2021 Systems and Information Engineering Design Symposium (SIEDS 2021)

Virtual Conference 29 – 30 April 2021



IEEE Catalog Number: CFP21SIE-POD ISBN:

978-1-6654-2944-3

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP21SIE-POD

 ISBN (Print-On-Demand):
 978-1-6654-2944-3

 ISBN (Online):
 978-1-6654-1250-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



Program

2021 Systems and Information Engineering Design Symposium (SIEDS)

Energy and Environment 1

A Comprehensive Guide to Sweet Briar College's Greenhouse Hydroponics System	
Angelika M Lindberg (Sweet Briar College, USA), Rachel Logan (Sweet Briar College, USA), Hannah Marron (Sweet Briar College, USA), Bethany Brinkman (Sweet Briar College, USA), Michelle Gervasio (Sweet Briar College, USA), Bryan Kuhr (Sweet Briar College, USA)	1
Deep Learning Approach to Predict Peak Floods and Evaluate Socioeconomic Vulnerability to Flood Events: A Case Study in Baltimore, MD, U.S.A	
Ruoyu Zhang (University of Virginia, USA), Hyunglok Kim (University of Virginia, USA), Emily Lien (University of Virginia, USA), Diyu Zheng (University of Virginia, USA), Lawrence Band (University of Virginia, USA), Venkatraman Lakshmi (University of Virginia, USA)	6
Managing Operational and Environmental Risks in the Strategic Plan of a Maritime Container Port	
Christopher G Gacek (University of Virginia, USA), Derek J Gimbel (University of Virginia, USA), Samuel Longo (University of Virginia, USA), Benjamin I Mendel (University of Virginia, USA), Gabriel Sampaio (University of Virginia, USA), Thomas Polmateer (University of Virginia, USA), Mark C. Manasco (Commonwealth Center for Advanced Logistics Systems, USA), Daniel Hendrickson (Virginia Port Authority, USA), Timothy L Eddy, Jr (University of Virginia, USA), James H. Lambert (University of Virginia, USA)	12
A Toolkit for the Spatiotemporal Analysis of Eutrophication Using Multispectral Imagery Collected from Drones	
Jorge Barajas (James Madison University, USA), Christian Detweiler (James Madison University, USA), Cailyn Lager (James Madison University, USA), Charles Seaver (James Madison University, USA), Mark Vakarchuk (James Madison University, USA), Jason Forsyth (James Madison University, USA)	18
Jason i Orsyth (James Madison Onliversity, OSA)	⊥0

Health 1

	Checkbox Detection on Rwandan Perioperative Flowsheets Using Convolutional Neural Network	
	Emily Murphy (University of Virginia, USA), Swathi A Samuel (University of Virginia, USA), Joseph Cho (University of Virginia, USA), William Adorno (University of Virginia, USA), Marcel Durieux (University of Virginia, USA), Donald Brown (University of Virginia, USA), Christian Ndaribitse (University of Rwanda, Rwanda)	23
	An Automated Machine Learning Pipeline for Monitoring and Forecasting Mobile Health Data	
	Anna Bonaquist (University of Virginia, USA), Meredith Grehan (University of Virginia, USA), Owen Haines (University of Virginia, USA), Joseph Keogh (University of Virginia, USA), Tahsin Mullick (University of Virginia, USA), Neil Singh (University of Virginia, USA), Sam Shaaban (NuRelm, USA), Ana Radovic (University of Pittsburgh & UPMC Children's Hospital of Pittsburgh, USA), Afsaneh Doryab (University of Virginia, USA)	29
	Inderstanding the Impact of COVID-19 on Economy and Environment in the Asia-Pacific Region	
	Rachel Bigelow (University of Virginia, USA), Reese Bowling (University of Virginia, USA), Shivani Das (University of Virginia, USA), Zachary Dedas (University of Virginia, USA), Eric T Jess (University of Virginia, USA), Venkataraman Lakshmi (UVa, USA)	35
Systems	s Design 1	
Is	Derek J D'Alessandro (University of Virginia, USA), William Gunderson (University of Virginia, USA), William Gunderson (University of Virginia, USA), Ethan Staten (University of Virginia, USA), Yann Kelsen Donastien (University of Virginia, USA), Pedro Rodriguez (University of Virginia, USA), Reid Bailey (University of Virginia, USA)	41
-	Jenna Cotter (University of Alabama in Huntsville, USA), Andrew Atchley (University of Alabama in Huntsville, USA), Barbara Banz (Yale University School of Medicine, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA)	46
E	Designing a Replicable Data Infrastructure for Education Research	
	Jordan Machita (University of Virginia, USA), Taylor R Rohrich (University of Virginia, USA), Yusheng Jiang (University of Virginia & UVA, USA), Yiran Zheng (University of Virginia, USA)	52

