

## **FINAL CONFERENCE PROGRAM BROCHURE**

**Welcome**

**to the**

**17<sup>th</sup> American Society of Nepalese Engineers (ASNEng) Annual  
Conference**

**“Bridging the Gap: Engineering, Science, and Technology for Global Progress”**

### **Conference Organized By**

**American Society of Nepalese Engineers (ASNEng)**

**P. O. Box 1616**

**Centreville, VA, 20122, USA**

**Email: [info@ASNEng.org](mailto:info@ASNEng.org)/ Web: [www.ASNEng.org](http://www.ASNEng.org)**

### **Conference Hosted By**

**ASNEng Carolinas Chapter**

### **Venue**

**Embassy Suites by Hilton**

**5400 John Q Hammons Drive NW | Concord, NC 28027**

### **Date**

**Saturday, August 10, 2024**

### **Conference Website**

**[www.ASNEng.org](http://www.ASNEng.org)**

## **WELCOME FROM CONFERENCE CHAIRS**

On behalf of the Conference Organizing Committee of the American Society of Nepalese Engineers (ASNEng), we would like to extend our greetings and warm welcome to you to the 17<sup>th</sup> ASNEng Annual Conference being held at Embassy Suites by Hilton Charlotte NC on 10<sup>th</sup> of August 2024. The conference is hosted by the Carolinas Chapter of ASNEng. This special conference has a unique theme of “*Bridging the Gap: Engineering, Science, and Technology for Global Progress*” with the principal objective of assembling faculty, engineers, scientists, entrepreneurs, students and other professionals from related areas together on a common platform for sharing and disseminating knowledge and experience with broader scientific and engineering communities.

The conference program covers a wide variety of engineering and scientific areas ranging from energy and sustainable technologies, civil engineering infrastructures to cutting edge research on information technology and artificial Intelligence. The program includes three technical sessions, a panel discussion session, networking, dinner and a cultural program. The conference program includes the conference opening with invited guest speakers, a keynote speech, a plenary session, a poster session, and 3 more technical oral presentation sessions. Each of these sessions will feature individual presentations and a question-answer forum to facilitate sharing of knowledge and experience among fellow engineers, scientists and professionals.

This year we are proud to have many invited distinguished guests such as Dr. Deb Jaisi, Professor of Environmental Biogeochemistry, University of Delaware; Dr. Muna Aryal, Assistant Professor of Bioengineering, North Carolina Agricultural and Technical State University; Mr. Alan Zogaria, Secretary, and Ms. Julia Gass, Coordinator, Engineers Without Borders, USA Research Triangle (RTP); and Mr. Suhas Mengale, Senior Vice-President, AECOM. We will have guest speaker Mr. Purna Kharel, Founder, President and CEO, K&A Engineering Consulting, P.C.

We also have invited speakers at the Panel Discussion Session related to the opportunity and challenges to become an Entrepreneur, facilitated by Mr. Raju Joshee, Senior Director, Strategic Services at BeyondID. Our distinguished panelists are Reshma Tamrakar, Managing Partner, Staggered Equity Investments; Mr. Moti KC P.E., President & CEO at EquaGen Engineers; Mr. Rad Pandit, Chairman & CEO, Everest Park LLC; and Mr. Sharad Acharya Consulting software Engineer, LexisNexis.

We extend our heartfelt thanks to the authors and presenters who submitted their abstracts and are willing to share their research and insights with conference attendees. We are confident that the conference will offer all participants a valuable opportunity to exchange knowledge and experiences in their respective fields, fostering a collaborative environment for advancing technology for the benefit of humanity.

We also express our gratitude to the conference attendees for dedicating their time and supporting the event. A special thank you goes to all members of the Conference Organizing Committee, particularly the Local Organizing Committee, for their unwavering dedication and countless hours of volunteer work. We are also grateful to the ASNEng Board of Directors for their valuable suggestions and support.

