UNIVERSITY, SAINT LOUIS, MO

- Major: Civil/Transportation Engineering
- Dissertation Topic: "A Forward Collision Warning Risk Assessment Model based on Bayesian Inference"

M.SC. | AUG. 2011 | AZAD UNIVERSITY, IRAN

- Major: Geographic Information Systems and Remote Sensing
- Thesis Topic: "A Context-aware Spatial Information System for Drivers' Safety"

B.SC. | JUL. 2006 | AZAD UNIVERSITY, IRAN

- Major: Civil/Geomatics Engineering

PROFESSIONAL LICENSES/CERTIFICATES

- Passed the NCEES Fundamentals of Engineering Exam, 2015
- Graduate Certificate in GIS from University of Texas at Dallas, 2012
- Professional Engineer in Tehran Construction Engineering Organization, 2009

INDUSTRY EXPERIENCE

DATA SCIENTIST/GIS DEVELOPER | EPATHUSA/NOVO TECHNOLOGIES| MODESTO, CA | OCT. 2016 – PRESENT

- Developed a prototype GIS application to compute time-dependent network travel times based on traffic condition for emergency transportation, San Francisco, California
  - Studied traffic data freely available by various U.S. government entities as well as commercial traffic data providers to select the most suitable data source for the proposed application
  - Conducted research on open source software and tools such as R packages, online service providers such as Google Maps APIs, and commercial software providers such as ESRI Network Analyst Extension to select the most suitable platform for developing the proposed application
  - Devised Network Dataset data model to store traffic condition and transportation network characteristics such as connectivity, directions, and turns to compute time-sensitive drive-times along the network
  - Programmed Python codes to develop a prototype application to analyze the accuracy of the computed drive-time rings based on the selected input traffic data as well as implementation platform

PI MODEL DEVELOPER | RISK MANAGEMENT SOLUTIONS | NEWARK, CA | JUN. 2016 – AUG. 2016

- Contributed in various tasks to help with model development of RMS predictive models, RMS, Newark, CA
  - Trained several machine learning classifiers to automatically tag 11000+ images with 87% overall accuracy, and provided recommendation such as the most efficient feature selection method, improving computation time using GPU, and examining deep learning methods such as Convolution Neural Networks
  - Programmed R codes to automatically extract useful information from 2000+ digitized insurance claims using various means of text-mining
  - Conducted a web reconnaissance to collect/integrate/analyze a wide variety of data using various resources to be used in RMS model development process
  - Communicated research findings verbally in team brainstorming sessions, presenting at management meetings, and writing research reports for documentations

INTERN TRANSPORTATION ENGINEER | TERRA ENGINEERING | SAINT LOUIS, MO | JUN. 2015 – DEC. 2015

- Developed a web-based GIS application for analyzing semi-automated sensors 'data for Arriyadh Authority Development, Riyadh, Saudi Arabia
  - Instructed project team members to help with data quality assurance such as georeferencing

- Integrated over 1600 Excel spreadsheet's data using Python to be imported into a designed GIS database
- Programmed a GIS application to provide data analytics tools for engineering decision-making

- Contributed in various Engineering projects, Multiple Locations, IL
  - Participated in Hoffman Estates Surveying project proposal preparation
  - Assisted in Chicago Cubs' Wrigley Field parking study project with AutoCAD drawings
  - Created traffic collision maps for Lancaster road traffic safety study using ArcGIS
- Developed a framework to verify/validate statewide collected sensors' data for Illinois Department of Transportation, Springfield, IL
  - Programmed a Python module to connect to ArcGIS, HDM, and Excel software and run various metrics to automate data verification process
  - Developed a data analyst environment using R to improve the data validation process of 800+ weekly sensors' data

