

DANIEL EMAASIT

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EDUCATION

Doctor of Philosophy in Civil and Transportation Engineering (Expected in May, 2017)

University of Nevada, Las Vegas, NV, USA. (2013 - Present)

Dissertation Topic: *A Machine Learning Approach to Developing Activity-Based Travel Demand Models Using Big Data from Mobile Phones.*

Masters of Engineering in Civil and Transportation Engineering (Aug, 2013). GPA=3.9/4.0

Tennessee State University, Nashville, TN, USA. (2011 - 2013)

Thesis Topic: *Framework to Identify Factors Associated with High Pedestrian and Bicycle Crash Locations Using Geographic Information System and Statistical Analysis.*

Bachelor of Science (Honors) in Civil & Transportation Engineering (Nov, 2010). GPA=4.0/5.0

University of Dar Es Salaam, Tanzania. (2006 - 2010)

Final Year Project: *Laboratory study on the suitability of Cement Kiln Dust and Non-Conforming Clinker for upgrading of the Engineering properties of laterite soils.*

RESEARCH INTERESTS

- Urban Mobility & Planning
- Travel Demand Forecasting and Modeling
- Highway Safety Analysis
- Application of Machine Learning, Statistics, and Data Mining in Transportation
- Bayesian Machine Learning
- Probabilistic Graphical Models
- Approximate Bayesian Inference
- Probabilistic Programming

PUBLICATIONS

1. Paz, A., **Emaasit, D.**, Branchini, M., Batoumi, A., Fouche, A., and H. De la Fuente. (2016). "Management of Large GIS Data for Utility Infrastructure". *The Scientific World Journal*, Under Review.
2. **Emaasit, D.**, Chimba, D., Allen, S., Hurst, B., Nelson, M. (2014). "Factors affecting Median Cable Barrier Crash Frequency: New Insights". *Journal of Transportation Safety and Security*, Vol. 6 No. 1, 2014, pp. 62-77. doi:10.1080/19439962.2013.812168.

3. Chimba, D., **D. Emaasit** and B. Kutela, (2012). "Integrating Origin-Destination Survey and Stochastic User Equilibrium: A Case Study for Route Relocation," *Journal of Transportation Technologies*, Vol. 2 No. 4, 2012, pp. 297-304. doi: 10.4236/jtts.2012.24032.
4. Chimba, D., **D. Emaasit** and B. Kutela (2012). "Likelihood Parameterization of Bicycle Crash Injury Severities," *Journal of Transportation Technologies*, Vol. 2 No. 3, 2012, pp. 213-219. doi: 10.4236/jtts.2012.23023.

CONFERENCE PROCEEDINGS

1. **Emaasit, D.**, and A. Paz. (2015). "Workflow for Managing GIS Utility Information". Presented at the Utility Committee Meeting of the *Transportation Research Board*, 94th Annual Meeting, (TRB), Washington, D.C., January 13th, 2015.
2. **Emaasit, D.**, and A. Paz. (2014). "Development of Tools for the Management of GIS Utility Infrastructure". Presented at the 23rd *Annual Fall Transportation Conference*. Institute of Transportation Engineers (ITE), Las Vegas, NV, October 10th, 2014. [**Best Paper & Presentation Award**]
3. **Emaasit, D.**, Chimba, D., Cherry, C., Pannell, Z. (2014). "Patterning Demographic and Socioeconomic Characteristics Affecting Pedestrian and Bicycle Crash Frequency". Accepted for presentation at the *Transportation Research Board* 93rd Annual Meeting, (TRB), Washington, D.C., January 14th, 2014.
4. **Emaasit, D.**, and D. Chimba. (2013). "Methodology to Identify Factors Associated with Pedestrian High-Crash Clusters Using GIS-Based Local Spatial Autocorrelation". Presented at the 35th *Annual Tennessee State University-Wide Research Symposium* Nashville, April 5th, 2013. [**Best Poster Presentation Award**].
5. **Emaasit, D.**, Chimba, D., Cherry, C., Kutela, B., Wilson, J. (2013). "Methodology to Identify Factors Associated with Pedestrian High-Crash Clusters Using GIS-Based Local Spatial Autocorrelation". Accepted for presentation at the *Transportation Research Board* 92nd Annual Meeting, (TRB), Washington, D.C., January 15th, 2013.
6. Chimba, D., **Emaasit, D.**, Allen, S., Hurst, B., Nelson, M. (2013). "Safety-Effectiveness Evaluation of Cable Rail Systems in Tennessee". Accepted for presentation at the *Transportation Research Board* 92nd Annual Meeting, (TRB), Washington, D.C., January 16th, 2013.
7. Chimba, D., Kutela, B., **Emaasit, D.**, Ogletree, G., Horne, F., Hallavant, R. (2013). "Impact of Abandoned and Disabled Vehicles on Freeway Incident Durations". Accepted for presentation at the *Transportation Research Board* 92nd Annual Meeting, (TRB), Washington, D.C., January 14th, 2013.
8. Chimba, D., and **Emaasit, D.** (2012). "Safety-Effectiveness Evaluation of Cable Rail Systems in Tennessee". Presented at the 34th Annual Tennessee State University-Wide Research Symposium, Nashville, March 26th, 2012.
9. Bujulu, P. M. S. and **Emaasit, D.** (2010) "Suitability of Cement Kiln Dust and Non-Conforming Clinker for Upgrading the Engineering Properties of Laterite Soils", 3rd Seminar on Infrastructure Technologies for Sustainable Development: JSPSAA Science Platform Program, 17th September, 2010, Kyoto, Japan.