Finally, we deeply appreciate the distinguished invited guests and speakers, as well as all sponsors and donors, for their generous contributions to the success of this special 17<sup>th</sup> conference. We wish everyone an enriching and memorable experience at the event.

*With warm regards,*



Mangal Maharjan.,  
*General Chair,  
Senior Design  
Engineer, EDF  
Renewables,  
Hanover, MD.*



Nirajan Aryal, P.E.,  
*General Co-Chair  
Engineer  
City of Raleigh,  
Raleigh, NC*



Om Dahal, *Ph.D., P.E.,  
Technical Chair,  
Senior Engineer, Burns  
& McDonnell, Charlotte  
NC*



Rabin Dhakal,  
*Ph.D., Technical  
Co-Chair,  
Senior Research  
Engineer, Electric  
Power Research  
Institute (EPRI),  
Charlotte, NC*



Bijaya Babu Paudyal,  
*Ph.D., P.E.,  
Local Committee  
Chair, Principal,  
Clean Energy  
Associates (CEA)  
Charlotte, NC*

**American Society of Nepalese Engineers (ASNEng)**  
**Presents the**  
**Seventeenth (17<sup>th</sup>) ASNEng Annual Conference and Meeting**  
**Theme:** “Bridging the Gap: Engineering, Science, and Technology for Global Progress”  
**Date:** August 10<sup>th</sup>, 2024  
**Venue:** Embassy Suites by Hilton,  
5400 John Q Hammons Drive NW | Concord, NC 28027  
**Hosted by:** ASNEng Carolinas, Chapter

*You are cordially invited to attend the conference.*  
*For registration, please visit – <http://www.asnengr.org/conference>*

**—Overall Program Schedule at-a-Glance—**  
**(Subject to change)**

**Saturday, August 10<sup>th</sup>, 2024**

**(Room)**

7:30 AM – 8:45 AM	Breakfast	Conference Hall
7:45 AM – 8:45 AM	On-Site Registration	Conference Hall
8:15 AM – 8:45 AM	Authors Coffee	Conference Hall
9:00 AM – 9:30 AM	Conference Opening Speech	Conference Hall
9:30 AM – 10:20 AM	Keynote Speech: (Invited Guest)	Conference Hall
10:20 AM – 10:30 AM	Break	
10:30 AM – 11:30 AM	Presentation: (Invited Guests)	Conference Hall
	Award Distribution	Conference Hall
11:30 AM – 05:40 PM	Poster Session & Networking	Conference Hall
12:00 PM – 1:15 PM	Lunch & Networking	Conference Hall
1:15 PM – 2:15 PM	Technical Session I: Artificial Intelligence & Computing	Conference Hall
2:15 PM – 3:30 PM	Technical Session II: Energy & Emerging Technology	Conference Hall
	Guest Speaker	
3:30 PM – 3:40 PM	Break	
3:40 PM – 4:40 PM	Panel Discussion	Conference Hall
4:40 PM – 5:40 PM	Technical Session III: Civil Engineering & Environment Technical	Conference Hall
5:40 PM – 10:00 PM	Happy Hour, Networking & Dinner	Conference Hall

**Sunday, August 11<sup>th</sup>, 2024**

7:00 AM- 10:00 PM	Friendly Soccer Match (Local Vs Invited)	Bradford Park Soccer Field
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## **Detail Conference Program Schedule**

### **Saturday, August 10th, 2024**

<b>Breakfast</b>	<b>7:30 AM – 8:45 AM</b>	<i>(Room)</i> <i>Conference Hall</i>
<b>On-Site Registration</b>	<b>7:45 AM – 8:45 AM</b>	<i>Conference Hall</i>
<b>Authors Coffee</b>	<b>8:15 AM – 8:45 AM</b>	<i>Conference Hall</i>
<b>Conference Opening</b>	<b>9:00 AM – 9:30 AM</b>	<i>Conference Hall</i>

*Welcome & Housekeeping update:*

by **Bijaya Paudyal, Ph.D., P.E.**, Local Chair and President of Carolinas Chapter