GRADUATE RESEARCH ASSISTANT | SAINT LOUIS UNIVERSITY | SAINT LOUIS, MO | JAN. 2013 – DEC. 2016

- Contributed to "Final Pedestrian Safety Action Plan" for the City of St. Louis, Saint Louis, MO
  - Customized ArcGIS software using VBA to facilitate the crash analysis
  - Analyzed/Visualized crash data in both spatial and temporal contexts to represent surprising patterns
- Developed "A Forward Collision Warning Risk Assessment Model based on Bayesian Inference" dissertation research, Saint Louis University, Saint Louis, MO
  - Conducted Exploratory Data Analysis using R to extract insights from structured/unstructured data available in the research dataset, and presented the results using various ggplot2 library visualization techniques
  - Programed 800+ lines of code to implement Genetic Algorithm to identify optimize threshold values as the ADAS warning decision criteria
  - Proposed a new algorithm to improve V2V communications efficiency with an assessment of the algorithm performance using Simulation runs in VISSIM, MySQL data management tools, ArcGIS spatial analysis toolbox, and Python programming
  - Developed/evaluated a data-driven Bayesian inference model to predict risk against models available in the literature
- Conducted "Machine Learning Approach to Automated Fundamental Traffic Diagram" research, internally funded research project by Saint Louis University, Saint Louis, MO
  - Collected, transformed, and analyzed various sensor data nationwide
  - Integrated MATLAB and R functionalities to expand the number of available ML classifiers for the research
  - Evaluated several Machine Learning methods, including K-means, PAM, CLARA, Hierarchical, GMM, and SOM based on various validity indexes such as Davies-Bouldin, Dunn Index, and Silhouette Coefficient
- Contributed to "Freeway Travel Time Estimation using Existing Fixed Sensors – Phase 1" project for the Missouri Department of Transportation, Traffic Management Center, Chesterfield, MO
  - Collected/managed/analyzed 700+real-time RTMS sensors' traffic data with 30-second temporal resolution using Microsoft SQL Server 2008
  - Selected/implemented/validated several mathematical models available in the literature to estimate travel time accurately
  - Programmed 1000+ lines of codes in MATLAB environment to provide several functions to derive knowledge from the database using various data visualizations
  - Verified the proposed application performance using various tests including ground truth data validation

PROJECT ENGINEER | GEOPART CONSULTING ENGINEERS | TEHRAN, IRAN | JAN. 2009 TO AUG. 2012

- Revised road geometric design of Maskane Mehr Mehrabaad Town, Roudehen, Iran
  - Conducted topographic survey to provide site elevation changes after constructions using total station
  - Built 3D surface model from most recent survey data by using Autodesk Land Development software
  - Adjusted proposed project vertical alignment to account for changes in field condition by considering design standards
- Participated in 20 km Road 64-NGL 3100 Site roadway design, Ilam, Iran
  - Advised engineering team during field investigation to discover alternative pathways
  - Devised a framework to roughly estimate the cost of each alternative

- Designed the selected path roadway plans, profiles, cross-sections, and calculated earthwork volumes

CIVIL ENGINEER | OMRAN TOSEGHARAN PISHGAM | TEHRAN, IRAN | DEC. 2007 TO JAN. 2009

- Supervised contractors in Shahid Beheshti urban development project, Tehran, Iran
  - Oversaw building materials including concrete, asphalt, and steel laboratory test results to approve permits
  - Inspected project sites to monitor contractor's progress and conformance of construction to design and standards
- Improved Contract Management Process in Shahid Beheshti urban development project, Tehran, Iran
  - Devised various Microsoft Excel Macros to improve contract invoice calculations
  - Developed an apartment GIS application in order to facilitate apartment assignment of the personnel

SURVEYOR | PERSIAN GULF STAR OIL COMPANY | TEHRAN, IRAN | JULY 2006 TO DEC. 2007

- Coordinated surveying operations in Bandar Abbas Gas Condensate Refinery, Bandar Abbas, Iran
  - Collaborated in 1200 ha topographic survey of the site using Leica TC 407 Total Stations and map preparation in AutoCAD software
  - Conducted a Kinematic GPS survey using Ashtech ProMark 120 receivers and GPS data analysis by using Ashtech
- Developed a Fleet Management System in Bandar Abbas Gas Condensate Refinery, Bandar Abbas, Iran
  - Designed User Interface for the system operators using Visual Basic
  - Programmed several functions including data reader, material percent calculator, daily and monthly report generator

WEB DEVELOPER | E-SOLVE LLC | TEHRAN, IRAN | NOV. 2004 TO JULY 2006

- Developed websites for various clients, Tehran, Iran
  - Programmed codes for static and dynamic web pages by using HTML, JavaScript, and PHP languages
  - Designed web pages using CSS language as well as creating graphics using Adobe Photoshop software
  - Created and integrated MySQL databases to provide content for dynamic websites

TEACHING EXPERIENCE

LECTURER | CALIFORNIA POLYTECHNIC STATE UNIVERSITY | SAN LUIS OBISPO, CA | SEP. 2016 – PRESENT

- Served as Lecturer in BRA Engineering Department, Cal Poly, San Luis Obispo, CA
  - Conducted labs and projects to help the students to learn by doing
  - Instructed ArcGIS, AutoCAD, and Civil 3D using the collected data during field works
  - Evaluated students' performance using multiple methods such as homework, quizzes, projects, and exams
  - Assisted in writing research proposals for ARI and CDFA specialty crop to keep up-to-date in the domain knowledge

GRADUATE TEACHING ASSISTANT | SAINT LOUIS UNIVERSITY | SAINT LOUIS, MO | JAN. 2013 – JUN 2016

- Served as Teaching Assistant for Engineering courses, Saint Louis University, Saint Louis, MO
  - Lectured "ArcGIS applications for Civil Engineers" workshop for undergraduate students
  - Assisted faculties to ensure labs are equipped adequately with essential facilities, materials, and computer software
  - Led students' extracurricular activities such as field trips, student competitions, and lab tours
  - Assisted faculties in planning lessons, classroom management, and grading students' assignments
  - Instructed AutoCAD, Civil 3D, and ArcGIS using Problem-based Learning (PBL) instructional method