Ε	Exploring Amateur Performance in Athletic Tests Using Wearable Sensors	
	Stephen Mitchell (James Madison University, USA), Jason Forsyth (James Madison University, USA), Michael S. Thompson (Bucknell University, USA)	58
Data 1		
F	Forecasting the 2020 Election: A Comparison of Methods	
	Matthew Thomas (Inclusively, USA), Chad Sopata (University of Virginia, USA), Ben Rogers (USA), Spencer Marusco (Freddie Mac, USA)	64
A	A Robust Pedestrian and Cyclist Detection Method Using Thermal Images	
	Navya Annapareddy (University of Virginia, USA), Emir Sahin (University of Virginia, USA), Sander Abraham (University of Virginia, USA), Md Mofijul Islam (University of Virginia, USA), Max DePiro (Perrone Robotics, USA), Tariq Iqbal (University of Virginia, USA)	69
	The Future of Livestreaming: Strategy and Predictive Analysis for Future Operations of Facebook Live	
	Nolan K Alexander (University of Virginia, USA), David E Brenman (University of Virginia, USA), John Eshirow (University of Virginia, USA), Joshua Rosenblatt (University of Virginia, USA), Justin S Wolter (University of Virginia, USA), William Scherer (University of Virginia, USA), James Valeiras (Facebook, Inc., USA)	75
Д	A Bayesian Hierarchical Model for Ranking Aggregation	
	Stephen C Loftus (Sweet Briar College, USA), Sydney A Campbell (Sweet Briar College, USA)	81
Optimiz	zation, Simulation, and Decision Analysis 1	
A	Application of Multi-Criteria Decision Making in Bioink Selection	
	Lily F Rohrbach (University of Oklahoma, USA), Pedro Huebner (University of Oklahoma, USA)	86
	Extending the Markowitz Model with Dimensionality Reduction: Forecasting Efficient Frontiers	
	Nolan K Alexander (University of Virginia, USA), William Scherer (University of Virginia, USA), Matt Burkett (University of Virginia, USA)	92
٨	Neutrosophic Fuzzy Weighted Saving Heuristic for COVID-19 Vaccination	
	Esra Çakır (Galatasaray University, Turkey), Mehmet Ali Taş (Turkish-German University, Turkey), Ziya Ulukan (Galatasaray University, Turkey)	98

Evaluating Educational Intervention Fidelity with TranscriptSim, A Replicable NLP Technique Latifa M Hasan (University of Virginia, USA), Christopher McCharen (University of Virginia, USA), Ashley Scurlock (University of Virginia, USA), Congxin Xu (University of Virginia, USA), Brian Wright (University of Virginia, USA)	102
Workshop: Crafting an Effective Portfolio in User	
Experience Design	
Crafting an Effective Portfolio in User Experience Design Gregory Gerling (University of Virginia, USA), Sara Riggs (University of Virginia, USA), Seongkook Heo (University of Virginia, USA), Panagiotis Apostolellis (University of Virginia, USA), Logan Clark (University of Virginia, USA), Courtney C Rogers (University of Virginia, USA)	108
Energy and Environment 2 Designing, Modeling and Simulating a New Plant Producing Coal-Derived "Green" Products	
Javier Langarica (The George Washington University, USA), Matthew Aaron Perlow (The George Washington University, USA), Alexa L Solomon (The George Washington University, USA), Derek Ripp (The George Washington University, USA) Multi-Output Random Forest Regression to Emulate the Earliest Stages of Planet	110
Formation Kevin Hoffman (University of Virginia, USA), Jae Yoon Sung (University of Virginia, USA), André Zazzera (University of Virginia, USA) Energy Supply Readiness Across Climate Change and Energy Demand Scenarios in the Columbia River Basin	116
Cameron D Bailey (University of Virginia, USA), Samantha Garcia (UVa, USA), Hong Liang (UVa, USA), Kenneth Ross (UVa, USA), Julie Quinn (University of Virginia, USA)	122

