Abhishek Dubey

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Computer Engineering,
Vanderbilt University
Senior Member, IEEE
ScopeLab: *https://scopelab.ai/*
Smart Transit: *https://smarttransit.ai/*
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Awards and Honors

2025	Award for Outstanding Systems or Deployments, Institute for Software Integrated Systems (ISIS) for the microtransit system design and pilot in Chattanooga, TN.
2025	Best Paper Candidate, AAMAS (Autonomous Agents and Multiagent Systems)
2024	Chancellor Faculty Fellow, Vanderbilt University
2024	Best Paper Award, ICCPS (International Conference on Cyber-Physical Systems)
2024	Best Paper Award, Equity in Transportation at INFORMS Conference
2024	General Chair, ICCPS (International Conference on Cyber-Physical Systems)
2023-25	Google Cloud Research Champion Innovator (2023-2025)
2023	Founder, Mobius AI, Inc., Catalyst Innovation Award
2023	Best Demonstration at IEEE SmartComp 2023 for Mobility-On-Demand Transportation: A System for Microtransit and Paratransit Operations
2022	Best Paper Award, AI for social Good, IJCAI (International Joint Conference on Artificial Intelligence)
2022	Best Paper Candidate, ICCPS (International Conference on Cyber-Physical Systems)
2022	High-Value Research Recognition, AASHTO Research Advisory Committee
2022	NSF CAREER Award for Robust Online Decision Procedures for Societal-Scale CPS
2019	Best paper award Smartcomp 2019.
2019	Arab American Frontiers invitation by National Academy of Engineering.
2019	Invited to discuss the future of work in power systems at the Shonan seminar.
2017	Connected Nashville and NTC Recognition for Technology Committee Leadership.
2017	Transit Hub was the best project finalist at NTC awards.
2016	Letter of commendation from the Chancellor's Office for the Smart Cities work in Nashville
2015	IEEE Senior Member Promotion.
2012	Best paper award ICAS.

Leadership Roles and Fellowship

2025-	**Steering Committee Member**, ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS).
2024-	**Program Director**, National Science Foundation Directorate for Computer and Information Science and Engineering (CISE), Cyber-Physical Systems, Smart and Connected Communities, and CIVIC Innovation Challenge.
2024-	**Chancellor Faculty Fellow**, Vanderbilt University.

2024-	**Co-founder and Chief Science Officer**, Mobius AI, Inc.
2024-	**Energy Integration Co-lead**, Vanderbilt Center for Sustainability, Energy and Climate
2024-	**Member**, Vanderbilt Connected Computing College Committee.
2024	**Co-Lead, Research Committee**, Vanderbilt Center for Sustainability, Energy, and Climate.
2024-	**Affiliated Faculty**, NSA Center of Academic Excellence in Cyber Research, Vanderbilt University.
2023-24	**Director of Graduate Studies**, CS(MS)
2023	**General Co-Chair**, IEEE International Conference on Smart Computing (SMARTCOMP) 2023.
2023	**Program Co-Chair**, ACM/IEEE International Conference on Cyber-Physical Systems (IC-CPS) 2023.
2023	**Program Co-Chair**, International Conference on Assured Autonomy (ICAA) 2023.
2022-24	**Expert**, National Science Foundation, Smart and Connected Communities and Cyber-Physical Systems Program
2022-	**Director**, SmartTransit.ai Research Group
2020	**Finance Chair**, 22nd IEEE International Symposium on Real-Time Computing (ISORC) 2020.
2019	**General Chair**, 22nd IEEE International Symposium on Real-Time Computing (ISORC) 2019.
2017	**co-Chair** Connected Nashville Technology Committee
2016-	**Director**, Scopelab.ai Laboratory
2016-	**Senior Member**, Institute of Electrical and Electronics Engineers

Academic Appointments

2022-	**Associate Professor**, Computer Science and Computer Engineering, Department of Electrical Engineering and Computer Science, Vanderbilt University
2016-	**Senior Research Scientist**, Institute for Software Integrated Systems, Vanderbilt University
2016-22	**Assistant Professor**, Computer Science and Computer Engineering, Department of Electrical Engineering and Computer Science, Vanderbilt University
2014-16	**Adjunct Assistant Professor**, Computer Science and Computer Engineering, Department of Electrical Engineering and Computer Science, Vanderbilt University
2009-16	**Research Scientist**, Institute for Software Integrated Systems, Vanderbilt University

Industry Appointments

2024-	**Co-founder and Chief Science Officer**, Mobius AI, Inc.
2008	**Research Intern**, IBM T.J Watson Research Center, Hawthorne, NY
2006	**Research Intern**, General Motors, Technical Center, Warren, MI
2001-03	**Software Engineer**, IBM Global Services, India

Education Background

2009	**PhD, Electrical Engineering**, Vanderbilt University, Nashville, TN

- Dissertation: Using Model-Based Techniques for Improving Performance and Reliability in High-Performance Scientific Computing.
- Advisor: Dr. Gabor Karsai - Professor, Electrical Engineering and Computer Science Department, Vanderbilt University.

2005	**M.S., Electrical Engineering**, Vanderbilt University, Nashville, TN

- Thesis: Metamodel Based Language and Computation Platform for Algorithmic Analysis of Hybrid Systems.
- Advisor: Dr. John Koo - Director, Cyber-Physical Systems at ASTRI.

2001 **B.Tech. (Bachelor of Technology)** with Honors, Electrical Engineering, Indian Institute of Technology, Banaras Hindu University, Varanasi, India

Transition to Practice

Dubey's research focuses on AI-driven cyber-physical systems with a special emphasis on transportation and energy systems.

Startup

2023- Mobius AI, Inc providing enterprise level fleet management solutions utilizing non-myopic planning, autonomy-aware routing, and vehicle-to-grid optimization

Patents

2024 Aron Laszka, Ayan Mukhopadhyay and Abhsihek Dubey. Dynamic Vehicle Routing Problem With Prompt And Guaranteed Confirmation Of Advance Requests. Applied for Provisional Patent 2024.

2024 N. M. Baig, L. Pedersen, X. Yang, A. Baranskaya, L. Atkins, K. Wray, A. Dubey, G. Pettet, A. Mukhopadhyay, J. P. Talusan, and others, Electric vehicle charging control device, US Patent App. 18/309,772. Oct-2024.

2023 Dubey, M. Wilbur, A. Mukhopadhyay, and A. Laszka, Forecasting energy consumption in a mixed-vehicle fleet, US Patent App. 18/708,438.

Software

Notable software products include

- ARINC-653 emulator for Linux and the first open source operating system implementation for Future Airborne Capability Environment (FACE).
- Modular platform for integrating blockchain and CPS called SolidWorx
- CHARIOT, reconfiguration engine for cyber physical system software systems.
- ReSonAte, A Runtime Risk Assessment Framework for Autonomous Systems
- TRANSAX - a middleware for transactive energy systems
- Smart Transit - Software as a service cloud platform for transit agencies focusing on energy and schedule optimization
- Statresp - Software as a service cloud platform for state department of transportation and city emergency departments focusing on resource allocation, optimization and dispatch
- Resilient Information Architecture Platform for Smart Grid (RIAPS), which is now a Linux foundation project
- MODICUM - online market software for enabling computational outsourcing.
- F6MDK, containerized operated system for fractionated satellites.

Sponsored Research Support

- Number of Grants as PI : 37. Number of Grants awarded after 2021 as PI: 16
- Number of Grants awarded as Co-PI : 20. Number of Grants awarded as Co-PI after 2021: 3
- Total Dollar Amount for Grants awarded as PI : $33.6 million. $21.0 million since 2021
- Vanderbilt Allocation of Grants awarded as PI: $10.8 million. $5.5 million since 2021
- Total Dollar Amount of Grants awarded as co-PI : $45.1 million. $7.9 million since 2021.

Grants Awarded With Ongoing Contract Negotiation

2025–2026 USDOT. **Fixed-Line Transit 2.0: Real-Time Optimization of High-Frequency Transit Services (contract Pending)**. Abhishek Dubey (PI), Ayan Mukhopadhyay and Jose Paolo Talusan. $466,000. Total $1,982,235. **Prime**: Nashville WeGo. Collaborating Institutions: WeGo, Penn State and Vanderbilt University.