*Opening Remark and Conference Overview:*

by **Mangal Maharjan**, General Chair and President of ASNEng

*Overview of Technical Program:*

by **Om Dahal, Ph.D., P.E.**, Technical Chair, Vice-President of Carolinas Chapter

*ASNEng highlight and achievements:*

by **Upendra Karna, Ph.D.**, Past President

<b><u>Keynote Speech</u></b>	<b>09:30 AM - 10:20 AM (1Hr PDH)</b>	<i>Conference Hall</i>
<p><b>“Global Climate Change and its Impacts on Ecosystem Health: Comparative Analysis of Developed and Underdeveloped Countries”</b></p> <p><b><i>By Prof. Dr. Deb Jaisi</i></b></p> <p><i>Interdepartmental Science and Engineering Laboratory</i> <i>Department of Plant and Soil Sciences; Earth Sciences</i> <i>University of Delaware, USA</i></p>		

***Keynote Speaker Dr. Deb P. Jaisi:*** Dr. Deb P. Jaisi is a Professor in the Department of Plant and Soil Sciences at the University of Delaware, where he has been a faculty member since 2011. He holds a master’s degree in Soil and Geoenvironmental Engineering from the Asian Institute of Technology, and a Ph.D. in Biogeochemistry from Miami University. Dr. Jaisi completed postdoctoral fellowships in Isotope Geochemistry and Environmental Engineering at Yale University. His research interests encompass soil and environmental chemistry, with a focus on phosphorus cycling and biogeochemical processes. Dr. Jaisi has received numerous accolades, including the NSF CAREER Award, the ACS New Investigator Award, and the Ralph Powe Junior Faculty Enhancement Award. He actively contributes to the scientific community through his roles as an associate editor for several journals, as well as his involvement in various professional societies and conference committees. His work is widely published, with an h-index of 30 and over 4,393 citations. For more information, visit his [Google Scholar profile](#) or [University of Delaware page](#).



<b><u>Break</u></b>	<b>10:20 AM – 10:30 AM</b>	
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<b>Invited Guests</b>	<b>10:20 AM – 10:30 AM</b>	<i>Conference Hall</i>
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***Transcranial Focused Ultrasound: A Revolution in Noninvasive and Targeted Drug Delivery for Neurological Disorders*** by **Muna Aryal, Ph. D., Assistant Professor of Bioengineering**, North Carolina Agricultural and Technical State University

***Engineers Without Borders-Changing Lives*** by **Alan Zogaria, Secretary, Julia Gass, Coordinator**, Engineers Without Borders, USA Research Triangle (RTP)

***AI: The Future or Passing Fad? Projecting the AEC Industry's Landscape in 5 Years and Beyond*** by **Suhas Mengale, Senior Vice-President**, AECOM

**Award Distribution:** Facilitate by **Rajan Pokhrel**,

- Outstanding Performance Award (7/1/2023 to 6/30/2024)
- Society Leadership Award (Past President)
- Emerging Leadership Award (Every 2 Year)
- Lifetime Achievement Award (Every 2 Years)

<b>Poster Session &amp; Networking</b>	<b>11:30 PM – 05:40 PM</b>	<i>Conference Hall</i>
<b>Session Chair(s):</b>		
<b>Upendra Karna, PhD, Past President ASNEng, President, U&amp;S ENGINEERS, P.C.</b>		
<b>Rameshwor Kunwor, Principal Security &amp; Cloud Architect, Condé Nast</b>		
<b>Jiten Gautam, P.E., CEM, Senior Engineer, Duke Energy Corporation, Charlotte, NC</b>		