Health 2

,	Digitization of Surgical Flowsheets Mary Blankemeier (University of Virginia, USA), Sarah Rambo (University of Virginia, USA), John Radossich (University of Virginia, USA), Charles Thompson (University of Virginia, USA), Donald Brown (University of Virginia, USA), Marcel Durieux (University of Virginia, USA), Christian Ndaribitse (University of Rwanda, Rwanda)	128
	An Application of the Partially Observed Markov Process in the Analysis of Transmission Dynamics of COVID-19 via Wastewater	
	Sihang Jiang (University of Virginia, USA), Kristen Maggard (University of Virginia, USA), Michael Porter (University of Virginia, USA), Heman Shakeri (University of Virginia, USA)	134
System	is Design 2	
	SAWBRID: SmArt WhiteBoard Replacement Interactive Device John Beasley (James Madison University, USA), Jack Burke (James Madison University, USA), James Overby (James Madison University, USA), Gregory Shelor (James Madison University, USA), Casey Thompson (James Madison University, USA), Ahmad Salman (James Madison University, USA)	140
,	A Novel Platform Design for Aircraft Noise Impact Assessment	140
	Chuyang Yang (Purdue University, USA), Zachary A. Marshall (Purdue University, USA), John H. Mott (Purdue University, USA)	146
	Soumya Chappidi (University of Virginia, USA), Laura E Gustad (University of Virginia, USA), Alexander Hu (University of Virginia, USA), Khin H Kyaw (University of Virginia, USA), Sara Riggs (University of Virginia, USA)	152
	Guiding the Design of Inclusive Playgrounds Through Needs Assessment and Materials Selection	
	Reid Auchterlonie (University of Virginia, USA), Chloe Brannock (University of Virginia, USA), Victoria Jackson (University of Virginia, USA), An Luong (University of Virginia, USA), Kiley Weeks (University of Virginia, USA), Rupa Valdez (University of Virginia, USA)	158