2024–2028 USDOT. **PATH-TN: Partnership for AI-driven Multimodal Transportation Services Integration in Tennessee Cities (contract Pending)**. Abhishek Dubey (PI), Ayan Mukhopadhyay and Jose Paolo Talusan. $2,000,000. Total $8,666,053. **Prime**: Vanderbilt University. Collaborating Institutions: WeGo, Penn State, University of Tennessee at Chattanooga, University of Memphis, Chattanooga Area Regional Transportation Authority, Memphis Area Transit Authority, Knoxville Area Transit, University of Tennessee at Knoxville and Vanderbilt University.

Federal and State Research Grants as PI

2024–2027 DOE. **AI-Powered Autonomy-Aware Neighborhood Mobility Zones**. Abhishek Dubey (PI) and Ayan Mukhopadhyay. $600,000. Total $3,294,294. **Prime**: Chattanooga Area Regional Transportation Authority. Collaborating Institutions: Vanderbilt University (Tech Lead), Cornell University, Penn State, Spark the Firm, Nissan.

2024–2026 TDOT. **Influencing Mode Shift Through Behavioral Change Strategies – Phase II**. Abhishek Dubey. $29,915. Total $100,000. **Prime**: University of Memphis. Collaborating Institutions: Vanderbilt University and University of Memphis.

2024–2025 TNECD. **Designing Multimodal Transit for Blue Oval City and Volkswagen**. Abhishek Dubey, Meiyi Ma, Ayan Mukhopadhyay, David Rogers. $190,000. Total $500,000. **Prime**: University of Memphis. Collaborating Institutions: University of Tennessee at Chattanooga, University of Memphis, University of Tennessee at Knoxville and Vanderbilt University.

2024–2025 TNECD. **AI driven route generation and alert notification system for school districts**. Abhishek Dubey (PI), Meiyi Ma, Ayan Mukhopadhyay and David Rogers. $450,000.

2023–2025 NSF. **NSF Engines: Tennessee Technology-Enabled Advanced Mobility Engine**. Abhishek Dubey (PI). $50,000. Total $1,000,000. **Prime**: University of Tennessee at Knoxville. Collaborating Institutions: UTK, UTC, UM and Vanderbilt University.

2023–2028 NSF. **CAREER Award: Robust Online Decision Procedures for Societal Scale CPS**. Abhishek Dubey (PI). $499,270.

2022–2024 NSF. **SCC-IRG Track 1: Mobility for all - Harnessing Emerging Transit Solutions for Underserved Communities - REU**. Abhishek Dubey (PI) and Ayan Mukhopadhyay. $32,000.

2022–2025 TDOT. **AI-Engine for Adaptive Sensor Fusion For Traffic**. Abhishek Dubey (PI). $208,268.

2020–2024 DOE. **AI-Engine for Optimizing Integrated Service Mixed Fleet Transit Operations**. Abhishek Dubey (PI). $477,000. Total $2,306,858. **Prime**: Chattanooga Area Regional Transportation Authority. Collaborating Institutions: Vanderbilt University (Tech Lead), Cornell University, Penn State, University of Tennessee at Chattanooga, Chattanooga Area Regional Transportation Authority, Siemens, Pacific Northwest National Laboratory.

2020–2025 NSF. **SCC-IRG Track 1: Mobility for all - Harnessing Emerging Transit Solutions for Underserved Communities**. Abhishek Dubey (PI) , Paul Speer and Ayan Mukhopadhyay. $1,200,000. Total $2,134,898. **Prime**: Vanderbilt University. Collaborating Institutions: Cornell University, Penn State, University of Tennessee at Chattanooga, Chattanooga Area Regional Transportation Authority, Vanderbilt University and University of Washington.

2021–2024 Federal Transit Authority. **SAFE-Ride – A regional transit Coalition for Managing Safe and Efficient Transit Operations using AI**. Abhishek Dubey (PI) and Ayan Mukhopadhyay. $216,794. Total $120,000. **Prime**: WeGo. Collaborating Institutions: Vanderbilt University (Tech Lead), The Transit App, Penn State and WeGo.

2020–2021	NSF. **Collaborative Research: RAPID: Addressing Transit Accessibility and Public Health Challenges due to COVID-19**. Abhishek Dubey. $54,912. Total $99,998. **Collaborative Grant**: University of Houston and Vanderbilt University.
2018–2021	Department of Energy. **High-dimensional Data-driven Energy optimization for Multi-Modal Transit Agencies (HD-EMMA)**. Abhishek Dubey (PI). $355,110. Total $1,000,000. **Prime**: Chattanooga Area Regional Transportation Authority. Collaborating Institutions: Vanderbilt University (Tech Lead), University of Houston and Chattanooga Area Regional Transportation Authority.
2018–2021	NSF. **III: Small: Collaborative Research: Summarizing Heterogeneous Crowdsourced & Web Streams Using Uncertain Concept Graphs**. Abhishek Dubey (PI) and Gautam Biswas. $239,953. Total $499,654. **Collaborative Grant**: Vanderbilt University and George Mason.
2018–2021	NSF. **NeTS: JUNO2: Collaborative Research: STEAM: Secure and Trustworthy Framework for Integrated Energy and Mobility in Smart Connected Communities**. Abhishek Dubey (PI). $209,992. Total $449,988. **Collaborative Grant**: Missouri University of Science and Technology, Waseda University, Nara Institute of Technology and Vanderbilt University.
2017–2019	Marriott International. **Internet of Things (IoT) Immersion**. Abhishek Dubey (PI) and Aniruddha Gokhale. $29,999.
2016–2020	NSF. **USIgnite: Collaborative Research: Social Computing Platform for Multi-Modal Transit**. Abhishek Dubey (PI). $306,376. Total $600,000. **Collaborative Grant**: Vanderbilt University and University of Washington.
2016–2019	U.S. Army. **Designing Resilient Data Processing Systems for Adversarial Environments**. Abhishek Dubey (PI) and Eugene Vorobeychik. $367,161.
2015–2017	NSF. **CPS-EAGER- Experiments with Smart City Hubs: Integration Platform for Human Cyber-Physical Systems In Smart Cities**. Abhishek Dubey (PI), Sandeep Neema and Jules White. $197,556.
2012–2013	The Office of Naval Research (ONR). **Domain Specific Languages for Designing Electrical Ships**. Abhishek Dubey (PI). $40,580.
2010–2012	NSF. **Center for Autonomic Computing**. Abhishek Dubey(PI). $49,970.

� **Industry Grants as PI**

2023–2025	Cisco Systems. **Integrated Software Environment for Online Edge Computing Based Generative Anomaly Detection**. Abhishek Dubey (PI), Jose Paolo Talusan and Ayan Mukhopadhyay. $100,000.
2022–2025	Nissan. **Optimizing Vehicle Charging and Discharging for Reducing Building Grid Dependency**. Abhishek Dubey (PI) and Ayan Mukhopadhyay. $634,736.
2021–2022	Cisco Systems. **EdgeNet- An online Edge Computing Based Generative Anomaly Detection and Prognostics Solution for Networked Equipment at Customer Premises**. Abhishek Dubey (PI), Aniruddha Gokhale and Ayan Mukhopadhyay. $100,000.
2019–2020	Cisco Systems. **Spatio-Temporal AI Inference Engines for System-Level Reliability**. Abhishek Dubey (PI) and Aniruddha Gokhale. $100,000.
2017–2019	Siemens, Inc. **Blockchain as Middleware Services for Transactive Energy Applications**. Abhishek Dubey (PI). $478,375.
2017–2018	MetaMorph. **MetaMorph Draper**. Abhishek Dubey (PI). $84,201.
2017–2018	MetaMorph. **CAD Extensions for OpenMETA**. Abhishek Dubey (PI). $88,127.
2016–2019	Siemens, Inc. **Industry Affiliate Program Grant**. Abhishek Dubey (PI). $450,000.
2016–2017	Siemens, Inc. **City-scale Extensible Smart Cyber-Physical Systems**. Abhishek Dubey (PI). $49,886.
2014–2016	Siemens, Inc. **Building Resilient Distributed Systems for Next-Generation Mobile Ad-hoc Cyber-Physical Systems**. Abhishek Dubey (PI). $238,188.