CAREER EXPERIENCE

Graduate Research Assistant, University of Nevada-Las Vegas (August, 2013 – Present)

Project 1: *Using Big Data from Mobile Phones to improve Urban Mobility.*

Tasks;

- Literature review, data collection, data preparation and storage
- Develop a data-driven approach to detect stays and timestamps that represent trips
- Develop a machine learning approach to cluster activities based on land use type, activity type & the generated trip schedules.
- Validate the developed Activity-Based travel demand models from cellular data

Project 2: *Development of a GIS Data Layer for Utilities in the ROW of NDOT Roads.*

Sponsor: Nevada Department of Transportation (NDOT)

Tasks;

- Literature review and creation of a data library and an inventory of GIS utility data
- Collection of sample utility data using surveying devices like Trimble GPS units
- Processing field survey data into ESRI GIS data formats

Project 3: *Business Intelligence for Nevada Department of Transportation.*

Sponsor: Nevada Department of Transportation (NDOT)

Tasks;

- Literature review of Bridge Management Systems (BMS)
- Bridge data collection, understanding and preparation
- Analysis of bridge data for anomalies and inconsistencies
- Developing the logic to determine highway capacities for Nevada roadways

Graduate Research and Teaching Assistant, Tennessee State University (August, 2011 – July, 2013)

Project 1: *Safety Effectiveness Evaluation of Median Cable Barriers in Tennessee.*

Sponsor: Tennessee Department of Transportation (TDOT)

Tasks;

- Collected data including crash data, geometric data of road segments with median cable barriers, properties of median cables used in Tennessee.
- Reviewed hard copy crash reports to identify median related crashes.
- Developed descriptive statistics of before and after performance of cable systems.
- Conducted Empirical Bayes analysis of the before and after performance of the cable systems.

Project 2: *Statewide Pedestrian and Bicycle Safety Analysis and Investment Policy.*

Sponsor: Tennessee Department of Transportation (TDOT)

Collaboration: With University of Tennessee Knoxville

Tasks;

- Collected data including pedestrian and bicyclist crash data, geospatial data of census tracts in Tennessee, socio-economic and demographic data of Tennessee.
- Geocoded crash data and identified high crash location using GIS spatial statistics.
- Performed descriptive statistical analysis of crash data.
- Applied statistical models such as Multinomial Logit and Negative Binomial models to perform Injury Severity and Frequency analysis of the crash data.

Teaching Assistant/Undergraduate Courses Taught

- CVEN 3131 Soil Mechanics Lab
- CVEN 3200 Transportation Engineering
- CVEN 4090 Traffic Engineering
- CVEN 4320 Highway Engineering

Research Assistant, University of Dar Es Salaam (August, 2010 – June, 2011)

Project: *Geotechnical Properties of Two-Stage Stabilized Expansive Soils with Lime and Cement.*

Supervisor: Dr. P.M.S. Bujulu

Tasks;

- Performed soil tests such as Atterberg limits, sieve analysis, Modified Proctor test, Unconfined Compressive Strength.

Highway Engineering Intern, SMEC International Pty, (Australian Consulting firm, Tanzania office) (July, 2009 – October, 2009)

Project: *Preparation of preliminary and detailed Road engineering designs, cost estimates, bidding documents, and environmental and social impact assessments for the investment sub-projects for Dodoma municipality under the Tanzania strategic cities project.*

Tasks;

- Conducted roadway inventory of features within the Right of Way
- Conducted geometric designs of roads using AutoCAD Civil 3D 2010.
- Prepared preliminary cost estimates for the roads.