Data 2

	Data Analytics for Cyber Risk Analysis Utilizing Cyber Incident Datasets	
	Melissa Portalatin (University at Albany - SUNY, USA), Omer F. Keskin (University at Albany - SUNY, USA), Sneha Malneedi (Shaker High School, USA), Owais Paza (University at Albany, SUNY, USA), Unal Tatar (University	
	USA), Owais Raza (University at Albany - SUNY, USA), Unal Tatar (University at Albany - SUNY, USA)	164
	Enemy Location Prediction in Naval Combat Using Deep Learning	
	Morgan Freiberg (University of Virginia, USA), Kent J McLaughlin (University of Virginia, USA), Adinda Ningtyas (University of Virginia, USA), Oliver Taylor (University of Virginia, USA), Stephen Adams (University of Virginia, USA), Peter Beling (University of Virginia, USA), Roy Hayes (Systems Engineering, Inc., USA)	170
	Improving the Efficiency and Effectiveness of Multilingual Classification Methods for Sentiment Analysis	
	Pantea Ferdosian (University of Virginia, USA), Sean M Grace (University of Virginia, USA), Vasudha Manikandan (University of Virginia, USA), Lucas Moles (University of Virginia, USA), Debajyoti (Debo) Datta (University of	476
	Virginia, USA), Donald Brown (University of Virginia, USA)	1/6
	Information Retrieval Techniques for Automated Policy Review Summer S Chambers (University of Virginia, USA), Kaleb Shikur (University of	
	Virginia, USA), Stephen A Morris (University of Virginia, USA)	180
Optim	Validation of ADS-B Aircraft Flight Path Data Using Onboard Digital Avionics Information Luigi Raphael I. Dy (Purdue University, USA), Kristoffer B. Borgen (Purdue	
	University, USA), John H. Mott (Purdue University, USA), Chunkit Sharma (Purdue University, USA), Zachary A. Marshall (Purdue University, USA), Michael Kusz (Purdue University, USA)	186
	Scoring Cyber Vulnerabilities Based on Their Impact on Organizational Goals Omer F. Keskin (University at Albany - SUNY, USA), Nick J. Gannon	
	(University at Albany - SUNY, USA), Brian Lopez (University at Albany - SUNY, USA), Unal Tatar (University at Albany - SUNY, USA)	192
	Analyzing the Role of Digital Communication Channels in Debt Collection	
	Philip G Halsey (University of Virginia, USA), Charlie Putnam (University of	
	Virginia, USA), Aditi Rajagopal (University of Virginia, USA), Keith Wilson	
	Virginia, USA), Aditi Rajagopal (University of Virginia, USA), Keith Wilson (University of Virginia, USA), Oliver Schaer (UVa, USA)	198

Christopher M VanYe (University of Virginia, USA), Beatrice E Li (University of Virginia, USA), Andrew Koch (University of Virginia, USA), Mai Luu (University of Virginia, USA), Rahman O. Adekunle (University of Virginia, USA), Negin Moghadasi (University of Virginia, USA), Zachary A. Collier (Collier Research Systems, USA), Thomas Polmateer (University of Virginia, USA), David Barnes (Systems Planning and Analysis, USA), David Slutzky (University of Virginia, USA), Mark C. Manasco (Commonwealth Center for Advanced Logistics Systems, USA), James Lambert (UVa, USA)	204
Infrastructure, Networks, and Policy 2	
Developing Models to Predict Giving Behavior of Nonprofit Donors	
Josh Eiland (University of Virginia, USA), Clare Hammonds (University of Virginia, USA), Sofia Ponos (University of Virginia, USA), Shawn Weigand (University of Virginia, USA), William Scherer (University of Virginia, USA)	210
Managing Cybersecurity Risk Using Threat Based Methodology for Evaluation of Cybersecurity Architectures	
Branko Bokan (The George Washington University, USA), Joost Santos (George Washington University, USA)	216
Effects of Access to Mental Health Services Following Release from Custody	
Nathaniel Donkoh-Moore (University of Virginia, USA), Madeline McNult (University of Virginia, USA), Grace Boland (University of Virginia, USA), Patrick Leonard (University of Virginia, USA), Colin Cool (University of	
Virginia, USA), Neal Goodloe (Jefferson Area Community Corrections, USA), Loreto Alonzi (University of Virginia, USA), K. Preston White (University of Virginia, USA), Michael Smith (University of Virginia, USA)	ววว
Analyzing Homeless Service Systems in Local Government Using a Systems Engineering Framework	222
Gareth S Norris (George Washington University, USA), Anya Qureshi (The George Washington University, USA), Katelyn M Russo (The George	
Washington University, USA), Mariana Santander Gomez (George Washington University, USA)	227
Data 3	
Online Review Content Moderation Using Natural Language Processing and Machine Learning Methods	
Alicia Doan (University of Virginia, USA), Nathan England (University of Virginia, USA), Travis Vitello (University of Virginia, USA)	233

