Minhaz M. Shahriar

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Professional Profile

Highly effective and self-motivated geotechnical engineer with total 8 years of teaching and research experience, which includes 6 years as Graduate Research & Teaching Assistant at Louisiana Tech University, LA, USA in the field of geotechnical & coastal engineering & 2 years as Lecturer (mainly Geotechnical, Structural & Transportation subjects), Dept. of Civil Engineering, AUST, Dhaka. Performed extensive research work in the field of geotechnical, including coastal & application of soil bio-engineering technique for bank slope stabilization in a cost-effective way in Louisiana, sponsored by CPRA & LATECH, LA, USA. Currently working as an Assistant Professor at North South University, Bangladesh.

Additionally, gained coastal process modeling experience with a hydrodynamic model (Delft3D FLOW), wave transformation, propagation and overtopping models (Delft3D WAVE/ SWAN). Developed a fully functional Delft3D hydrodynamic and wave model of Calcasieu-Sabine areas, including calibration. Coastal analysis, coastal & riverine hydrodynamics, coastal erosion and coast protection and restoration techniques, including Soil Bioengineering (ecosystem based) know-how are, therefore, added advantages.

Background includes the work on various externally funded researches, as well as journal publications and presentations.

Education

Ph.D. in Engineering (Geotechnical), 2017
Louisiana Tech University, - Ruston, LA, USA
- ✓ Fully funded by College of Engineering & Science (COES), Louisiana Tech University and partially funded by National Science Foundation [NSF]
- ✓ Dissertation Title: "Numerical & Experimental Studies on Coastal Marsh Erosion under Hurricane Induced Wave & Current"

MS in Civil Engineering, 2015
Louisiana Tech University, - Ruston, LA, USA
- ✓ Fully funded by Louisiana Sea Grant, USA
- ✓ Thesis Title: "Ability of Johnson grass roots to bind soil and stabilizing shallow slopes"

BS in Civil Engineering, 2009
Ahsanullah University of Science & Technology – Dhaka, Bangladesh
- ✓ **Thesis Title:** "Structural Sustainability Study of Meghna-Gumti Bridge, Bangladesh under increasing traffic load from Dhaka-Chittagong National Highway"

Teaching Experience

North South University, Dhaka, Bangladesh
Assistant Professor, Department of Civil & Environmental Engineering (2018 – present)
- Evaluating and testing students under my direct supervision.
- Attending faculty and parent teacher meetings.
- Teaching the following theory courses:
    - ❖ CEE240 'Introduction to Soil Mechanics and Foundation Engineering'
    - ❖ CEE340 'Advanced Foundation Engineering'
    - ❖ CEE 330 'Structural Analysis and Design-I'

Louisiana Tech University, Ruston, LA, USA
Teaching Assistant, College of Engineering & Science (2011 – 2017)
- Collaborated with professors and other TA's on course material and grading policies
- Wrote weekly quizzes; posted solutions online; graded quizzes and exams; demonstrated basic geotechnical and other lab tests, both to undergraduate and graduate students
- Assisted in teaching the following courses:
    - ❖ CVEN-440 'Foundation Engineering'
    - ❖ CVEN 325 'Intro to Foundation Engineering'
    - ❖ CVEN 324 'Intro to Soils Engineering'
    - ❖ CVEN332 'Highway Engineering I'
    - ❖ MEEN 361 'Advanced Mechanics of Materials'
    - ❖ MEMT 201 'Engineering Materials'

Ahsanullah University of Science & Technology, Dhaka, Bangladesh
Lecturer, Department of Civil Engineering (2009 – 2011)
- Taught major courses in the field of geotechnical and transportation engineering; Participated in different committees for class coordination, etc.; served as a lab supervisor for the geotechnical lab
- Lectured the following courses
    - ❖ CE 351 'Transportation Engineering – I'
    - ❖ CE 341 ''Geotechnical Engineering- I'
    - ❖ CE 211 'Mechanics of Solids – I'
    - ❖ CE 200 'Details of Construction'
    - ❖ CE 208 'Quantity Surveying'
    - ❖ CE 101 'Engineering Mechanics'
    - ❖ CE 344 'Geotechnical Engineering- Lab I'
    - ❖ CE 452 'Transportation Engineering- Lab II'

Research Experience

Louisiana Tech University, Ruston, LA, USA
Graduate Research Assistant, Geotechnical Engineering Lab (2011 – 2017);
PhD Researcher (2013 – 2017)
- Investigated and analyzed the erosion of coastal slopes under high hurricane waves and flood action
- Conducted geotechnical research of vegetated marsh soil, and plant roots to extract physical and strength (combined and separate) properties
- Developed a new finite element approach to predict and measure erosion
- Gained coastal process modeling experience with a hydrodynamic model (Delft3D FLOW), wave transformation, propagation and overtopping models (Delft3D WAVE/ SWAN)
- Developed a fully functional Delft3D hydrodynamic and wave model of Calcasieu-Sabine areas; successfully calibrated the model with observed tide/water level data from several NOAA and CPRA stations
- Facilitated the preparation of research proposals to NSF, NRCS, NOAA, and CPRA
- Trained new graduate students and employees
- Worked on multiple projects, including:
    - ➤ "Soil binding ability of natural vegetation Spartina alterniflora established on dredged soils in Louisiana coastal area". [Sponsor: Louisiana Sea Grant; Duration: 06/01/2015 – 05/30/2018]
    - ➤ "Development of an Innovative Model for Analyzing Current (Wave)-Dike Vegetated Soil Interaction and its Application in Louisiana Coastal Restoration Projects" [Sponsor: NSF-EPSCoR, Board of Regents, Louisiana; Duration: 10/01/2014 – 09/30/2015]