***Effectiveness of Strategies to Avoid Microbiological and Chemical Contaminants in Household Drinking Water within the Kathmandu Valley*** by **Nishan K. Shrestha<sup>1</sup> (Corresponding Author)**, **Seth H. Frisbie, Ph.D.<sup>2</sup>**, **Erika Mitchell, Ph.D.<sup>3</sup>**, **Bibudhendra Sarkar, Ph.D.<sup>4</sup>**, **Sushil Dahal<sup>5</sup>**, **Rojina Amatya, Amy Hoeltge, Ph.D.<sup>2</sup>**, <sup>1</sup>Beachwood High School, Beachwood, Ohio, USA; <sup>2</sup>Norwich University, Northfield, Vermont, USA; <sup>3</sup>Better Life Laboratories, Inc., Calais, Vermont, USA; <sup>4</sup>The Hospital for Sick Children, Toronto, Ontario, Canada; <sup>5</sup>Tribhuvan University, Kathmandu, Nepal

***Evaluating Extraction Principles for Increased Viral RNA Output*** by **Nita Khanal<sup>1</sup> (Ph. D Student, Corresponding Author)**, **Md Ariful Islam Juel<sup>1</sup>**, **Cynthia Gibas<sup>2</sup>**, **Jessica Schlueter<sup>2</sup>**, **Mariya Munir<sup>1</sup>**, <sup>1</sup>Department of Civil Engineering & <sup>2</sup>Department of Bioinformatics and Genomics, University of North Carolina at Charlotte, Charlotte NC

***Performance Analysis of a Propeller Turbine*** by **Biswas Gautam, MS student**, Department of Mechanical Engineering, University of North Carolina at Charlotte, Charlotte NC

***Grid Integration of Electric Vehicles and Renewable Energy: Opportunities and Challenges*** by **Manish Niraula, Power Conversion Controls Engineer**, Electrification Department, Canoo Technologies Inc., Torrance, CA, USA

**Finite Element Model Updating for Old Railroad Bridges using Field Experiment Data and Optimization Algorithms** by **Sachin Tripathi (Ph.D. candidate); Rahul Anand (M.S. Student), Celso Cruz De Oliveira (Ph.D. Candidate), and Ramesh B. Malla, Ph.D., F. ASCE, F. EMI, A.F. AIAA, F. ASNEng, Professor (Corresponding Author)**, Department of Civil & Environmental Engineering, University of Connecticut, Storrs

<b>Lunch and Networking</b>	<b>12:00 PM – 01:15 PM</b>	<i>Conference Hall</i>
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<b><u>Technical Session I</u></b>	<b>1:15 PM – 2:15 PM (1Hr PDH)</b>	<i>Conference Hall</i>
<p><b>Session Title: Information Technology and Artificial Intelligence</b>  <b>Session Chair(s): Ranjan Pokhrel, Principal Database Administrator, Yahoo Inc. Sudeep Sapkota, Executive Director - Emerging Risk &amp; Innovation, Wells Fargo</b></p>		

**Revolutionizing Software Development: The Impact of AI Engineering and GitHub Copilot** by **Surendra Bajracharya, Lead Software Engineer, Wells Fargo**

**Empowering Engineering Innovation with Generative Artificial Intelligence (AI)** by **Rameshwor Kunwor, Principal Security & Cloud Architect, Condé Nast**

**How can Nepal benefit from innovative practices in ICT** by **Gokarna Sharma, Ph.D., Associate Professor, Department of Computer Science, Kent State University, Kent OH**

<b><u>Technical Session II</u></b>	<b>2:15 PM – 3:30 PM (1Hr PDH)</b>	<i>Conference Hall</i>
<p><b>Session Title: Energy and Emerging Technology</b>  <b>Session Chair(s): Dilli Neupane, P.E., CEM, Principal, Astrum Renewables Ram Chandra Poudel, Ph.D., Assistant Professor, Appalachian State University, Boone, NC</b></p>		

**Balancing Scale and Efficiency: Exploring BESS Sustainability Through Size Optimization and Augmentation Strategies** by **Manoj Karki, P.E., MBA, Business Development Manager, Duke Energy Corporation, Moti KC P.E., President & CEO, EquaGen Engineers, Raleigh-Durham, North Carolina**

**Overvoltage Analysis in unbalanced distribution system with multiple DERs** by **Er. Hiva Nasiri, Ph.D., Er. Nistha Shakya, Er. Abinash Kumar Chaudhary, Er. Kishan Kumar Soni, Er. Sudhan Dahal, K&A Engineering Consulting**

