Clarkson University

Clarkson-SRIHER-ICMR Indo-US Knowledge Initiative Project

August 5-9, 2019

TRAINING WORKSHOP ON LOW-COST AIR QUALITY SENSORS AND RELATED DATA ANALYTICS

Day	Morning		Afternoon	
Monday Theme: Air quality background; data availability	09.00 - 09.30	Introduction to workshop goals SN 214 (Dhaniyala/Powers)	01.15 - 03.00	Activity: Get monitoring data from AirNow/Env: Canada SN 241 (Dhaniyala/Hopke)
	09.30 - 10.30	Air quality related health effects SN 214 (Hopke)		
	10.30 - 10.45	Break	03.00 - 03.15	Break
	10.45 - 12.00	Air quality history and regulations SN 214 (Hopke)	03.15 - 04.30	Discussion and experimental design in groups SN 241 (Dhaniyala/Rossner)
	12.00 - 01.15	Linking air quality and health in India MPR (Balakrishnan)		
Tuesday Theme: Air sensors introduction; lab evaluation of sensors	09.15 - 10.15	Aerosol sampling and measurements SN 214 (Dhaniyala)	01.30 - 03.00	Activity: Laboratory aerosol measurements and sensors CAMP 292 (Dhaniyala/Rossner)
	10.15 - 10.30	Break	03.00 - 03.30	Break
	10.30 - 12.00	Low-cost air quality sensors SN 214 (Dhaniyala)	03.30 - 04.30	Plan on research project using sensors and employing advanced data analytics Innovation Space (Various)
	12.00 - 01.15	Food for thought: Global low-cost sensor networks MPR (Dhaniyala)		

For more information about the workshop contact Suresh Dhaniyala (sdhaniya@clarkson.edu), or Angela Rodriguez (arodrigu@clarkson.edu)

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Day	Morning		Afternoon	
Wednesday Theme: Sensors and Data analytics	09.15 - 10.30	Introductory data analytics SN 214 (Skufca)	01.15 - 03.00	Group research project Various (Dhaniyala/Rossner)
	10.30 - 10.45	Break	03.00 - 03.15	Break
	10.45 - 12.00	Data visualization and visual analysis SN 214 (Skufca)	03.15 - 04.30	Advanced data analytics I - using R and Python SN 241/239 (Gurajala/Mondal)
	12.00 - 01.30	Intro India Electricity Future Game MPR (Powers)		
Thursday Theme: Data Analytics and Visualization	09.15 - 10.15	Machine learning basics SN 214 (Skufca)	01.15 - 03.00	Group research project; Measurements/analytics
	10.15 - 10.30	Break	03.00 - 03.15	Break
	10.30 - 12.00	Advanced data analytics II - R/Python SN 241/239 (Gurajala/Mondal)	03.15 - 04.30	Designing experimental plan for aerosol measurements
	12.00 - 01.15	ICMR: Mandate on air quality and health MPR (		Innovation Space
Friday	09.15 - 11.30	Presentations from groups	01.30 - 03.00	India Electricity Future Game
	12.00 - 01.30	Lunch in MPR		

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Workshop Presenters

SURESH DHANIYALA, Ph.D.

Suresh Dhaniyala is the Bayard D. Clarkson Distinguished Professor in the Mechanical and Aeronautical Engineering Department at Clarkson University. Prof. Dhaniyala's interests are in the fields of air quality monitoring, sensors, and health effects of airborne particles. He received a NSF CAREER award and Clarkson's John W. Graham Jr. Award for research accomplishments and the Pi Tau Sigma award for teaching. He has more than 50 peer-reviewed publications, authored 3 book chapters, and 3 patents on aerosol sensing techniques.

BAYARD D. CLARKSON DISTINGUISHED PROFESSOR

DEPARTMENT OF MECHANICAL & AERONAUTICAL ENGINEERING

CLARKSON UNIVERSITY

SUSAN POWERS, Ph.D.

Susan E. Powers, PhD, PE, is the Director of Clarkson's Institute for a Sustainable Environment and the Spence Professor in Sustainable Environmental Systems. She has been a Professor and Administrator at Clarkson since 1992. She teaches classes in climate change, industrial ecology and environmental engineering design. Her research focuses primarily on the environmental impacts of energy systems.

PROFESSOR/DIRECTOR

INSTITUTE for a SUSTAINABLE ENVIRONMENT

CLARKSON UNIVERSITY

SUMONA MONDAL, Ph.D.