INSTRUCTOR | NATIONAL GEOGRAPHIC ORGANIZATION| TEHRAN, IRAN | JUN. 2011 – AUG 2012

- Served as instructor for surveying courses, NGO - Technical Institute, Tehran, Iran
  - Lectured "Route Surveying and Highway Engineering" undergraduate course
  - Instructed "Autodesk Civil 3D Land Desktop" for Land Development
  - Trained utilizing latest technology in the surveying field such as precise levelers, Total Stations, and GPS equipment

- Conducted surveying field projects to ensure student learning using Experiential Learning/Field Work instructional method

PUBLICATIONS

- Saber Abdoli, Jalil Kianfar, “A Forward Collision Warning Method Based on Bayesian Inference”, Transportation Research Record, Washington D.C., USA, (under review)
- Jalil Kianfar, Saber Abdoli, “Work Zone Stochastic Capacity: Case Study of a Smart Work Zone in Missouri”, Transportation Research Board Record, Washington D.C., USA, January, 2016
- Saber Abdoli, Mohammad Reza Malek, “An Advanced Driver Assistant System based on Road’s Contexts Analysis”, in Persian language, Geospatial Engineering Journal, No 14, P 34-46, 21 June 2012
- Saber Abdoli, Mohammad Reza Malek, “A Context-Aware System for Tourism Trip Planning”, in Persian language, Geospatial Engineering Journal, N0 12, P 12-23, 27 Sep 2011
- Saber Abdoli, Mohammad Reza Malek, “Presenting a Method for Spatial Relations Recognition in Context-Aware Systems”, in Persian language, Iranian Journal of Remote Sensing and GIS, No 3(7), P 61-74, 4 Oct 2010

CONFERENCE PRESENTATIONS

- Saber Abdoli, "A Proposed Framework to Automate and Improve Traffic Data QAQC Procedure for IDOT", 13th TEAM StL FAIR and MOVITE Annual Fall Meeting, St. Louis, MO, USA, September 24, 2015
- Saber Abdoli, Yao-Jan Wu, "Geospatial Statistical Analysis for Pedestrian Accidents in the City of St. Louis", 64th Traffic and Safety Conference, Columbia, MO, USA, May 15, 2013
- Saber Abdoli, Yao-Jan Wu, “Presenting a Spatial Decision Support Framework for Roadway Design”, 14th Missouri GIS Conference, Chesterfield, MO, USA, February 20, 2013
- Saber Abdoli, Mohammad Reza Malek, “Hazardous driving condition detecting by using ubiquitous GIS”, 3rd International Traffic Accident Conference, Faculty of Engineering, University of Tehran, Tehran, Iran, May 16, 2011
- Abbas Alimohammadi, Saber Abdoli, Mohammad Naghavi,"A Tourism Service for Trip Planning Based on Time, Money and Interests", International Workshop on Tourism and Cultural Heritage Information Services, Florence, Italy, October 6, 2010

ADDITIONL RESEARCH ACTIVITIES

- Proposal Writing
  - California Department of Food and Agriculture, “An Autonomous Strawberry Runner Cutter System”, November 2016 (PI Professor Bo Liu)
  - Agricultural Research Institute, “An Autonomous Strawberry Yield Prediction Robot using Machine Vision and Expert System”, December 2016 (PI Professor Bo Liu)
  - Missouri Department of Transportation, “Freeway Travel Time Estimation using Existing Fixed Sensors – Phase 2”, March 2013 (Under Professor Yao-Jan Wu Supervision)
  - City of St. Louis, Geo-spatial Analysis for Pedestrian Accident in the City of St. Louis, Dec 11, 2012
- Research Reports
  - Saber Abdoli, “North Atlantic Hurricane Models Web Reconnaissance”, Risk Management Solutions, June 2016
  - Yao-Jan Wu, Shu Yang, and Saber Abdoli, “Freeway Travel Time Estimation using Existing Fixed Sensors – Phase 1”, Missouri Department of Transportation, Traffic Management Center, August 2013

COMPUTER SKILLS

- Programming: Python for ArcGIS, Object Oriented Java, Visual Basic, R, MATLAB
- Database/RDBMS: Microsoft SQL Server 2008/2012, MySQL, familiarity with Oracle Spatial
- Web Development: HTML, JavaScript, Google Map APIs, XML, JSON, D3, CSS, Bootstrap, PHP
- GIS/Data Analysis/Model Development: ArcGIS package, QGIS, Excel, SQL, MATLAB, SPSS, Pandas, R-Shiny