**Smart Microgrid Feasibility Study with multiple constraints using Machine Learning Algorithms for scale up** by **Jiten Gautam, P.E., CEM, Senior Engineer, Duke Energy Corporation, Charlotte, NC**

**Entrepreneurship, Creating Jobs and Technology Knowledge Transfer in Nepal** by **Purna Kharel, Founder, President and CEO, K&A Engineering Consulting, P.C.**



<b>Break</b>	<b>3:30 PM – 3:40 PM</b>	
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<b>Panel Discussion</b>	<b>3:40 PM – 4:40 PM</b>	<i>Conference Hall</i>
<b>Title: <i>Innovative Synergies: Business, Technology, Entrepreneurship and AI</i></b>		
<b>Moderator: <i>Raju Joshee, PMP, Vice President of Global Services, BeyondID, Odenton, MD</i></b>		
<b>Panelists:</b>		
<b><i>Moti KC, P.E., President &amp; CEO, Equagen Engineers, Raleigh-Durham, NC</i></b>		
<b><i>Rad Pandit, Chairman &amp; CEO, Everest Park LLC, Siler City, NC</i></b>		
<b><i>Reshma Tamrakar - Managing Partner, Staggered Equity Investments, Charlotte, NC</i></b>		
<b><i>Sharad Acharya-Consulting Software Engineer (SRC), LexisNexis, Cary, NC</i></b>		

<b><u>Technical Session III</u></b>	<b>4:40 PM – 5:40 PM (1Hr PDH)</b>	<i>Conference Hall</i>
<b>Session Title: <i>Civil and Infrastructure</i></b>		
<b>Session Chairs: <i>Krishna Dhakal Ph.D., P.E., Project Manager, Anne Arundel County Department of Public Works</i></b>		
<b><i>Vinod Mahat Ph.D., PE, CFM, Civil Engineer, FEMA Region 3</i></b>		

***Opportunities and challenges in preparing planning and policy framework in urban watershed management by Thakur Dhakal, P.E, Engineer IV, Fairfax County Government, Virginia, USA***

***Comparing flood risk exposure characterization to utility scale solar based on floodplain maps and hurricane induced flooding by Kshitiz Khanal, Ph.D. Candidate (Corresponding Author), Nikhil Kaza, Ph.D. Professor, Department of Energy System Planning, University of North Carolina at Chapel Hill, NC***

***Production of lithium carbonate from geothermal brine by selective extraction of lithium using a novel ion sieve method by Ujjwal Pokharel, Graduate Research Assistant, Old Dominion University, Norfolk, VA***

<b><u>Happy Hour, Networking &amp; Dinner</u></b>	<b>5:40 PM – 10:00 PM</b>	<i>Conference Hall</i>
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- Happy Hour and Networking (Cash Bar)
- Dinner
- Cultural Program & DJ Night



## **Conference Organizing Committees**

### **Conference Chairs:**

#### **General Chair & Co-Chair:**

**Mangal Maharjan, General Chair**

EDF Renewables, Hanover, MD (E-mail: [maharjan77@yahoo.com](mailto:maharjan77@yahoo.com))

**Nirajan Aryal, P.E., General Co-Chair**

Raleigh, NC (E-mail: [nirurm@hotmail.com](mailto:nirurm@hotmail.com))

#### **Technical Chair & Co-Chair:**

**Om Dahal, Ph.D., P.E.; Technical Chair**

Burns & McDonnell, Charlotte, NC (Email: [omdahal@yahoo.com](mailto:omdahal@yahoo.com))

**Rabin Dhakal, Ph.D.; Technical Co-Chair**

Electric Power Research Institute (EPRI), Charlotte NC (E-mail: [rbndhakal@gmail.com](mailto:rbndhakal@gmail.com))

