

Abel Souza | Publication List

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Research Interest.....

Enhance the performance and sustainability of large distributed systems, including but not limited to high performance and edge computing, cloud datacenters, operating systems, and cyber-physical systems.

Publications.....

Vision Papers

- EMPOWERING USER-CENTERED CARBON MANAGEMENT** 2023
Abel Souza, Mihir Shenoy, Camellia Zakaria
10th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys)
- UNLOCKING EFFICIENCY: UNDERSTANDING END-TO-END PERFORMANCE IN DISTRIBUTED ANALYTICS PIPELINES** 2023
Abel Souza, N. Ng, T. Abdelzaher, D. Towsley, and P. Shenoy
41st IEEE Military Communications Conference (MILCOM)
- SUSTAINABLE COMPUTING - WITHOUT THE HOT AIR** 2022
N. Bashir, D. Irwin, P. Shenoy, Abel Souza
The Inaugural Workshop on Sustainable Computer Systems Design and Implementation (HotCarbon)
- ENABLING SUSTAINABLE CLOUDS: THE CASE FOR VIRTUALIZING THE ENERGY SYSTEM** 2021
N. Bashir, T. Guo, M. Hajiesmaili, D. Irwin, P. Shenoy, R. Sitaraman, Abel Souza, A. Wierman
ACM Symposium on Cloud Computing (SoCC)

Conference Papers.....

- CASPER: CARBON-AWARE SCHEDULING AND PROVISIONING FOR DISTRIBUTED WEB SERVICES** 2023
Abel Souza, J. Shruti, B. Chakrabarty, A. Bridgwater, A. Lundberg, F. Skogh, A. Ali-Eldin, D. Irwin, P. Shenoy
14th International Green and Sustainable Computing Conference (IGSC), *Best Paper Runner Up*
- ECOVISOR: A VIRTUAL ENERGY SYSTEM FOR CARBON-EFFICIENT APPLICATIONS** 2023
Abel Souza, N. Bashir, J. Murillo, W. Hanafy, Q. Liang, D. Irwin, P. Shenoy
28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)
- ADCOM: ADAPTIVE COMBINER FOR STREAMING AGGREGATIONS** 2021
F. Gutierrez, K. Beedkar, Abel Souza, V. Markl
24th International Conference on Extending Database Technology (EDBT)
- A HPC CO-SCHEDULER WITH REINFORCEMENT LEARNING** 2021
Abel Souza, K. Pelckmans, J. Tordsson
24th Job Scheduling Strategies for Parallel Processing (JSSPP)
- THE ADAPTIVE SCHEDULING ARCHITECTURE** 2020
Abel Souza, K. Pelckmans, J. Tordsson
29th International Symposium on High-Performance Parallel and Distributed Computing (HPDC)
- THE VASCO PROJECT: 100 RED TRANSIENTS AND THEIR FOLLOW UP** 2020
B. Villarroel, K. Pelckmans, Enrique Solano, M. Laaksoharju, Abel Souza, and et al.
71st International Astronautical Congress (IAC)
- HYBRID RESOURCE MANAGEMENT FOR HPC AND DATA INTENSIVE WORKLOADS** 2019
Abel Souza, M. Rezaei, E. Laure, J. Tordsson
19th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID)
- HYBRID ADAPTIVE CHECKPOINTING FOR VIRTUAL MACHINE FAULT TOLERANCE** 2018
Abel Souza, A. V. Papadopoulos, L. Tomas, D. Gilbert, J. Tordsson
2018 IEEE International Conference on Cloud Engineering (IC2E), *Best Paper Runner Up*
- AN ARCHITECTURE FOR LARGE SCALE EXPERIMENTS IN P2P NETWORKS** 2015
Abel Souza, A. A. A. Rocha
33rd Brazilian Symposium on Computer Networks and Distributed Systems (Tools Section)

Workshop Papers.....

- ECOVISOR: A VIRTUAL ENERGY SYSTEM FOR CARBON-EFFICIENT APPLICATIONS** 2023
Abel Souza, N. Bashir, D. Irwin, P. Shenoy
1st Workshop on NetZero Carbon Computing (NetZero), *Invited*