Internal Grants as PI

2025–2026   Vanderbilt. **Nashville Innovation Alliance: Predictive Analytics for Fire Department Staffing and Resource Optimization**. Abhishek Dubey (PI), Jose Paolo Talusan and Ayan Mukhopadhyay . $59,998.

2024–2026   Vanderbilt. **Chancellor Faculty Fellowship**. Abhishek Dubey (PI). $80,000.

2024–2025   VANDERBILT. **Mobius, Inc: Last mile Freight Optimization for Heterogeneous Fleets**. Abhishek Dubey (PI), David Rogers, Jose Paolo Talusan and Ayan Mukhopadhyay . $80,000.

Federal and State Research Grants as Co-PI

2023–2027.   DARPA. **Assured Neuro Symbolic Components and Systems (ANSCS)**. PI: Gabor Karsai. $5,672,990.

2022–2025.   TDOT. **TDOT RDS Data Quality Assurance and High-Resolution Content Enhancement**. PI: William Barbour. $249,030.

2022–2025.   DOE/ARPA-E. **Microgrid Control/Coordination Co-Design (MicroC3)**. PI: Gabor Karsai. $1,999,670.

2020–2023.   Department of Defense. **Integrated Microgrid Control Platform**. PI: Karsai, Gabor. $933,392.

2020–2023.   Defense Advanced Research Projects Agency. **Model-based Intent-Driven Adaptive Software (MIDAS)**. PI: Karsai, Gabor. $3,176,697.

2019–2025.   NSF. **Collaborative Research: An Interdisciplinary Approach to Prepare Undergraduates for Data Science Using Real-World Data from High-Frequency Monitoring Systems**. PI: Biswas, Gautam. $631,435.

2018–2025.   NSF. **FW-HTF Theme 1: Collaborative Research: Augmenting and Advancing Cognitive Performance of Control Room Operators for Power Grid Resiliency**. PI: Biswas, Gautam. $323,081.

2018–2026.   DARPA. **Assurance-based Learning-enabled Cyber-Physical Systems (ALC)**. PI: Karsai, Gabor. $9,265,386.

2018–2022.   Defense Advanced Research Projects Agency. **Assurance-based Learning-enabled Cyber-Physical Systems (ALC)**. PI: Karsai, Gabor. $7,196,463.

2018–2020.   Tennessee Department of Transportation. **Collaborative Research Project To Coordinate The Data From the Crash Predictive Analytics Program Between TDOT and TDOSHS**. PI: Baroud, Hiba. $174,998.

2018–2019.   General Dynamics Land systems. **GDLS-MBSE**. PI: Bapty, Ted. $120,000.

2016–2020.   Department of Energy. **Resilient Information Architecture Platform for the Smart Grid (RIAPS)**. PI: Karsai, Gabor. $3,998,459.

2016–2019.   NSF. **Integrated Safety Incident Forecasting and Analysis**. PI: Yevgeniy Vorobeychik. $199,993.   The objective of this research was to understand and improve the resource coordination and dispatch mechanisms used by first responders in smart and connected communities.

2016–2017.   Air Force Office of Scientific Research. **SCOPE Laboratory: Experimental Testbed for Evaluating Secure Cyber Operations in Physical Environments**. PI: Gokhale, Aniruddha. $95,400.

2014–2016.   Defense Advanced Research Projects Agency. **Support for System of Systems Integration Technology and Experimentation (SoSITE)**. PI: Karsai, Gabor. $96,146.

2013–2016.   NSF. **CPS: Synergy: Collaborative Research: Diagnostics and Prognostics Using Temporal Causal Models for Cyber-Physical Systems- A case of Smart Electric Grid**. PI: Karsai, Gabor. $399,951.

2012–2014.   AFRL. **Resilient Software Systems**. PI: Karsai, Gabor. $699,570.

2012–2013.   Department of Defense. **Future Airborne Capability Environment (FACE 5)**. PI: Bapty, Ted. $3,573,021.

2011–2014. Defense Advanced Research Projects Agency. **DARPA - F6 Model-driven Development Kit (F6MDK)**. PI: Karsai,Gabor. $6,245,040.

Publications

- 251 Total Refereed Publications. 80 publications after 2021.
- 36 H-Index. 5286 Total Citations (Google Scholar). 2761 after 2021.
- Co-authors with a trailing ∗ indicate graduate and undergraduate students.
- Co-authors with a trailing † indicate students who have graduated and are still collaborating.
- Co-authors with a trailing ‡ are postdocs and research scientists.
- 50 Journal Publications. 17 after 2021.
- 60 Highly Selective Conferences Publications with low acceptance rates. 42 after 2021.

Journal Publications

2024

J1. Md. Jaminur Islam, Jose Paolo Talusan‡, Shameek Bhattacharjee, Francis Tiausas, **Abhishek Dubey**, Keiichi Yasumoto, and Sajal K. Das (May 2024). "Scalable Pythagorean Mean-based Incident Detection in Smart Transportation Systems". In: *ACM Trans. Cyber-Phys. Syst.* 8.2. ISSN: 2378-962X
  - *Summary:* Algorithms for detecting traffic anomalies. We propose an incremental region growing approximation algorithm for optimal Spatio-temporal clustering of road segments and their data; such that road segments are strategically divided into highly correlated clusters
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 2.3**.]

J2. Yasas Senarath, Ayan Mukhopadhyay‡, Hemant Purohit, and **Abhishek Dubey** (Mar. 2024). "Designing a Human-centered AI Tool for Proactive Incident Detection Using Crowdsourced Data Sources to Support Emergency Response". In: *Digit. Gov.: Res. Pract.* 5.1
  - *Summary:* This paper describes a tool for early incident detection on highways using information from Waze.
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 1.595**.]

J3. Salah Uddin Kadir, Subir Majumder, Anurag K. Srivastava, Ajay Dev Chhokra†, Himanshu Neema, **Abhishek Dubey**, and Aron Laszka (2024). "Reinforcement-Learning-Based Proactive Control for Enabling Power Grid Resilience to Wildfire". In: *IEEE Transactions on Industrial Informatics* 20.1, pp. 795–805
  - *Summary:* This paper describes an approach to handle uncertainty while responding to grid failures caused by wildfires.
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 11.7**.]

J4. Agnivesh Pani, Harish Puppala, Shreepati Jha, Ankit Gupta∗, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2024). "Enhancing Urban Mobility with Aerial Ropeway Transit (ART): Future Accessibility Impacts of Multimodal Transit Expansion Scenarios". In: *Transportation Research Record* 0.0, online first
  - *Summary:* This paper describes the impacts of a potential ropeway transit system being designed in varanasi, india.
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 1.6**.]

2023

J5. Michael Wilbur*, Afiya Ayman, Amutheezan Sivagnanam, Anna Ouyang, Vincent Poon, Riyan Kabir, Abhiram Vadali, Philip Pugliese, Daniel Freudberg, Aron Laszka, and **Abhishek Dubey** (2023). "Impact of COVID-19 on Public Transit Accessibility and Ridership". In: *Transportation Research Record* 2677.4, pp. 531–546
  - *Summary:* This paper provided analysis of impact of covid-19 on public transportation services.
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.6**.]

J6. Francis Tiausas, Keiichi Yasumoto, Jose Paolo Talusan‡, Hayato Yamana, Hirozumi Yamaguchi, Shameek Bhattacharjee, **Abhishek Dubey**, and Sajal K. Das (Oct. 2023). "HPRoP: Hierarchical Privacy-Preserving Route Planning for Smart Cities". In: *ACM Trans. Cyber-Phys. Syst.* 7.4. ISSN: 2378-962X
  - *Summary:* This paper describes an innovative privacy preserving routing alogrithm for smart transportation.
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 2.3**.]

2022

J7. Ayan Mukhopadhyay‡, Geoffrey Pettet†, Sayyed Mohsen Vazirizade‡, Di Lu, Alejandro Jaimes, Said El Said, Hiba Baroud, Yevgeniy Vorobeychik, Mykel Kochenderfer, and **Abhishek Dubey** (2022). "A Review of Incident Prediction, Resource Allocation, and Dispatch Models for Emergency Management". In: *Accident Analysis & Prevention* 165, p. 106501. ISSN: 0001-4575
  - *Summary:* This is one of the first exhaustive reviews of decision-theoretic prediction and optimization procedures used in emergency response domain.
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 5.7**.]