#### **Local Organizing Committee Chair**

**Bijaya Babu Paudyal, Ph.D., PE; Local Committee Chair**

Clean Energy Associates (CEA), Charlotte, NC (Email: [bijaya.paudyal@gmail.com](mailto:bijaya.paudyal@gmail.com))

### **Steering Committee**

- |  |  |
|--|--|
| 1. Mangal Maharjan, MD (General Chair)   | 19. Rajendra Shrestha, Ph.D., F. TX (Past President)             |
| 2. Om Dahal, Ph.D., NC (Technical Chair)   | 20. Upendra L. Karna, P.E., NJ (Past President)                  |
| 3. Rabin Dhakal, Ph.D., NC (Technical Co-Chair)                                    | 21. Jagannath Ghimire, P.E., TX (Past President)                 |
| 4. Nirajan Aryal, P.E., NC (General Co-Chair)                                      | 22. Thakur Dhakal, P. E., (Past President)                       |
| 5. Surya Thapa P.E, OH (Past President)  | 23. Sagar Khadka, VA (DC Chapter President)                      |
| 6. Ananda Paudel, Ph.D., CO (General Secretary)                                    | 24. Raju Joshee, PMP, MD (Past Technical Chair)                  |
| 7. Shuba Adhikari, AICP, VA (Information Secretary)                                | 25. Bijaya Paudyal, Ph.D., NC (Local Chair)                      |
| 8. Prashanna Gyawali, WV (Treasurer)   | 26. Suman Adhikari, P.E., NC (Local Committee Member)            |
| 9. Srijana Khatiwada, WV (Joint Secretary)   | 27. Manisha Rauniyar, NC (Local Organizing Committee Member)     |
| 10. Uttam Sedai, VA (Member)   | 28. Rameshwor Kunwor, NC (Local Organizing Committee Member)     |
| 11. Kiran Adhikari, IL (Member)  | 29. Sudeep Sapkota, NC (Local Organizing Committee Member)       |
| 12. Utsab Pokharel (Member)  | 30. Nav Raj Paneru, P.E., NC (Local Organizing Committee Member) |
| 13. Om Dhodary (Member)  | 31. Padam Karki, NC  |
| 14. Rabin Bhattarai, Ph.D., Urbana-Champaign, IL (Technical Committee Chair)       | 32. Ram Poudel, Ph.D., NC  |
| 15. Santosh Dhakal, P.E., MD (Fundraising and Financial Oversight Committee Chair) | 33. Abakash Pokharel, NC   |
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| 17. Garima Sharma CO (Student Committee Chair)                                     |  |
| 18. Ramesh B. Malla, Ph.D., CT (Past President)                                    |  |

### Local Committee

Bijaya Paudyal, Ph.D., PE, President  
Om Dahal, Ph.D., PE, Vice-President  
Rabin Dhakal, Ph.D., Secretary  
Suman Adhikari, Joint-Secretary  
Manisha Rauniyar, Treasurer  
Nirajan Aryal, P.E.  
Ram Poudel, Ph.D.

Nav Paneru  
Sudeep Sapkota  
Rameshwor Kunwor  
Bikram Shrestha  
Keshab Sapkota  
Shubhalaxmi Shakya  
Deepesh Dawadi

*Cultural Program Coordinated by:* Bikram Shrestha

### Conference Sponsors and Donors



*American Society of Nepalese Engineers (ASNEng) - a non-profit organization established in September 2007 with IRS 501(c)(3) tax exempt status – aims at providing a common platform for people of Nepalese background and their friends, in engineering and closely related scientific and technical areas to come together, exchange ideas, and support each other for their and the larger society's common good and benefits. It operates for engineering, scientific and technological research and educational purposes. The Society also strives at promoting engineering, scientific, and technological advancement in Nepal. The Membership application form and detailed information on ASNEng and updates on its recent activities can be found at <http://www.ASNEng.org>.*

### Conference Websites

For more information on the conference, please visit the following websites:  
[www.ASNEng.org](http://www.ASNEng.org) (“Annual Conferences and Meetings”)

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