Trust and Security of Embedded Smart Devices in Advanced Logistics Systems

	Context Matrix Methods for Property and Structure Ontology Completion in Wikidata	
	Jonathan A Gomez (University of Virginia, USA), Thomas Hartka (University of Virginia, USA), Binyong Liang (University of Virginia, USA), Gavin Wiehl (University of Virginia, USA)	239
	An Analysis and Visualization of Best Practices for Police Data Transparency	
	Maria Arango (University of Virginia, USA), Andrew M Hoque (University of Virginia, USA), Karyne Williams (University of Virginia, USA)	245
	Detecting Research from an Uncurated HTML Archive Using Semi-Supervised Machine Learning	
	John R McNulty (University of Virginia, USA), Sarai Alvarez (UVa, USA), Michael Langmayr (UVa, USA)	249
	Supervised Machine Learning and Deep Learning Classification Techniques to Identify Scholarly and Research Content	
	Huilin Chang (University of Virginia, USA), Yihnew Eshetu (University of Virginia, USA), Celeste Lemrow (University of Virginia, USA)	255
Energy	and Environment 4	
	Destination Selection in Environmental Migration with TOPSIS	
	Emma C Kuttler (University of Oklahoma, USA), Buket Cilali (University of Oklahoma, USA), Kash Barker (University of Oklahoma, USA)	261
	Behind the Meter: Implementing Distributed Energy Technologies to Balance Energy Load in Virginia	
	Thomas Anderson (University of Virginia, USA), Daniel Collins (University of Virginia, USA), Chloe Fauvel (University of Virginia, USA), Harrison Hurst (University of Virginia, USA), Nina Mellin (University of Virginia, USA), Bailey Thran (University of Virginia, USA), Andres Clarens (University of Virginia, USA), Arthur Small (University of Virginia, USA)	267
	Water Out of Thin Air: Designing an Atmospheric Water Generator to Address Water Scarcity	
	Devin P Simons (James Madison University, USA), Declan R Tyranski (James Madison University, USA), Zachary High (James Madison University, USA),	

Health 4

	Transplants	
	John Bullock (University of Virginia, USA), Megan Grieco (University of Virginia, USA), Yingzheng Li (University of Virginia, USA), Ian Pedersen (University of Virginia, USA), Benjamin Roberson (University of Virginia, USA), Gracie Wright (University of Virginia, USA), Loreto Alonzi (University of Virginia, USA), Michael McCulloch (University of Virginia Children's Hospital, USA), Michael Porter (University of Virginia, USA)	279
	A Comprehensive COVID-19 Database for the United States	
	Gunnar Sundberg (Florida Polytechnic University, USA, USA), Bayazit Karaman (Florida Polytechnic University, USA)	285
	Data Mining of Rare Alleles to Assess Biogeographic Ancestry	
	Colleen B Callahan (University of Virginia, USA), Holden Bridge (University of Virginia, USA)	290
	Identifying Pediatric Crohn's Disease Using Deep Learning to Classify Magnetic Resonance Enterography (MRE) Images	
	Marissa Shand (University of Virginia, USA), Joseph Manderfield (University of Virginia, USA), Surbhi Singh (University of Virginia, USA), Clair E McLafferty (University of Virginia, USA)	296
Syste	ms Design 4	
Syste		
Syste	Incentive Mechanisms for Acceptance and Adoption of Automated Systems Michael Shane Flynn (The University of Alabama in Huntsville, USA), Hannah M Smitherman (University of Alabama in Huntsville, USA), Kristin Weger (University of Alabama in Huntsville, USA), Bryan Mesmer (University of Alabama in Huntsville, USA), Robert Semmens (Naval Postgraduate School, USA), Douglas L Van Bossuyt (Naval Postgraduate School, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA)	302
Syste	Incentive Mechanisms for Acceptance and Adoption of Automated Systems Michael Shane Flynn (The University of Alabama in Huntsville, USA), Hannah M Smitherman (University of Alabama in Huntsville, USA), Kristin Weger (University of Alabama in Huntsville, USA), Bryan Mesmer (University of Alabama in Huntsville, USA), Robert Semmens (Naval Postgraduate School, USA), Douglas L Van Bossuyt (Naval Postgraduate School, USA), Nathan	302
Syste	Incentive Mechanisms for Acceptance and Adoption of Automated Systems Michael Shane Flynn (The University of Alabama in Huntsville, USA), Hannah M Smitherman (University of Alabama in Huntsville, USA), Kristin Weger (University of Alabama in Huntsville, USA), Bryan Mesmer (University of Alabama in Huntsville, USA), Robert Semmens (Naval Postgraduate School, USA), Douglas L Van Bossuyt (Naval Postgraduate School, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA) Incorporating Supply Chain Design into the Engineering Product Design Phase Kundan Paudyal (Iowa State University, USA), Cameron MacKenzie (Iowa State University, USA)	
Syste	Incentive Mechanisms for Acceptance and Adoption of Automated Systems Michael Shane Flynn (The University of Alabama in Huntsville, USA), Hannah M Smitherman (University of Alabama in Huntsville, USA), Kristin Weger (University of Alabama in Huntsville, USA), Bryan Mesmer (University of Alabama in Huntsville, USA), Robert Semmens (Naval Postgraduate School, USA), Douglas L Van Bossuyt (Naval Postgraduate School, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA) Incorporating Supply Chain Design into the Engineering Product Design Phase Kundan Paudyal (Iowa State University, USA), Cameron MacKenzie (Iowa	