Civil Engineering Materials Intern, Central Materials Laboratory (CML) Ministry of Works and Transport, Uganda (July 2008 – October 2008).

Tasks: *Tested construction materials from contractors including tests like Atterberg limits, Proctor test, and sieve analysis.*

Water Resources Engineering Intern, M & E Associates Ltd Consulting Engineers, Uganda (July, 2007 – October, 2007)

Project: *Rehabilitation and construction of water and sanitation facilities in Soroti, Sironko and Kaberamaido districts in Uganda.*

COMPUTER SKILLS

1. RDBMS: MS SQL Server, Oracle DB, MySQL, Amazon Redshift
2. NoSQL: MongoDB, Amazon DynamoDB
3. Statistics: R, STATA, SPSS
4. Programming: Java, Scala, Visual Basic
5. Version Control: Git & Github
6. Business Intelligence: Teradata, QlikView, Plotly, Tableau, Shiny
7. Big Data: h2o, Apache Spark, Amazon EMR, Databricks Cloud
8. Planning: ESRI ArcGIS & MS Project.
9. Highway Design: Micro Station & AutoCAD Civil 3D.
10. Traffic Analysis: HCS & Synchro.
11. Microsoft Office: Word, Excel, PowerPoint & Access.

AWARDS AND SCHOLARSHIPS

1. Best student paper and oral presentation award at the 2014 Fall Transportation Conference. Organized by Institute of Transportation Engineers (ITE)-Nevada Chapter, Las Vegas, October 9-10, 2014. (Award amount: \$500).
2. UNLV Access Grant NN, University of Nevada Las Vegas (2014 & 2015). (Award amount: \$2,000).
3. Graduate Research Assistantship, University of Nevada-Las Vegas (2013-2016). (Award amount: Full tuition and Stipend).
4. Certificate for Best Graduate Poster Presentation in the Category of Engineering, 35th Annual Tennessee State University-Wide Research Symposium, Nashville, April 1-5, 2013. (Award amount: \$500)
5. Certificate for Excellent Academic Performance from the Golden Key International Honor Society, Tennessee State University. (Awarded on December 6, 2012)
6. Graduate Research and Teaching Assistantship, Tennessee State University (2011-2013). (Award Amount: Full tuition and Stipend).
7. Transportation and Geotechnical Engineering Department Prize for being the Best Final year student in Civil and Transportation Engineering, University of Dar Es salaam. (Awarded in November, 2010). (Award amount: Tshs. 50,000).
8. Highway and Transportation Engineering Prize for being the Best 4th year student in Civil and Transportation Engineering, University of Dar Es salaam. (Awarded in November, 2010). (Award amount: Tshs. 50,000).
9. Certificate for Excellent Performance for being the Best First year student in Civil and Transportation Engineering during the 2006/2007 Academic year, University of Dar Es salaam (Awarded in November 2007). (Award amount: Tshs. 50,000).
10. Exchange Student scholarship from the Inter-University Council for East Africa to pursue B.Sc. in Civil Engineering at the University of Dar Es salaam (2006-2010). (Award amount: Full tuition and Stipend).

MEMBERSHIP IN PROFESSIONAL SOCIETIES

1. The R Foundation for Statistical Computing (2014-Present)
2. Nevada Geographic Information Society (NGIS). (2015-Present)
3. American Statistical Association (ASA). (2014-Present)
4. Professional Association for SQL Server (2014-Present)
5. Intelligent Transportation Society of America (ITS). (2014-Present)
6. Golden Key International Honor Society (2012-Present)
7. Institute of Transportation Engineers (ITE). (2011 – Present)
8. American Society of Civil Engineers (ASCE). (2011 – Present)
9. Institution of Engineers in Tanzania (IET). (2007 – Present)

VOLUNTEER EXPERIENCE

1. Reviewer, Journal of Transportation Research Board (2014-Present)
2. Reviewer, Journal of Traffic Injury Prevention (2014-Present)
3. Organizer, Data Science Africa (2015-Present)
4. Organizer, Data Science Las Vegas (2014-Present)
5. Secretary & Founding Member, Institute of Transportation Engineers (ITE)-Tennessee State University Chapter (2011 – 2013)
6. General Secretary, Rotaract Club of Kwanza, University of Dar Es Salaam (2008 – 2009)

REFEREES

Provided Upon Request