J8. Alessandro Coglio, Eric McCarthy, Stephen Westfold, Daniel Balasubramanian, **Abhishek Dubey**, and Gabor Karsai (May 2022). "Syntheto: A Surface Language for APT and ACL2". In: *Electronic Proceedings in Theoretical Computer Science* 359, pp. 151–167
  - *Summary:* This paper describes a high-level language for ACL2.
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

J9. Bradley Potteiger, **Abhishek Dubey**, Feiyang Cai, Xenofon Koutsoukos, and Zhenkai Zhang* (2022). "Moving target defense for the security and resilience of mixed time and event triggered cyber–physical systems". In: *Journal of Systems Architecture* 125, p. 102420. ISSN: 1383-7621
  - *Summary:* This paper describes the design of a moving target defense algorithm using an operating system kernel that supports spatial and temporal separation.
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 3.8**.]

2021

J10. Geoffrey Pettet†, Ayan Mukhopadhyay‡, Mykel J. Kochenderfer, and **Abhishek Dubey** (Nov. 2021). "Hierarchical Planning for Dynamic Resource Allocation in Smart and Connected Communities". In: *ACM Trans. Cyber-Phys. Syst.* Just Accepted. ISSN: 2378-962X
  - *Summary:* This paper presents a hierarchical decision making framework for emergency response and resource allocations systems.
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.3**.]

J11. Shreyas Ramakrishna*, Zahra RahimiNasab, Gabor Karsai, Arvind Easwaran, and **Abhishek Dubey** (2021). "Efficient Out-of-Distribution Detection Using Latent Space of β-VAE for Cyber-Physical Systems". In: *ACM Trans. Cyber-Phys. Syst.*

- *Summary:* This paper describes a workflow, methodology and results for detecting abnormal conditions in autonomous driving systems. The key idea presented in the paper is that detection and explanation of the reasons behind the anomaly can be done using a single strategically trained variational autoencoder.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.3.**]

J12. Scott Eisele*, Taha Eghtesad, Keegan Campanelli∗, Prakhar⊙ Agrawal, Aron Laszka, and **Abhishek Dubey** (Jan. 2021). "Safe and Private Forward-Trading Platform for Transactive Microgrids". In: *ACM Transactions of Cyber-Physical Systems* 5.1. ISSN: 2378-962X
- *Summary:* This paper presented the privacy and safety trade-off challenge we faced while designing the transactive energy systems using TRANSAX.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.3.**]

J13. Ricardo Sandoval, Caleb Van Geffen, Michael Wilbur*, Brandon Hall, **Abhishek Dubey**, William Barbour, and Daniel B. Work (2021). "Data driven methods for effective micro-mobility parking". In: *Transportation Research Interdisciplinary Perspectives.*
- *Summary:* This paper describes algorithms to determine optimal depots to park and store scooters in Nashville, TN instead of dropping them on side-streets in an adhoc manner.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 3.9.**]

J14. Yuche Chen, Guoyuan Wu, Ruixiao Sun*, **Abhishek Dubey**, Aron Laszka, and Philip Pugliese (2021). "A Review and Outlook of Energy Consumption Estimation Models for Electric Vehicles". In: *Society of Automotive Engineers (SAE) International Journal of Sustainable Transportation, Energy, Environment, & Policy*
- *Summary:* This paper describes the state of the art on energy consumption models for electric vehicles.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

J15. Ruixiao S, Yuche Chen, **Abhishek Dubey**, and Philip Pugliese (2021). "Hybrid electric buses fuel consumption prediction based on real-world driving data". In: *Transportation Research Part D: Transport and Environment* 91, p. 102637. ISSN: 1361-9209
- *Summary:* This paper described the microscopic energy prediction models for hybrid-electric buses based on the data from the DOE VTO grant with Chattanooga. My role in the project was PI.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 7.4.**]

J16. Afiya Ayman, Amutheezan Sivagnanam, Michael Wilbur*, Philip Pugliese, **Abhishek Dubey**, and Aron Laszka (Oct. 2021). "Data-Driven Prediction and Optimization of Energy Use for Transit Fleets of Electric and ICE Vehicles". In: *ACM Trans. Internet Technol.* 22.1. ISSN: 1533-5399
- *Summary:* This paper describes the design, deployment and challenges faced while building macro energy prediction models for mixed transit fleet of Chattanooga, TN.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 3.5.**]

J17. Sanchita Basak*, Saptarshi Sengupta, Shi-Jie Wen, and **Abhishek Dubey** (2021). "Spatio-temporal AI inference engine for estimating hard disk reliability". In: *Pervasive and Mobile Computing* 70, p. 101283. ISSN: 1574-1192.
- *Summary:* This paper describes a anomaly detection method for unstructured time series data of hard disk performance parameters. This is an extension of a conference paper.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 3.0.**]

2020

J18. Hao Tu, Yuhua Du, Hui Yu, **Abhishek Dubey**, Srdjan Lukic, and Gabor Karsai (2020). "Resilient Information Architecture Platform for the Smart Grid: A Novel Open-Source Platform for Microgrid Control". In: *IEEE Transactions on Industrial Electronics* 67.11, pp. 9393–9404.

  ▪ *Summary:* This paper describes the design and components of the Resilient Information Architecture Platform for Smart Grid and describes the implementation of distributed microgrid control algorithms on the middleware.

  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 7.5**.]

J19. Scott Eisele*, Carlos Barreto, **Abhishek Dubey**, Xenofon Koutsoukos, Taha Eghtesad, Aron Laszka, and Anastasia Mavridou (2020). "Blockchains for Transactive Energy Systems: Opportunities, Challenges, and Approaches". In: *IEEE Computer* 53.9, pp. 66–76

  ▪ *Summary:* This paper describes the reasons of the interest in use of blockchains for transactive energy systems. The paper also focuses on challenges such as verification and security of the blockchain-based transactive systems.

  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.0**.]

J20. Scott Eisele*, Aron Laszka, Doug Schmidt, and **Abhishek Dubey** (2020). "The Role of Blockchains in Multi-Stakeholder Transactive Energy Systems". In: *Frontiers in Blockchain* 3, p. 55. ISSN: 2624-7852

  ▪ *Summary:* This paper describes the decentralized protocols of TRANSAX, our transactive energy middleware.

  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.9**.]

J21. Jose Paolo Talusan‡, Michael Wilbur*, **Abhishek Dubey**, and Keichi Yasumoto (2020). "Route Planning Through Distributed Computing by Road Side Units". In: *IEEE Access* 8, pp. 176134–176148

  ▪ *Summary:* This paper describes algorithms for decentralized route planning in cities. The goal is to reduce the reliance on centralized cloud services which may become unavailable during disasters.

  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 3.4**.]

J22. Yuche Chen, Guoyuan Wu, Ruixiao S, **Abhishek Dubey**, Aron Laszka, and Philip Pugliese (2020). "A Review and Outlook of Energy Consumption Estimation Models for Electric Vehicles". In: *Renewable and Sustainable Energy Reviews*

  ▪ *Summary:* The paper presents a review of current state of the art in energy estimation models for transit fleet, especially electric vehicles.

  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 16.3**.]

J23. Purboday Ghosh, Scott Eisele*, **Abhishek Dubey**, Mary Metelko, Istvan Madari, Peter Volgyesi, and Gabor Karsai (2020). "Designing a decentralized fault-tolerant software framework for smart grids and its applications". In: *Journal of Systems Architecture* 109, p. 101759. ISSN: 1383-7621

  ▪ *Summary:* This paper describes the fault management architecture of the Resilient Information Architecture Platform for Smart Grid.

  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 3.8**.]

J24. Saideep Nannapaneni‡, Sankaran Mahadevan, **Abhishek Dubey**, and Yung-Tsun Tina Lee (2020). "Online monitoring and control of a cyber-physical manufacturing process under uncertainty". In: *Journal of Intelligent Manufacturing*, pp. 1–16

  ▪ *Summary:* This paper develops a dynamic Bayesian network approach, which enables the aggregation of multiple uncertainty sources, parameter estimation and robust prediction for online control.

- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 5.9**.]

J25. Shreyas Ramakrishna∗, Charles Hartsell∗, Matthew P. Burruss∗, Gabor Karsai, and **Abhishek Dubey** (2020). "Dynamic-weighted simplex strategy for learning enabled cyber physical systems". In: *Journal of Systems Architecture* 111, p. 101760. ISSN: 1383-7621
- *Summary:* This paper describes the design of Deep NN Car and describes an online simplex strategy for adaptive augmentation of a preexisting AI based driving algorithms in the vehicles.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 3.8**.]