Data 4

	Employing Predictive Trend Analysis to Decrease Construction Schedule Delay	
	Vivian Austin (University of Virginia, USA), Zachary T McLane (University of Virginia, USA), Caroline O'Keeffe (University of Virginia, USA), Diyar Rashid (University of Virginia, USA), Ariana Zimmerman (University of Virginia, USA), Diana Franco Duran (Uva, USA), Arsalan Heydarian (University of Virginia, USA), Todd Bagwell (Hourigan, USA)	320
	Designing the UVA Open Data Initiative: Increasing Engagement for Students, Faculty, Staff Members, and Other Stakeholders	
	Ronith Ranjan (University of Virginia, USA), Kasra Lekan (University of Virginia, USA), Vinay Bhaip (University of Virginia, USA)	326
	A Text Analysis of the 2020 U.S. Presidential Election Campaign Speeches	
	Kevin Finity (University of Virginia, USA), Ramit K Garg (University of Virginia, USA), Maxwell McGaw (University of Virginia, USA)	332
	Towards Automating Search and Classification of Protostellar Images	
	Pavan Kumar Bondalapati (University of Virginia, USA), Pengwei Hu (University of Virginia, USA), Shannon E Paylor (University of Virginia, USA), John Zhang (University of Virginia, USA)	338
Infract		336
Infrast	tructure, Networks, and Policy 4	336
Infrast	tructure, Networks, and Policy 4 The Design and Integration of a Comprehensive Measurement System to Assess	330
Infrast	tructure, Networks, and Policy 4	
Infrast	The Design and Integration of a Comprehensive Measurement System to Assess Trust in Automated Driving Anna Madison (United States Air Force Academy, USA), Abiqail Arestides (United States Air Force Academy, USA), Stephen Harold (United States Air Force Academy, USA), Tyler Gurchiek (United States Air Force Academy, USA), Kai Chang (United States Air Force Academy, USA), Kai Chang (United States Air Force Academy, USA), Anthony Ries (ARL, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA), Elizabeth Phillips (George Mason University, USA), Ewart de Visser (United	
Infrast	The Design and Integration of a Comprehensive Measurement System to Assess Trust in Automated Driving Anna Madison (United States Air Force Academy, USA), Abigail Arestides (United States Air Force Academy, USA), Stephen Harold (United States Air Force Academy, USA), Tyler Gurchiek (United States Air Force Academy, USA), Kai Chang (United States Air Force Academy, USA), Anthony Ries (ARL, USA), Nathan Tenhundfeld (University of Alabama in Huntsville, USA), Elizabeth Phillips (George Mason University, USA), Ewart de Visser (United States Air Force Academy, USA), Chad C Tossell (USAF Academy, USA)	