Sumona Mondal is an Associate Professor of Statistics in the Mathematics Department at Clarkson University. Professor Mondal's research interests are Multivariate Theory, Statistical Inference, Design of Experiments, and Applications of Data Mining Techniques on biological and engineering data. Mondal is an active member in the scientific community, publishing over 25 peer-reviewed articles regularly in statistics, mathematics, engineering, bio-medical journals and giving more than 40 talks at conferences across the globe.

ASSOCIATE PROFESSOR

DEPARTMENT OF MATHEMATICS

CLARKSON UNIVERSITY

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JOSEPH SKUFCA Ph.D.

Joe Skufca graduated from the US Naval Academy and served 20 years as a submarine officer. He retired from the Navy in 2005, completed his PhD in Applied Mathematics, and began as a faculty member in the Math Department at Clarkson University. His work stretches broadly across applied mathematics and dynamical systems, with focus on applied modeling. He now serves as Chair of the Department of Mathematics and is one of the founding co-directors of the Clarkson's Interdisciplinary Master's Program in Data

PROFESSOR/CHAIR

DEPARTMENT OF MATHEMATICS

CLARKSON UNIVERSITY

SUPRAJA GURAJALA, Ph. D.

Supraja Gurajala is an Assistant Professor in the Computer Science Department at SUNY Potsdam. She earned her PhD in computer science from Clarkson University. Her research interests are in the fields of social media data analytics, databases computer networks, and security.

ASSISTANT PROFESSOR

DEPARTMENT OF COMPUTER SCIENCE

SUNY POTSDAM

NUERAILI KUERBANJIANG M.S.

Nueraili Kuerbanjiang is a sustainable engineer whose research focuses on utilizing PM sensors network to address air quality issues. He graduated from the University of Science & Technology Beijing, with a bachelor's degree in metallurgy and ecological engineering. He received a Master of Science from Clarkson University in May 2019. His research interests are designing and developing portable iot PM sensors, applying different machine learning models on multi PM sensors to increase air quality monitoring accuracy, and real time air quality visualization techniques.

RESEARCHER

INSTITUTE for a SUSTAINABLE ENVIRONMENT

CLARKSON UNIVERSITY

DEVIN KAPPER, Ph. D.

Devin Kapper obtained his Ph.D. from Clarkson University in 2018 working under the guidance of Sumona Mondal and Shantanu Sur. His dissertation was titled "Clustering approaches to biological data and modeling cellular dynamics for classification and inference," and sought to analyze cell motion to explore which latent cell properties could be identified through image processing techniques. His research focuses on cross-disciplinary methodologies involving longitudinal data analysis, multivariate statistical analysis, statistical modeling, data mining, and data visualization. He has previously worked as a postdoctoral research associate and fellow at Clarkson University.

VISITING ASSISTANT PROFESSOR

DEPARTMENT OF MATHEMATICS

CLARKSON UNIVERSITY

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Workshop Presenters

PROFESSOR EMERITUS

CIVIL and ENVIRONMENTAL ENGINEERING

CLARKSON UNIVERSITY

PHIL HOPKE, Ph.D.

Dr. Philip K. Hopke is the Bayard D. Clarkson Distinguished Professor Emeritus at Clarkson University, and former Director of the Center for Air Resources Engineering and Science (CARES), and former Director of the Institute for a Sustainable Environment (ISE). He also holds an adjunct professorship in the Department of Public Health Sciences at the University of Rochester School of Medicine and Dentistry. Dr. Hopke is a past Chair of EPA's Clean Air Scientific Advisory Committee (CASAC), and has served on the EPA Science Advisory Board (SAB). Professor Hopke is a Past President of the American Association for Aerosol Research (AAAR), and was a member of the more than a dozen National Research Council committees. He is a member of the NRC's Board of Environmental Studies and Toxicology. He is a fellow of the International Aerosol Research Assembly, the American Association for the Advancement of Science and the American Association for Aerosol Research. He is an elected member of the International Statistics Institute and was the recipient of the Eastern Analytical Symposium Award in Chemometrics and the Chemometrics in Analytical Chemistry Conference Lifetime Achievement Award. He is also a recipient of the David Sinclair Award of the AAAR and co-recipient of the 2018 Fissan-Pui-TSI Award for International Collaboration presented by the International Aerosol Research Assembly. He served as a Jefferson Science Fellow at the U.S. Department of State during the 2008-09 academic year.

For more information about the workshop please contact Suresh Dhaniyala (sdhaniya@clarkson.edu), or Angela Rodriguez (arodrigu@clarkson.edu)

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