J26. Saqib Hasan∗, **Abhishek Dubey**, Gabor Karsai, and Xenofon Koutsoukos (2020). "A game-theoretic approach for power systems defense against dynamic cyber-attacks". In: *International Journal of Electrical Power & Energy Systems* 115. ISSN: 0142-0615
- *Summary:* This paper describes a game theoretic dynamic strategy for prioritizing the resources that should be protected during dynamic attacks on substation networks.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 5.0**.]

J27. Shashank Shekhar, Ajay Chhokra†, Hongyang S, Aniruddha Gokhale, **Abhishek Dubey**, Xenofon Koutsoukos, and Gabor Karsai (2020). "URMILA: Dynamically Trading-off Fog and Edge Resources for Performance and Mobility-Aware IoT Services". In: *Journal of Systems Architecture*. ISSN: 1383-7621
- *Summary:* This paper describes dynamic optimization of fog computing services.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 3.8**.]

2019

J28. Fangzhou Sun∗, **Abhishek Dubey**, Jules White, and Aniruddha Gokhale (Jan. 2019). "Transit-hub: a smart public transportation decision support system with multi-timescale analytical services". In: *Cluster Computing* 22.Suppl 1, pp. 2239–2254
- *Summary:* This paper describes the Transit Hub system my team developed for Nashville, TN as part of the global cities team challenge in 2016.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 3.6**.]

J29. Ria Mae Borromeo, Lei Chen, **Abhishek Dubey**, Sudeepa Roy, and Saravanan Thirumuruganathan (2019). "On Benchmarking for Crowdsourcing and Future of Work Platforms". In: *IEEE Data Eng. Bull.* 42.4, pp. 46–54
- *Summary:* This paper describes the discussions from the benchmark problems from the Shonan meeting on future of work in 2019.
- Contributions: 5%. Participated in paper discussion.

J30. **Abhishek Dubey**, W. Emfinger, A. Gokhale, P. Kumar, D. McDermet, T. Bapty, and G. Karsai (July 2019). "Enabling Strong Isolation for Distributed Real-Time Applications in Edge Computing Scenarios". In: *IEEE Aerospace and Electronic Systems Magazine* 34.7, pp. 32–45. ISSN: 1557-959X
- *Summary:* The paper describes the design and implementation of a FACE conformant operating system kernel that provides both POSIX as well as ARINC653 APIs and support health management.
- *Contributions: 90 %. Developed the concept and wrote the manuscript.* [**Impact Factor: 3.6**.]

J31. **Abhishek Dubey**, Gabor Karsai, Peter Volgyesi, Mary Metelko, Istvan Madari, Hao Tu, Yuhua Du, and Srdjan Lukic (2019). "Device Access Abstractions for Resilient Information Architecture Platform for Smart Grid". In: *Embedded Systems Letters* 11.2, pp. 34–37
- *Summary:* The paper describes the design of device actors, an abstraction to integrate heterogeneous external devices into distributed power system applications built over the RIAPS platform.

- *Contributions: 90 %. Developed the concept and wrote the manuscript.* [**Impact Factor: 1.7**.]

    2018

J32. Ajay Chhokra†, **Abhishek Dubey**, Nagabhushan Mahadevan, Gabor Karsai, Daniel Balasubramanian, and Saqib Hasan∗ (Feb. 2018). "Hierarchical Reasoning about Faults in Cyber-Physical Energy Systems using Temporal Causal Diagrams". In: *International Journal of Prognostics and Health Management* 9.1
- *Summary:* This paper describes the design and operations of a new formalism for studying and analyzing temporal fault propagation in power system networks.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 1.4**.]

J33. Marisol Garcia Valls, **Abhishek Dubey**, and Vicent J. Botti (2018). "Introducing the new paradigm of Social Dispersed Computing: Applications, Technologies and Challenges". In: *Journal of Systems Architecture* 91, pp. 83–102
- *Summary:* The paper explores the emerging concepts of computing and how they are beneficial to social cyber-physical system applications. A key contribution of the paper is to present a consensus definition of various emerging distributed system concepts and identify the research challenges.
- *Contributions: 50 %. Jointly developed the idea with Marisol and co-wrote the paper.* [**Impact Factor: 3.8**.]

J34. Subhav Pradhan∗, **Abhishek Dubey**, Shweta Khare, Saideep Nannapaneni‡, Aniruddha S. Gokhale, Sankaran Mahadevan, Douglas C. Schmidt, and Martin Lehofer (2018). "CHARIOT: Goal-Driven Orchestration Middleware for Resilient IoT Systems". In: *Transactions of Cyber Physical Systems* 2.3, 16:1–16:37
- *Summary:* This paper describes the algorithm, design, and architecture of an online reconfiguration planner that can ensure that cyber-physical systems can recover from failures without a prescribed sequence of recovery actions.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.3**.]

    2017

J35. Saideep Nannapaneni‡, S. Mahadevan, **Abhishek Dubey**, D. Lechevalier, A. Narayanan, and S. Rachuri (2017). "Automated Uncertainty Quantification Through Information Fusion in Manufacturing Processes". eng. In: *Smart and Sustainable Manufacturing Systems* 1.1, pp. 153–177. ISSN: 25206478
- *Summary:* This paper describes a Bayesian network based uncertainty quantification approach for manufacturing CPS.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Impact Factor: 0.81**.]

    2016

J36. Subhav Pradhan∗, **Abhishek Dubey**, Tihamer Levendovszky, Pranav Srinivas Kumar, William Emfinger, Daniel Balasubramanian, William Otte, and Gabor Karsai (2016). "Achieving resilience in distributed software systems via self-reconfiguration". In: *Journal of Systems and Software* 122, pp. 344–363
- *Summary:* This paper describes the key mappings and encoding of the resilient recovery problem of systems using Z3, a Satisfiability Modulo Theory solver.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 3.7**.]

J37. Gonçalo Martins, Arul Moondra, **Abhishek Dubey**, Anirban Bhattacharjee, and Xenofon D. Koutsoukos (2016). "Computation and Communication Evaluation of an Authentication Mechanism for Time-Triggered Networked Control Systems". In: *Sensors* 16.8, p. 1166.

- *Summary:* This paper studied the overhead of authentication based security mechanisms on time triggered networks.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 3.9**.]

J38. Gautam Biswas, Hamed Khorasgani, Gerald Stanje, **Abhishek Dubey**, Somnath Deb, and Sudipto Ghoshal (2016b). "An approach to mode and anomaly detection with spacecraft telemetry data". In: *International Journal of Prognostics and Health Management*.
- *Summary:* This paper described a semi-supervised approach to anomaly detection from streaming data collected from spacecraft. The same approach applies to telemetry data received from the projects we are doing with the transit and emergency response departments.
- *Contributions: 10%. Participated in paper discussions and wrote/edited a minor portion of the paper.* [**Impact Factor: 1.4**.]

J39. Saideep Nannapaneni[‡], **Abhishek Dubey**, Sherif Abdelwahed, Sankaran Mahadevan, Sandeep Neema, and Ted Bapty (2016). "Mission-based reliability prediction in component-based systems". In: *International Journal of Prognostics and Health Management* 7.001
- *Summary:* This paper extended the recovery planning algorithms to choose a recovery configuration that is less likely to fail over the time of the mission. The key idea was to generate reliability block diagrams from system configurations considering both software and hardware failures and then use the estimated reliability information to select the recovery configuration.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.4**.]

2015 and Before

J40. Daniel Balasubramanian, **Abhishek Dubey**, William Otte, Tihamer Levendovszky, Aniruddha S. Gokhale, Pranav Srinivas Kumar, William Emfinger, and Gabor Karsai (2015). "DREMS ML: A wide spectrum architecture design language for distributed computing platforms". In: *Science of Computer Programming* 106, pp. 3–29
- *Summary:* This paper describes the modeling language that combines the best aspects of textual and graphical environments to enable design and analysis of applications for fractionated satellite platforms that were part of the DARPA F6 program.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Impact Factor: 1.5**.]

