Najet Draper, PhD

815 Monroe St, 48124 Dearborn, MI◆(313) 627 1926◆
najetBDraper@gmail.com
https://www.linkedin.com/in/najetbichraouidraper/

Computational Sustainability | Big Data Analytics and Modeling

Over 14 years of experience in the sustainability | environmental | Research and industry. Uses scientific research and investigatory methods to develop and promote sustainable design for the sate of Michigan. Specialize in using big data analytics to build sustainable system and processes. Delivered 50+ presentations at both academic and private sector settings. Recruited and Trained teams. Managed budgets of $5M+.

I am passionate about solving problems by designing processes that addresses issues where the 3 pillars of sustainability (environmental, social and economic) are at stake. I wish to be part of endeavors that tackles issues related to community resilience as a holistic, proactive framework to reduce risk, improve services, adapt to changing conditions, and empower citizens.

Simulation Modeling

- Big Data and Quantitative Data Analysis (R)
- Combined Linear and Nonlinear Models
- Combined Agent-based modeling (Machine learning, Netlogo, Python, Stella) and Geographic Information System (GIS)
- Quantitative/Qualitative decision Modeling
- Create computational program and dashboard for simulation scenarios
- Social Statistics

Environmental /Sustainable modeling and Management

- Environmental and Performance metrics: Life cycle Assessment (SIMAPRO, OPEN LCA)
- Material Flows Analysis (MFA)
- Environmental and Performance metrics
- Project Management
- Budget design and management
- Team training and management

EXPERIENCE

GREEN DORR CONSULTING, LLC ◆ DEARBORN, MI ◆ MAY. 2015 - CURRENTLY
INDEPENDENT CONSULTANT

Provides services in Environmental and sustainability consulting in regulatory compliance, auditing, training, and engineering.

Specialties:

- Environmental regulatory compliance assessments
- Life Cycle Assessment (LCA)
- Big Data Modeling and analysis (R)
- Sustainability management
- Energy and Bioenergy system modeling and audit
- Carbon footprint
- Conflict Minerals (Dodd-Frank, strategic and sustainable sourcing)
- REACH
- Corporate Social Responsibility and Sustainability

UNIVERSITY OF MICHIGAN SCHOOL OF NATURAL RESOURCES & CIVIL AND ENVIRONMENTAL ENGINEERING◆ ANN ARBOR, MI , IN CONJUNCTION WITH UNIVERSITY OF TECHNOLOGIES◆ TROYES, FRANCE ◆SEPT. 2011-FEB 2015

PHD CANDIDATE (JOINT USA/FRANCE PHD)
Employed at CNRS (Centre National Pour la Recherche Scientifique / National Center for Scientific Research) through the University of Technology of Troyes (UTT) that hosts CREIDD, a CNRS lab. I completed a joint PhD between UTT and University of Michigan, Ann Arbor.

Created computational program to provide predictive simulations model scenarios.

This thesis focuses on the development of a modeling approach for quantifying sustainability using a systems thinking approach using two case study that could potentially promote material and energy closing cycles for feedstock biomass products within a regional context.

- The first case study is seen as a way of testing this theorical concept by assessing the main factors that contribute to switchgrass adoption by farmers as a biomass feedstock, and its effect on its environmental life cycle using a hybrid agent-based (AB) and life cycle assessment (LCA) model.
- The second case study, takes AB modeling to the next level by combining Geographic Information System (GIS) and an ABM and using actual material flow data form an industrial ecosystem.

Both cases study results generated a great amount of data (over a million spreadsheet lines for each scenarios), therefore they had been processed and analyze through the mathematical software R.

TU DELFT UNIVERSITY ◆ NETHERLANDS ◆ NOVEMBER 2014 TO DECEMBER 2014

VISITING SCHOLAR (PhD)
Skills developed:
Data analysis computing: R statistical software computing in order to understand the processes underlying the data and discover the important patterns in the data (R).

VISITING RESEARCH FELLOW (PhD)

Skills developed:

Development of a Validation methodology for Agent-based modeling combined with Geographic Information system (GIS) applied to regional Industrial Symbiosis.

UNIVERSITY OF MAINE SCHOOL OF NATURAL RESOURCES ◆ ORONO, ME ◆ JANUARY 2010 TO MAY 2012

RESEARCH ASSISTANT (Sustainable system)

Research topic: Modeling the development of low Greenhouse Gas emissions of an Industrial ecosystem applied to the oilseed-based products industry in the Picardie/Champagne region

- ➢ Machine Learning
- ➢ Agent-Based Modelling (Netlogo)
- ➢ System Dynamics (stella)
- ➢ Big Data (R)

UNIVERSITY OF TECHNOLOGIES◆ TROYES◆ Spring 2010 to Fall 2013

SUSTAINABILITY (LCA) COURSE INSTRUCTOR

Instructor (In English) for Introduction to Computational Sustainable Models required at University of Technology of Troyes.

- ➢ Gave lectures, coordinated with teaching assistant
- ➢ Held office hours
- ➢ Graded exams

VEOLIA ENVIRONMENTAL SERVICES – HAZARDOUS WASTE MANAGEMENT◆ LYON, FRANCE
MARCH 2007 TO SEPTEMBER 2009

HAZARDOUS WASTE PROJECT MANAGER

Recruited to plan and direct creation of a team of international experts that provide assistance for environmental emergencies in developing countries, including but not limited to those involving hazardous waste and landfill.