Master's Researcher (2011 – 2014)
- Established a numerical approach allowing to measure the contribution of vegetation roots in protecting any kind of soil slope by reducing surface erosion; presented the research extensively, at ASCE conferences and CPRA meetings
- Assisted in the preparation and execution of geotechnical laboratory sections; managed laboratory functions including organization, ordering and scheduling equipment use
- Prepared and submitted 12 quarterly project update reports to Louisiana Sea Grant office and Coastal Protection & Restoration Authority on the following project
    - ➤ "Application of soil bioengineering (ecosystem-based) approaches for riparian restoration in coastal area of Louisiana" [Sponsor: Louisiana Sea Grant; Duration: 07/01/2011 – 06/30/2014]

Ahsanullah University of Science & Technology, Dhaka, Bangladesh
Undergraduate Researcher (2008 – 2009)
- Researched the design of Meghna-Gumti Bridge, Bangladesh to check the sustainability under increasing traffic load from Dhaka-Chittagong national highway
- Led a team of 4 undergraduate students in a 12-month project to study the rehabilitation of Meghna-Gumti Bridge, Bangladesh

Professional Experience

Coastal Protection & Restoration Authority (CPRA), Baton Rouge, LA, USA
Engineering Intern (2012)
- Researched the effectiveness of different projects by evaluating project monitoring data; proposed a basin based coastal protection and restoration strategy

Skills

- Students teaching and instructing
- Academic writing
- Externally funded researches
- Lab operations supervision
- Soil bioengineering
- Bearing capacity & foundation settlement
- Functional model development
- Geotechnical Design - shallow & deep foundation (Footing, Raft, Piles etc.)
- Soil liquefaction- seismic settlement

- Ground improvement techniques & settlement analysis
- Heave-shrinkage analysis of expansive soil
- Geotechnical and structural researches
- Coastal and water resources engineering
- Coastal Hydrodynamic & Wave Modeling
- Erosion analysis
- Stabilization of slopes & landslide retaining systems

Software Skills

Geotechnical Software
- GEO-STUDIO (SLOPE/W, SEEP/W, SIGMA/W & VADOSE/W)
- SETTLE3D
- PLAXIS 2D & 3D
- LPILE

Coastal Modeling Software
- DELFT3D FLOW
- DELFT3D WAVE/ SWAN

Geospatial Analysis Software
- ArcGIS

Others
- AutoCAD Civil 3D
- SAP 2000
- ETABS
- SOLIDWORKS
- MS OFFICE

Publications

Journal Publications
- Shahriar, M.M., Wang, J.X., Alam, S., and Patterson, W.B. (2016). Soil binding ability of vegetation roots in enhancing erosion resistance of a shallow slope. International Journal of Geotechnical Engineering. http://dx.doi.org/10.1080/19386362.2016.1168608

Conference Publications
- Shahriar, M.M., Wang, J.X., and Patterson, W.B. (2013). The contribution of Shrub Roots on Enhancement of Slope and Embankment Stability in the Coastal Area of Louisiana. In Geo-Congress 2013, *San Diego, CA, March 3-6, 2013*, Geotechnical Special Publication, GSP 231, 1339-1348.

Article submitted or in preparation:
- Shahriar, M.M., Wang, J.X. (2017). Field and Laboratory Analysis of Spartina alterniflora Marsh Soil in Coastal Area of Louisiana, in revision for submission.
- Shahriar, M.M., Wang, J.X. (2017). Numerical Study on Louisiana Coastal Marsh Erosion Under Hurricane Induced Wave & Current, in revision for submission to Costal Engineering Journal.

Presentations

- "Application of Soil Bioengineering in stabilizing coastal slopes" at the Second Annual COES Graduate Conference, Louisiana Tech University, Ruston, LA, October 18, 2012
- "Contribution of Shrub Roots on Enhancement of Slope and Embankment Stability in the Coastal Area of Louisiana" at Geo-Congress 2013, ASCE Conference, San Diego, CA, March 04, 2013
- "Study on Current (Wave)-Dike Interaction in the Project of Lake Hermitage Marsh Creation (BA-42)" at the Louisiana Tech Research Symposium, Louisiana Tech University, Ruston, LA, March 21, 2013
- "Soil binding ability of vegetation roots in enhancing slope stability & contribution to coastal crisis prevention" at Coastal Protection and Restoration (CPRA) office, Baton Rouge, LA May 19, 2014
- "Study the shear strength enhancement in root reinforced soil and its capability to Stabilize soil slope" at the Louisiana Tech Research Symposium, Ruston, LA, February 26, 2016
- "Numerical and experimental studies on coastal marsh erosion under hurricane-induced wave & current" at Coastal Protection and Restoration (CPRA) office, Baton Rouge, LA September 07, 2016
- "Numerical Study on Louisiana Coastal Marsh under Hurricane Ike" at the Gulf of Mexico oil spill and ecosystem science conference 2017, New Orleans, LA, February 07, 2017