J41. Nagabhushan Mahadevan, **Abhishek Dubey**, Ajay Chhokra[†], Huangcheng Guo, and Gabor Karsai (2015). "Using temporal causal models to isolate failures in power system protection devices". In: *IEEE Instrumentation and Measurement Magazine* 18.4, pp. 28–39
- *Summary:* This paper describe the temporal causal model formulation that is an extension of temporal failure propagation graphs and focuses on diagnosing systems with fault protection devices that can fail themselves.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.6**.]

J42. Tihamer Levendovszky, **Abhishek Dubey**, William Otte, Daniel Balasubramanian, Alessandro Coglio, Sandor Nyako, William Emfinger, Pranav Srinivas Kumar, Aniruddha S. Gokhale, and Gabor Karsai (2014). "Distributed Real-Time Managed Systems: A Model-Driven Distributed Secure Information Architecture Platform for Managed Embedded Systems". In: *IEEE Software* 31.2, pp. 62–69
- *Summary:* This paper describes the key challenges and the mechanisms to mitigate those challenges for multi stakeholder distributed real-time systems.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 2.589**.]

J43. Nagabhushan Mahadevan, **Abhishek Dubey**, Daniel Balasubramanian, and Gabor Karsai (2013). "Deliberative, search-based mitigation strategies for model-based software health management". In: *Innovations in Systems and Software Engineering* 9.4, pp. 293–318

- *Summary:* This paper described deliberation strategies for finding the optimal mitigation action for recovering real-time systems from failures. This paper was part of our effort on developing health management techniques for software-intensive systems.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.1**.]

J44. **Abhishek Dubey** and Gabor Karsai (2013). "Software health management". In: *Innovations in System and Software Engineering* 9.4, p. 217
- *Summary:* introduction to the special issue on software health management.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.1**.]

J45. Subhav Pradhan*, William Otte, **Abhishek Dubey**, Aniruddha S. Gokhale, and Gabor Karsai (2013). "Towards a resilient deployment and configuration infrastructure for fractionated spacecraft". In: *SIGBED Review* 10.4, pp. 29–32
- *Summary:* This paper provided an early overview of the System F6 software architecture that included a separation kernel, multi-level security information architecture, and a remote deployment engine that can manage the application state remotely and securely.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

J46. **Abhishek Dubey**, Gabor Karsai, and Nagabhushan Mahadevan (2011). "A component model for hard real-time systems: CCM with ARINC-653". In: *Software: Practacice and Experience* 41.12, pp. 1517–1550
- *Summary:* This paper described one of the first implementations of an ARINC-653 layer for Linux. It also described the formulation of a component model for building distributed applications upon that operating system. This architecture was heavily leveraged in designing the future airborne capability environment (FACE).
- *Contributions: 90 %. Developed the concept and wrote the manuscript.* [**Impact Factor: 2.6**.]

J47. Steven Nordstrom, **Abhishek Dubey**, Turker Keskinpala, Sandeep Neema, and Theodore Bapty (2011). "Autonomic Healing of Model-Based Systems". In: *JACIC* 8.4, pp. 87–99
- *Summary:* This paper described a policy for prescriptive system recovery mechanism for high performance computing clusters.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

J48. Luciano Piccoli, **Abhishek Dubey**, James N Simone, and James B Kowalkowlski (Apr. 2010). "LQCD workflow execution framework: Models, provenance and fault-tolerance". In: *Journal of Physics: Conference Series* 219.7, p. 072047
- *Summary:* This paper described the workflow engine used for Lattice Quantum Chromodynamics experiments at FERMI Lab.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

J49. **Abhishek Dubey**, Rajat Mehrotra, Sherif Abdelwahed, and Asser N. Tantawi (2009). "Performance modeling of distributed multi-tier enterprise systems". In: *SIGMETRICS Performance Evaluation Review* 37.2, pp. 9–11
- *Summary:* This paper described the formalization of a queuing theoretic multi-tier model of cloud systems. This paper was later leveraged for the work on power management of computing clusters and autoscaling of cloud applications. The latter paper has been cited more than 600 times since it was published in 2011.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

J50. **Abhishek Dubey**, Steven Nordstrom, Turker Keskinpala, Sandeep Neema, Ted Bapty, and Gabor Karsai (2007). "Towards a verifiable real-time, autonomic, fault mitigation framework for large scale real-time systems". In: *Innovations in Systems and Software Engineering* 3.1, pp. 33–52

- *Summary:* This paper described the real-time reflex engine and established parameters under which it will perform as expected and can scale to manage faults in large systems.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Impact Factor: 1.1**.]

Highly Selective Conference Publications (Refereed)

2025

HC1. Baiting Luo*, Ava Pettet†, Aron Laszka, **Abhishek Dubey**, and Ayan Mukhopadhyay‡ (2025). "Scalable Decision-Making In Stochastic Environments Through Learned Temporal Abstraction". In: *Proceedings of the 13th International Conference on Learning Representations, Singapore*
- *Summary:* This paper presentations L-MAP, which is a model-based offline RL approach that addresses the challenges of high-dimensional continuous action spaces in stochastic environments by learning temporally extended macro-actions via a state-conditional VQ-VAE, enabling efficient planning with MCTS and achieving strong performance in complex control tasks.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 32.8 %**.]

HC2. Rishav Sen*, Yunuo Zhang*, Fangqi Liu‡, Jose Paolo Talusan‡, Ava Pettet†, Yoshinori Suzue, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2025). "Online Decision-Making Under Uncertainty for Vehicle-to-Building Systems". In: *Proceedings of the ACM/IEEE 16th International Conference on Cyber-Physical Systems (ICCPS)*. ICCPS '25. California, USA: Association for Computing Machinery
- *Summary:* This paper formulates the Vehicle-to-Building (V2B) optimization problem as a Markov decision process, addressing challenges in energy cost minimization under fluctuating electricity pricing and long planning horizons by leveraging online search and domain-specific heuristics, demonstrating superior performance over existing methods in real-world evaluations.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 28.4 %**.]

HC3. Yunuo Zhang*, Baiting Luo*, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2025). "Observation Adaptation via Annealed Importance Resampling for POMDPs". In: *Proceedings of the 35th International Conference on Automated Planning and Scheduling (ICAPS)*. accepted as oral presentation. AAAI Press
- *Summary:* This paper proposes an improved online POMDP solver that mitigates particle degeneracy by constructing bridge distributions through iterative Monte Carlo steps, enabling more accurate belief updates under noisy observations and significantly outperforming state-of-the-art methods.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 22.8 %**.]

HC4. Fangqi Liu‡, Rishav Sen*, Jose Talusan‡, Ava Pettet†, Aaron Kandel, Yoshinori Suzue, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2025). "Reinforcement Learning-based Approach for Vehicle-to-Building Charging with Heterogeneous Agents and Long Term Rewards". In: *Proceedings of the 23rd Conference on Autonomous Agents and MultiAgent Systems, AAMAS 2025, Detroit, Michigan*. AAMAS '25. nominated for best paper. International Conference on Autonomous Agents and Multi-Agent Systems. Detroit, Michigan: International Foundation for Autonomous Agents and Multiagent Systems
- *Summary:* This paper introduces a novel RL framework that combines the Deep Deterministic Policy Gradient approach (DDPG) with action masking and efficient MILP-driven policy guidance. Our approach balances the exploration of continuous action spaces to meet user charging demands. **[Nominated for Best Paper Award]**

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 24.5 %**.]

HC5. Agrima Khanna*, Fangqi Liu‡, Samir Gupta*, Sophie Pavia*, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2025). "PDPTW-DB: MILP-Based Offline Route Planning for PDPTW with Driver Breaks". In: *Proceedings of the 26th International Conference on Distributed Computing and Networking*. ICDCN '25. New York, NY, USA: Association for Computing Machinery, pp. 73–83. ISBN: 9798400710629
- *Summary:* This study presents a novel mixed-integer linear programming formulation for the Pickup and Delivery Problem with Time Windows and Driver Breaks.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 32 %**.]

HC6. Ziyan An, Xia Wang, Hendrik Baier, Zirong Chen, **Abhishek Dubey**, Taylor T. Johnson, Jonathan Sprinkle, Ayan Mukhopadhyay‡, and Meiyi Ma (2025). "LogiEx: Integrating Formal Logic and Large Language Model for Explainable Planning". In: *Proceedings of the 24th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2025)*. Extended Abstract
- *Summary:* This paper describes an approach to explain the sequence of decisions made in planning.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 40 %**.]