- ➢ Managed the biggest budget assigned to a single project manager in the company (1 million Euros for 3 years)
- ➢ Recruited and trained employee volunteers
- ➢ Created and developed the logistic support system
- ➢ Developed the intervention procedures
- ➢ Crafted and negotiated partnership with the joint program UNEP/OCHA director in Geneva Switzerland (United Nation Environment Program/Office for the Coordination of Humanitarian affairs)

EDF-GDF NATIONAL PUBLIC ELECTRICITY AND GAS◆ CHAMBERY, FRANCE ◆ JUNE 2005 TO AUGUST 2005

ASSITANT FIELD ENGINEER

Assisted in national campaign to move aerial electrical cables underground

- ➢ Charged with researching underground schematic (existing telephone cables, water pipes ...) and mapped out plans for future underground electric cable infrastructure

POLDEN INSA HAZARDOUS WASTE RESEARCH CENTER◆ LYON, FRANCE ◆ OCTOBER 2004 TO JUNE 2005

SOLID WASTE RESEARCH ASSISTANT
Supervised a feasibility study for the implementation of a scientific cluster in environmental sciences between local universities, local government and local industries in the Champagne, France region.
- ➢ Organized meeting presentations to elected officials, industry representatives and university scientists
- ➢ Collected social, environmental and economic data for project viability
- ➢ Assessed feasibility of industrial ecology approach for industrial area redevelopment utilizing material and energy flow analysis (using GIS) and Life Cycle Analysis

PLASTIC OMNIUM – URBAN SYSTEM◆ LYON, FRANCE◆ SEPTEMBER 2003 TO AUGUST 2004

EHS AND AUDIT ASSISTANT / SOLID WASTE OPERATIONS MANAGER
Charged with assessing and solving dysfunctions in the operations department (Audit). Performed internal audit and dysfunction analysis of the CSC (center for customer service). As part as the Agenda 21 of the Belfort territory (France), I Planned and managed a municipal new waste collection system technology, a new on-board scale weighing: Each bin is electronically chipped with its geographic and technical details. Garbage trucks were fitted with a device that can read the bin data, and linked to a central monitoring station which records collection times and alerts management when the units need washing.
- ➢ Created risk assessment and developed procedures and process documents
- ➢ Planned and managed a municipal new waste collection system technology, on-board scale weighing; separate and weigh the non recycled trash and charge household for only that quantity.
- ➢ Created new production procedure, which increased the units (plastic bins) distributed by 30%
- ➢ Wrote procedures manual, defining product specifications and standards necessary to meet customer requirements
- ➢ Implemented new inspection process, which identified and led to correction of potential defects
- ➢ Recruited and trained team; designed waste collection route; developed excellent customer relationships

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EDUCATION

PhD of Computational Sustainability, Joint Research between the University of Technology of Troyes (UTT) and the University of Michigan, Ann Arbor (February 2015).
Thesis Title: Computational Sustainability Assessment: Agent-Based Models & Agricultural Industrial Ecology

Master of Rudology (waste sciences) Social and Local Management of Waste and Pollution, University of Maine, Le Mans, France 2007 Graduated Magna Cum laude

Dissertation title: "Creation and development of an intervention team for environmental emergencies in developing countries (Africa)"

Master of Environmental Engineering specialized in Industrial Security, Certification and Environment, University of North Carolina, Greensboro, N. Carolina, USA 2006
Dissertation title: "The socioeconomic approach on household waste management"

Bachelor of Socio-economic Management specialized in Quality and Team Management, Lyon, France 2005
Dissertation title: "Local government environmental policy management in France"

BTS (Advanced degree. 2 years of postsecondary study) **in Business Administration and Management,** Lyon, France 2004

PUBLICATIONS

Bichraoui, N., Xu, M., Miller, S. B. Guillaume. Agent-Based Life Cycle Assessment for Switchgrass-Based Bioenergy Systems (Resources, Conservation & Recycling)

Bichraoui, N., B. Guillaume, and A. Halog. 2013. "Agent-Based Modeling Simulation for the Development of an Industrial Symbiosis - Preliminary Results." The 3rd International Conference on Sustainable Future for Human Security, SUSTAIN 2012, 3-5 November 2012, Clock Tower Centennial Hall, Kyoto University, JAPAN 17 (0): 195–204. doi:10.1016/j.proenv.2013.02.029.

Bichraoui, Najet. 2011. "Modeling an Eco-Industrial System through Life Cycle Approach for the Pulp and Paper Industry in Maine." Conference Proceedings at the International Conference on Complex Systems (ICCS 2011).

Bichraoui, Najet, and Anthony Halog. 2012. "Application of Agent-Based Modeling (ABM) of An Integrated System Modeling Framework for Designing a Sustainable Industrial Park." April 2.

http://www3.aiche.org/Proceedings/Abstract.aspx?ConfID=Spring-GCPS-2012&GroupID=1652&SessionID=18545&PaperID=246096.

Halog, Anthony, Najet Bichraoui, Yosef Manik, and Binod Neupane. 2011. "Advancing Integrated Methodological Framework for Developing Sustainable and Resilient Systems." Conference Proceedings at the International Conference on Complex Systems (ICCS 2011), Pages 129–14 3.