Anzy Lee

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RESEARCH INTERESTS

- Computational Fluid Dynamics: River Hydraulics, Two-phase Flow, Coupled Groundwater and Surface-Water Flow Model, Hyporheic Exchange
- Conservative/Reactive Solute Transport through Porous Media
- Machine Learning: Neural Networks, Metaheuristic Optimization Algorithm

EDUCATION

Purdue University *Aug 2016 - May 2020 (expected)*
Ph.D in Civil Engineering
Thesis: Riverbed Morphology, Hydrodynamics and Hyporheic Exchange Processes
Advisor: Prof. Antoine Aubeneau

Seoul National University, Republic of Korea *Mar 2014 - Feb 2016*
MS in Civil and Environmental Engineering
Thesis: Determination of Near-global Optimal Initial Weights of Artificial Neural Network Using Harmony Search Algorithm: Application to Breakwater Armor Stones
Advisor: Prof. Kyung-Duck Suh

Handong Global University, Republic of Korea *Mar 2010 - Feb 2014*
BS in Spatial Environment System Engineering

RESEARCH EXPERIENCE

Research Assistant Aug 2016 - present
Prof. Antoine Aubeneau *Lyles School of Civil Engineering, Purdue University*

- Conducted numerical modeling of hyporheic exchange processes in fractal riverbed

Visiting Scholar Feb 2019 - Apr 2019
Prof. Xiaofeng Liu *Civil and Environmental Engineering, Penn State University*

- Developed boulder-driven hyporheic exchange model

Visiting Scholar Jan 2018 - Jan 2019
Prof. M. Bayani Cardenas *Jackson School of Geosciences, The University of Texas at Austin*

- Investigated hyporheic exchange in channels with high Froude Number flows: the importance of free surface water elevation changes

Research Assistant 2014 - 2015
Prof. Kyung-Duck Suh *Coastal Engineering Laboratory, Seoul National University*

- Developed a robust hybrid Artificial Neural Network (ANN) model integrated with the Harmony search algorithm to estimate the stability number of armor unit of rubble mound structure

JOURNAL ARTICLES

A. Lee, A. Aubeneau, M. B. Cardenas, 3D Numerical Modeling of Hyporheic Exchange Processes in Fractal Riverbed (in preparation)

A. Lee, J. W. Geem, K. D. Suh (2016) Determination of near-global optimal initial weights of artificial neural network using harmony search algorithm: Application to breakwater armor stones. Appl. Sci. 6(6), 164.

A. Lee, S. E. Kim, K. D. Suh (2016) An easy way to use artificial neural network model for calculating stability number of rock armor. Ocean Eng. 127, 349-356.

CONFERENCE PROCEEDINGS

A. Lee, M. B. Cardenas, A. Aubeneau (2018) Investigation of hyporheic exchange in channels with high Froude Number flows: the importance of free surface water elevation changes, AGU 2018 Fall Meeting, Dec 2018, Washington, D.C., United States

A. Lee, A. Aubeneau (2017) 3D Numerical Modeling of Hyporheic Exchange Processes in Fractal Riverbed, AGU 2017 Fall Meeting, Dec 2017, New Orleans, United States

TEACHING AND MENTORING

Lab Instructor and Grader Fall 2014
Elementary Fluid Mechanics *Instructor. Prof. K. D. Suh, Seoul National University*

- Prepared the experimental procedures, set up the experimental apparatus, introduced the experiment, responded to student questions during the experiment, and graded student reports

AWARDS, SERVICE AND EXTRACURRICULAR EXPERIENCE

Climate Science Summer School, *NASA JPL Center for Climate Sciences* 2018
Delleur Award, *Purdue University* 2017, 2018
Summer Institute on Earth-Surface Dynamics, *National Center for Earth-surface Dynamics* 2017
Peer Reviewer, *The journal Engineering Optimization* 2015

COMPUTER SKILLS

Operating Systems: Windows, Linux
Programming: C/C++, MATLAB, Python, MPI, Visual Basic
Scientific Applications: LaTeX, OpenFOAM, FEniCS, ParaView, GIS, HEC-RAS, HEC-HMS
Technical Drawing: yEd, Adobe Illustrator, AutoCAD, Microsoft Visio

REFERENCES

Prof. Antoine Aubeneau aubeneau@purdue.edu
Lyles School of Civil engineering, Purdue University

Prof. Xiaofeng Liu xzl123@psu.edu
Civil and Environmental Engineering, Penn State University

Prof. M. Bayani Cardenas cardenas@jsg.utexas.edu
Jackson School of Geosciences, The University of Texas at Austin