	Safe and Sustainable Fleet Management with Data Analytics and Training Thomas R Gresham (University of Virginia, USA), Joshua Kim (University of Virginia, USA), James McDonald (University of Virginia, USA), Nick Scoggins (University of Virginia, USA), Moeen Mostafavi (University of Virginia, USA), B. Brian Park (University of Virginia, USA), Michael Porter (University of Virginia, USA), Michael E Duffy (University of Virginia, USA), Sandra A Smith (University of Virginia, USA) Investigating Novel Proximity Monitoring Techniques Using Ubiquitous Sensor Technology	356
	Seanna Adam (University of Virginia, USA), Caroline Glazier (University of Virginia, USA), Brian Coward (University of Virginia, USA), Grayson DeBerry (University of Virginia, USA), Evan Magnusson (University of Virginia, USA), Mehdi Boukhechba (University of Virginia, USA)	362
Energ	y and Environment 5	
	Developing a Dashboard for High Occupancy Buildings Christina Berger (The George Washington University, USA), Kayleigh J Calder (The George Washington University, USA), Sarah Cassway (The George Washington University, USA), Caroline Walton (The George Washington University, USA)	368
	A User Interface Informing Medical Staff on Continuous Indoor Environmental Quality to Support Patient Care and Airborne Disease Mitigation Jacob L Rantas (University of Virginia, USA), David Wang (University of Virginia, USA), William E Jarrard (University of Virginia, USA), James R Sterchi (Submission, USA), Alan Wang (University of Virginia, USA), Mahsa Pahlavikhah Varnosfaderani (University of Virginia, USA), Arsalan Heydarian (University of Virginia, USA)	
	Assessing the Feasibility of Microgrid Supported Open Hydroponics (MSOHCC) for A Resilient Fresh Food Supply in SIDS Henry C Quach (University of Virginia, USA), Hannah Hiscott (University of Virginia, USA), Harrison Mazanec (University of Virginia, USA), Sahil B Mehta (University of Virginia, USA)	
Healt	h 5	
	Mutational Hotspot Detection in LGL Leukemia	
	Nikki Aaron (University of Virginia, USA), Prabhjot Singh (University of Virginia, USA), Siddharth Surapaneni (University of Virginia, USA), Joseph Wysocki (University of Virginia, USA)	201
	Wysocki (University of Virginia, USA) Understanding Public Attitudes Toward COVID-19 with Twitter	
	Jae Hyun Lee (University of Virginia, USA)	390

	utations in STAT3 and TTN Associated with Clinical Outcomes in Large ranular Lymphocyte Leukemia	
	Rachel Filderman (University of Virginia, USA), Buckley Dowdle (University of Virginia, USA), Youssef Abubaker (2020 Treetop Drive, USA), David A Vann (University of Virginia, USA)	396
	Actensions and Application of the Robust Shared Response Model to ectroencephalography Data for Enhancing Brain-Computer Interface Systems Andrew J. Graves (University of Virginia, USA), Cory Clayton (University of Virginia, USA), Joon Yuhl Soh (University of Virginia, USA), Gabriel Yohe (University of Virginia, USA), Per B. Sederberg (University of Virginia, USA)	
Systems	Design 5	
	oom-Level Localization and Automated Contact Tracing via Internet of Things oT) Nodes and Machine Learning Algorithm	
	Zachary Yorio (James Madison University, USA), Samy S. El-Tawab (James Madison University, USA), M. Hossain Heydari (James Madison University, USA)	408
	nproving Brain Computer Interfaces Using Deep Scale-Invariant Temporal istory Applied to Scalp Electroencephalogram Data Gaurav Anand (University of Virginia, USA), Arshiya Ansari (University of	
	Virginia, USA), Beverly Dobrenz (University of Virginia, USA), Yibo Wang (University of Virginia, USA), Brandon Jacques (University of Virginia, USA), Per B. Sederberg (University of Virginia, USA)	414
Data 5		
Us	sing Graph Algorithms for Skills Gap Analysis	
	Jay Choi (School of Data Science, USA), Brian A Foster-Pegg (University of Virginia, USA), Joel A Hensel (University of Virginia, USA), Oliver Schaer (University of Virginia, USA)	420
	ata Schema to Formalize Education Research & Development Using Natural anguage Processing	
	Hannah B Frederick (University of Virginia, USA), Haizhu Hong (University of Virginia, USA), Margaret A Williams (University of Virginia, USA), Amanda Christine West (UVa, USA), Brian Wright (University of Virginia, USA)	426
De	eveloping a Recommendation System for Collegiate Golf Recruiting	
	Michael Bassilios (University of Virginia, USA), Ava Jundanian (University of Virginia, USA), Josh Barnard (University of Virginia, USA), Vienna Donnelly (University of Virginia, USA), Rachel Kreitzer (University of Virginia, USA), Stephen Adams (University of Virginia, USA), William Scherer (University of	
	Virginia, USA)	432