BENEFITS AND LIMITATIONS OF CARBON ACCOUNTING PARADIGMS	2023
<i>N. Bashir, Abel Souza, D. Irwin, P. Shenoy</i>	
1st Workshop on NetZero Carbon Computing (NetZero), <i>Invited</i>	
DARTS: DISTRIBUTED IOT ARCHITECTURE FOR REAL-TIME, RESILIENT AND AI-COMPRESSED WORKFLOWS	2022
<i>R. Gupta, B. Chen, S. Liu, T. Wang, S. S. Sandha, Abel Souza, K. Nahrstedt, T. Abdelzaher, M. Srivastava, P. Shenoy, et al.</i>	
2022 Workshop on Advanced tools, programming languages, and PPlatforms for Implementing and Evaluating algorithms for Distributed systems (ApPLIED)	
E-HPC: A LIBRARY FOR ELASTIC RESOURCE MANAGEMENT IN HPC ENVIRONMENTS	2017
<i>W. Fox, D. Ghoshal, Abel Souza, G. P. Rodrigo, L. Ramakrishnan</i>	
12th Workshop on Workflows in Support of Large-Scale Science (WORKS)	
Journal Papers	
NETWORK SYNTHESIS FOR TACTICAL ENVIRONMENTS: SCENARIO, CHALLENGES, AND OPPORTUNITIES	2022
<i>T. Anevlavis, J. Bunton, J. Coleman, M. G. Dogan, E. Grippo, Abel Souza, C. Fragouli, B. Krishnamachari, M. Maness, et al.</i>	
Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications	
LAUNCHING THE VASCO CITIZEN SCIENCE PROJECT	2021
<i>B. Villarroel, K. Pelckmans, E. Solano, M. Laaksoharju, Abel Souza, et al.</i>	
Universe	
Under Review	
EXAMINING THE ADOPTION OF ELECTROMOBILITY CONCEPTS ACROSS SOCIAL CONTEXTS FOR ENERGY TRANSITION	2024
<i>J. Köhlke, A. Lechowicz, O. Fabikun, N. Bashir, Abel Souza, P. Shenoy, S. Lehnhoff</i>	
TAILTAMER: REDUCING TAIL RESPONSE TIME THROUGH SYSTEM-WIDE SCHEDULING	2024
<i>N. Ng, Abel Souza, A. Ali-Eldin, C. Klein, D. Irwin, D. Towsley, P. Shenoy</i>	
THE CLOUD SUSTAINABILITY PRICE TAG: CUSTOMER AND PROVIDER PERSPECTIVES	2024
<i>W. Hanafy, T. Sukprasertm Abel Souza, D. Irwin, P. Shenoy</i>	
OPENCARBON: AN API TO ACCESS AND VISUALIZE CARBON FORECASTS	2024
<i>Abel Souza, D. Maji, R. K. Sitaraman, P. Shenoy</i>	
ON THE LIMITATIONS OF CARBON-AWARE TEMPORAL AND SPATIAL WORKLOAD SHIFTING IN THE CLOUD	2024
<i>T. Sukprasert, Abel Souza, N. Bashir, D. Irwin, P. Shenoy</i>	
OPTIMIZING THE COST OF REDUCING CLOUD CARBON EMISSIONS	2024
<i>W. A. Hanafy, Q. Liang, N. Bashir, Abel Souza, D. Irwin, P. Shenoy</i>	
SLO-POWER: SLO AND POWER-AWARE ELASTIC SCALING FOR WEB SERVICES	2024
<i>M. Savasci, Abel Souza, L. Wu, D. Irwin, A. Ali-Edin, P. Shenoy</i>	
HOW THE CHOICE OF CARBON INTENSITY SIGNAL SHAPES CARBON-AWARE SCHEDULING OUTCOMES	2024
<i>T. Sukprasert, Abel Souza, N. Bashir, S. Berehe, P. Jain, D. Irwin, P. Shenoy</i>	
Posters	
SPATIOTEMPORAL CARBON-AWARE SCHEDULING IN THE CLOUD: LIMITS AND BENEFITS	2023
<i>T. Sukprasert, Abel Souza, N. Bashir, D. Irwin, P. Shenoy</i>	
14th ACM International Conference on Future Energy Systems (E-Energy)	
VISUALIZING THE IMPACT OF USER PREFERENCES AND HABITS ON CARBON EMISSIONS	2023
<i>T. V Savadi, Abel Souza, C. Zakaria</i>	
MIT IEEE Undergraduate Research Technology Conference (URTC)	
REAL-TIME CARBON INTENSITY FORECASTS FOR THE ELECTRIC GRID IN EUROPE	2023
<i>C. Kim (Case Western Reserve University), D. Maji, Abel Souza, R. K. Sitaraman, P. Shenoy</i>	
UMass Research Experience for Undergraduates (REU)	
HOW SHOULD I RESPOND TO MIXED SIGNALS? INTERPRETING AVERAGE AND MARGINAL CARBON INTENSITY SIGNALS	2023
<i>S. Berehe (Robert Morris University), Abel Souza, N. Bashir, P. Shenoy</i>	
UMass Research Experience for Undergraduates (REU)	
ASA – ADAPTIVE SCHEDULING ALGORITHM FOR SCIENTIFIC WORKFLOWS	2019
<i>Abel Souza, K. Pelckmans, and J. Tordsson</i>	
15th Cloud Control Workshop	
HYBRID RESOURCE MANAGEMENT FOR HPC AND DATA INTENSIVE WORKLOADS	2018
<i>Abel Souza, J. Tordsson, M. Rezaei, and E. Laure</i>	
13th Cloud Control Workshop	
DATA ANALYTICS FOR SCHEDULING IN HYBRID HPC ENVIRONMENTS	2016
<i>Abel Souza, J. Tordsson, M. Rezaei, and E. Laure</i>	
6th Workshop on Cloud Data and Platforms (CloudDP)	

Thesis	
AUTONOMOUS RESOURCE MANAGEMENT FOR HIGH PERFORMANCE DATACENTERS	2020
<i>Abel Souza</i>	
Umeå University, Ph.D. Thesis	
APPLICATION-AWARE RESOURCE MANAGEMENT FOR DATACENTERS	2018
<i>Abel Souza</i>	
Umeå University, Licentiate Thesis	
AN ARCHITECTURE FOR LARGE-SCALE EXPERIMENTS ON P2P NETWORKS.	2014
<i>Abel Souza</i>	
Fluminense Federal University, Bachelor Thesis	
Academic Honors	
BEST PAPER FINALIST	2023
<i>14th International Green and Sustainable Computing Conference (IGSC)</i>	
BEST PAPER FINALIST	2018
<i>2018 IEEE International Conference on Cloud Engineering (IC2E)</i>	