	Predicting Survivability in Lost Person Cases Michael Pajewski (University of Virginia, USA), Chirag A Kulkarni (University of Virginia, USA), Repair Bibwani	
	of Virginia, USA), Nikhil Daga (University of Virginia, USA), Ronak Rijhwani (University of Virginia, USA)	438
Opti	mization, Simulation, and Decision Analysis 5	
	Leveraging Google BERT to Detect and Measure Innovation Discussed in News Articles	
	Keyu Chen (University of Virginia, USA), Benjamin C Cosgro (University of Virginia, USA), Oretha Domfeh (University of Virginia, USA), Alex Stern (University of Virginia, USA)	444
	A Systems Approach to Optimizing Patient Flow During the COVID-19 Pandemic	
	Elizabeth Korte (University of Virginia, USA), Courtney Laughlin (University of Virginia, USA), Thomas Peters (University of Virginia, USA), Lillian Stiles (University of Virginia, USA), Robert J Riggs (University of Virginia, USA), Kimberly Dowdell (University of Virginia, USA), Karen Measells (University of	
	Virginia, USA)	450
	Monica Uribe-Francisco (The George Washington University, USA), Olivia Hoerle (The George Washington University, USA), Joshua Groover (The George Washington University, USA), Olivia Zarroli (The George Washington University, USA)	456
	Process Mining and Simulation for a p-Time Petri Net Model with Hybrid Resources	
	Felipe Nedopetalski (Universidade Federal de Jatai, Brazil), Joslaine Cristina de Freitas (Universidade Federal de Jatai, Brazil)	463
Infra	structure, Networks, and Policy 5	
	Comparison of Connected Automated Vehicle to Pedestrian Interaction Systems to Reduce Vehicle Waiting Times	
	Ryan Barnett (University of Virginia, USA), Christopher M Hume (University of Virginia, USA), Andrew Taylor (University of Virginia, USA)	469
	Fast, Safe, and Proactive Runtime Planning and Control of Autonomous Ground Vehicles in Changing Environments	
	Grace Glaubit (University of Virginia, USA), Katie Kleeman (University of Virginia, USA), Noelle Law (University of Virginia, USA), Jeremiah Thomas (University of Virginia, USA), Shijie Gao (University of Virginia, USA), Rahul Peddi (University of Virginia, USA),	
	Nicola Bezzo (University of Virginia, USA)	474

Design and Implementation of a Vehicular Cloud Real Time System (VCRTS) Using a Fault-Tolerant Approach	
Luther A Bell (St. John's University, USA), Puya Ghazizadeh (St. John's University, USA), Samy S. El-Tawab (James Madison University, USA), Aida Ghazizadeh (Old Dominion University, USA)	480
Hazard Analysis of Large Cargo Delivery UAVs Under the Chinese Air Traffic Control System	
Daoyi Li (Purdue University, USA), Yuzhao Qiang (Purdue University, USA), John H. Mott (Purdue University, USA)	486