2024

HC7. Baiting Luo*, Yunuo Zhang*, **Abhishek Dubey**, and Ayan Mukhopadhyay‡ (2024). "Act as You Learn: Adaptive Decision-Making in Non-Stationary Markov Decision Processes". In: *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*
- *Summary:* This paper introduces Adaptive Monte Carlo Tree Search (ADA-MCTS), a heuristic search algorithm for non-stationary Markov decision processes (NS-MDPs) that allows agents to learn and adapt to evolving environmental dynamics over time, reducing pessimism in decision-making while maintaining safety, and demonstrating superior speed and adaptability compared to state-of-the-art methods. **[**Received Runner Up Interal Best Paper Award**]**
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 20 %**.]

HC8. Sophie Pavia*, David Rogers‡, Amutheezan Sivagnanam, Michael Wilbur*, Danushka Edirimanna, Youngseok Kim, Philip Pugliese, Samitha Samaranayake, Aron Laszka, Ayano Mukhopadhyay‡, and **Abhishek Dubey** (2024). "Deploying mobility-on-demand for all by optimizing paratransit services". In: *Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence*. IJCAI '24. Jeju, Korea. ISBN: 978-1-956792-04-1
- *Summary:* This paper presents a vehicle routing problem formulation for optimizing paratransit services, leveraging real-world data and a pilot deployment to demonstrate significant improvements over existing approaches in providing accessible on-demand mobility services for individuals with disabilities.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 15 %**.]

HC9. Sophie Pavia*, David Rogers‡, Amutheezan Sivagnanam, Michael Wilbur*, Danushka Edirimanna, Youngseo Kim, Ayan Mukhopadhyay‡, Philip Pugliese, Samitha Samaranayake, Aron Laszka, and **Abhishek Dubey** (2024). "SmartTransit.AI: a dynamic paratransit and microtransit application". In: *Proceedings of the Thirty-Third International Joint Conference on Artificial Intelligence*. IJCAI '24. Jeju, Korea. ISBN: 978-1-956792-04-1
- *Summary:* This demonstration showcases SmartTransit.AI, a modular on-demand public transportation scheduling software for microtransit and paratransit services, aimed at helping transit agencies implement state-of-the-art rideshare and ridepooling algorithms in real-world settings. **Received Best Deployment Award at ISIS, Vanderbilt University**

- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 15 %.**]

HC10. Jose Paolo Talusan‡, Chaeeun Han, Ayan Mukhopadhyay‡, Aron Laszka, Dan Freudberg, and **Abhishek Dubey** (2024). "An Online Approach to Solving Public Transit Stationing and Dispatch Problem". In: *Proceedings of the ACM/IEEE 15th International Conference on Cyber-Physical Systems (ICCPS)*. ICCPS '24. Hong Kong, China: Association for Computing Machinery

- *Summary:* This paper shows an online planning approach to handle disruptions in fixed line bus service. **[Best Paper Award]**
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 28.2 %.**]

HC11. Ziyan An, Hendrik Baier, **Abhishek Dubey**, Ayan Mukhopadhyay‡, and Meiyi Ma (2024). "Enabling MCTS Explainability for Sequential Planning Through Computation Tree Logic". In: *ECAI 2024 - 27th European Conference on Artificial Intelligence*. Santiago de Compostela, Spain

- *Summary:* This paper introduces a computation tree logic-based explainer for Monte Carlo Tree Search (MCTS) in sequential planning, translating user-defined requirements into formal logic specifications and generating human-readable explanations, significantly improving user understanding and preference in transportation routing services.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 23 %.**]

HC12. Chaeeun Han, Jose Paolo Talusan‡, Dan Freudberg, Ayan Mukhopadhyay‡, **Abhishek Dubey**, and Aron Laszka (2024). "Forecasting and Mitigating Disruptions in Public Bus Transit Services". In: *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*

- *Summary:* This paper describes an application of AI planning and optimization methods for reducing the impact of disruptions to public transit services in Nashville
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 25 %.**]

HC13. Amutheezan Sivagnanam, Ava Pettet†, Hunter Lee, Ayan Mukhopadhyay‡, **Abhishek Dubey**, and Aron Laszka (2024). "Multi-agent reinforcement learning with hierarchical coordination for emergency responder stationing". In: *Proceedings of the 41st International Conference on Machine Learning*. ICML'24. Vienna, Austria: JMLR.org

- *Summary:* This paper presents a multi-agent reinforcement learning approach with hierarchical coordination for emergency responder stationing, significantly reducing decision time while improving response efficiency by leveraging transformers, fixed-dimensional projections, and combinatorial techniques.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 27.5 %.**]

HC14. Samir Gupta*, Agrima Khanna*, Jose Paolo Talusan‡, Anwar Said, Dan Freudberg, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (June 2024). "A Graph Neural Network Framework for Imbalanced Bus Ridership Forecasting". In: *2024 IEEE International Conference on Smart Computing (SMARTCOMP)*

- *Summary:* This paper presents a Graph Neural Network framework that leverages dynamic graphs and focal loss to improve imbalanced bus ridership forecasting by incorporating temporal, spatial, and auto-regressive features, significantly outperforming state-of-the-art baselines.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 32.9 %.**]

HC15. Ava Pettet†, Yunuo Zhang*, Baiting Luo*, Kyle Wray, Hendrik Baier, Aron Laszka, **Abhishek Dubey**, and Ayan Mukhopadhyay‡ (2024). "Decision Making in Non-Stationary Environments with Policy-Augmented Searchs". In: *22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*. Accepted as an extended abstract.

- *Summary:* This paper describes policy augmented search in online planning.

- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 25 %.**]

HC16. Jose Paolo Talusan‡, Rishav Sen*, Aaron Kandel Ava Pettet, Yoshinori Suzue, Liam Pedersen, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (June 2024). "OPTIMUS: Discrete Event Simulator for Vehicle-to-Building Charging Optimization". In: *2024 IEEE International Conference on Smart Computing (SMARTCOMP)*

- *Summary:* This paper presents OPTIMUS, a discrete event simulator designed for vehicle-to-building charging optimization, enabling building owners and EV manufacturers to evaluate, benchmark, and optimize charging policies under uncertainty to enhance energy resiliency and cost efficiency.

- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 32.9 %.**]

2023

HC17. Jacob Buckelew*, Sagnik Basumallik, Vasavi Sivaramakrishnan, Ayan Mukhopadhyay‡, Anurag K. Srivastava, and **Abhishek Dubey** (2023). "Synchrophasor Data Event Detection using Unsupervised Wavelet Convolutional Autoencoders". In: *2023 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 326–331

- *Summary:* This paper describes a novel anomaly detection algorithm for smart grid.

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 31 %.**]

HC18. Baiting Luo*, Shreyas Ramakrishna*, Ava Pettet†, Christopher Kuhn, Gabor Karsai, and Ayan Mukhopadhyay‡ (2023). "Dynamic Simplex: Balancing Safety and Performance in Autonomous Cyber Physical Systems". In: *Proceedings of the ACM/IEEE 14th International Conference on Cyber-Physical Systems (with CPS-IoT Week 2023)*. ICCPS '23. San Antonio, TX, USA: Association for Computing Machinery, pp. 177–186. ISBN: 9798400700361

- *Summary:* This paper describes dynamic simplex for guiding safe switching of policy in autonomous driving.

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 25 %.**]

HC19. Sophie Pavia*, J. Carlos Martinez Mori, Aryaman Sharma, Philip Pugliese, **Abhishek Dubey**, Samitha Samaranayake, and Ayan Mukhopadhyay‡ (2023a). "Designing Equitable Transit Networks". In: *ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO)*

- *Summary:* This paper describes approach to design equitable transit services in Chattanooga, TN

- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 16 %.**]

HC20. Michael Wilbur*, Maxime Coursey, Pravesh Koirala, Zakariyya Al-Quran, Philip Pugliese, and **Abhishek Dubey** (2023a). "Mobility-On-Demand Transportation: A System for Microtransit and Paratransit Operations". In: *Proceedings of the ACM/IEEE 14th International Conference on Cyber-Physical Systems (with CPS-IoT Week 2023)*. ICCPS '23. demonstration. San Antonio, TX, USA: Association for Computing Machinery, pp. 260–261. ISBN: 9798400700361

- *Summary:* This demonstration presents an on-demand transportation scheduling software for microtransit and paratransit services, helping transit agencies incorporate state-of-the-art rideshare and ridepooling algorithms into everyday operations.

- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 15 %.**]

HC21. Ammar Bin Zulqarnain, Samir Gupta*, Jose Paolo Talusan‡, Dan Freudberg, Philip Pugliese, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2023). "Addressing APC Data Sparsity in Predicting Occupancy and Delay of Transit Buses: A Multitask Learning Approach". In: *2023 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 17–24
  - *Summary:* This paper describes a learning algorithm for addressing prediction challenges for automated passenger counter data for public transit service in Nashville TN.
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 31** %.]

HC22. Seyedmehdi Khaleghian, Himanshu Neema, Mina Sartipi, Toan Tran, Rishav Sen*, and **Abhishek Dubey** (2023). "Calibrating Real-World City Traffic Simulation Model Using Vehicle Speed Data". In: *2023 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 303–308
  - *Summary:* This paper describes approach to configure a realistic simulator for analyzing performance of transit service in Chattanooga, TN
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 31** %.]

2022

HC23. Youngseo Kim, Danushka Edirimanna, Michael Wilbur*, Philip Pugliese, Aron Laszka, **Abhishek Dubey**, and Samitha Samaranayake (2023). "Rolling Horizon based Temporal Decomposition for the Offline Pickup and Delivery Problem with Time Windows". In: *Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI-23)*
  - *Summary:* This paper describes a heuristic to efficiently solve the offline microtransit scheduling algorithms
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 19.6** %.]

HC24. Michael Wilbur*, Salah Kadir, Youngseo Kim, Geoffrey Pettet†, Ayan Mukhopadhyay‡, Philip Pugliese, Samitha Samaranayake, Aron Laszka, and **Abhishek Dubey** (Apr. 2022). "An Online Approach to Solve the Dynamic Vehicle Routing Problem with Stochastic Trip Requests for Paratransit Services". In: *ACM/IEEE 13th International Conference on Cyber-Physical Systems (ICCPS)*. IEEE
  - *Summary:* This paper describes on online principled decision procedure for on-demand vehicle routing problems under uncertainty of demand and traffic conditions
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 28** %.]

HC25. Vineet Nair, Kritika Prakash, Michael Wilbur*, Aparna Taneja, Corrine Namblard, Oyindamola Adeyemo, **Abhishek Dubey**, Abiodun Adereni, Milind Tambe, and Ayan Mukhopadhyay‡ (July 2022). "ADVISER: AI-Driven Vaccination Intervention Optimiser for Increasing Vaccine Uptake in Nigeria". In: *31st International Joint Conference on Artificial Intelligence (IJCAI: AI for Social Good Track)*
  - *Summary:* This paper describes an innovative end to end optimization for distributing resources in communities. **Best Paper Award at IJCAI 2022** - **AI for social good track.**
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [Acceptance Rate: **15** %.]

HC26. Scott Eisele*, Michael Wilbur*, Taha Eghtesad, Kevin Silvergold, Fred Eisele*, Ayan Mukhopadhyay‡, Aron Laszka, and **Abhishek Dubey** (Oct. 2022). "Decentralized Computation Market for Stream Processing Applications". In: *2022 IEEE International Conference on Cloud Engineering (IC2E)*. Pacific Grove, CA, USA: IEEE Computer Society
  - *Summary:* This paper describes an online middleware for building decentralized outsourced computing applications
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 32.6** %.]

HC27. Amutheezan Sivagnanam, Salah Uddin Kadir, Ayan Mukhopadhyay‡, Philip Pugliese, **Abhishek Dubey**, Samitha Samaranayake, and Aron Laszka (July 2022). "Offline Vehicle Routing Problem with Online Bookings: A Novel Problem Formulation with Applications to Paratransit". In: *31st International Joint Conference on Artificial Intelligence (IJCAI)*
- *Summary:* This paper describes an innovative bookings process to improve the efficiency of paratransit services.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 15** %.]

HC28. Geoffrey Pettet†, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2022). *Decision Making in Non-Stationary Environments with Policy-Augmented Monte Carlo Tree Search*
- *Summary:* This paper describes an approach for augmenting the online search with reinforcement learning policies.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

HC29. Shreyas Ramakrishna*, Hyunjee Jin, **Abhishek Dubey**, and Arun Ramamurthy (2022). "Automating Pattern Selection for Assurance Case Development of Cyber-Physical Systems". In: *The 41st International Conference on Computer Safety, Reliability and Security (SafeComp 2022)*. Springer
- *Summary:* This paper describes an approach for generating assurance cases.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 25.8** %.]

HC30. Afiya Ayman, Juan Martinez, Philip Pugliese, **Abhishek Dubey**, and Aron Laszka (June 2022). "Neural Architecture and Feature Search for Predicting the Ridership of Public Transportation Routes". In: *8th IEEE International Conference on Smart Computing (SMART-COMP)*
- *Summary:* This paper describes an approach for predicting vehicle occupancy numbers for public transit.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 30** %.]

HC31. Jaminur Islam, Jose Paolo Talusan‡, Shameek Bhattacharjee, Francis Tiausas, Sayyed Mohsen Vazirizade‡, **Abhishek Dubey**, Keiichi Yasumoto, and Sajal Das (Apr. 2022). "Anomaly based Incident Detection in Large Scale Smart Transportation Systems". In: *ACM/IEEE 13th International Conference on Cyber-Physical Systems (ICCPS)*. IEEE
- *Summary:* This paper describes a principled mechanism for anomaly detection procedures for traffic networks. **[Nominated for best paper award].**
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 28** %.]

2021

HC32. Samriddhi Singla, Ayan Mukhopadhyay‡, Michael Wilbur*, Tina Diao, Vinayak Gajjewar, Ahmed Eldawy, Mykel Kochenderfer, Ross Shachter, and **Abhishek Dubey** (2021). "WildfireDB: An Open-Source Dataset Connecting Wildfire Spread with Relevant Determinants". In: *35th Conference on Neural Information Processing Systems (NeurIPS 2021) Track on Datasets and Benchmarks*
- *Summary:* This paper describes the datasets that can be used by the research community for learning forecasting models for wildfires.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 26** %.]

HC33. Yasas Senarath, Ayan Mukhopadhyay‡, Sayyed Vazirizade‡, hemant Purohit, Saideep Nannapaneni‡, and **Abhishek Dubey** (2021). "Practitioner-Centric Approach for Early Incident Detection Using Crowdsourced Data for Emergency Services". In: *21st IEEE International Conference on Data Mining (ICDM 2021)*
  - *Summary:* This paper describes an optimization framework for estimating the location of emergency incidents given uncertain crowd-sourced reports
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 20** %.]

HC34. Geoffrey Pettet†, Ayan Mukhopadhyay‡, Mykel Kochenderfer, and **Abhishek Dubey** (2021). "Hierarchical Planning for Resource Allocation in Emergency Response Systems". In: *Proceedings of the 12th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2021, Nashville, TN, USA*
  - *Summary:* This paper describes an efficient strategy for dynamically allocating the first responders across a city by leveraging hierarchy and allowing frequent re-balancing between the areas. The work was validated with real-world data from the Nashville TN fire department.
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 26** %.]

HC35. Michael Wilbur*, Ayan Mukhopadhyay‡, Sayyed Vazirizade‡, Philip Pugliese, Aron Laszka, and **Abhishek Dubey** (2021). "Energy and Emission Prediction for Mixed-Vehicle Transit Fleets Using Multi-Task and Inductive Transfer Learning". In: *The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD)*
  - *Summary:* This paper describes the multi-task and transfer learning formulations for the energy prediction models.
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 29** %.]

HC36. Amutheezan Sivagnanam, Afiya Ayman, Michael Wilbur*, Philip Pugliese, **Abhishek Dubey**, and Aron Laszka (2021). "Minimizing Energy Use of Mixed-Fleet Public Transit for Fixed-Route Service". In: *Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI-21)*
  - *Summary:* This paper was part of our DOE project with Chattanooga Transit Agency. In the paper, we described a set of algorithms and heuristics to solve the complex problem of the vehicle to trip assignment considering expected energy usage (estimated using predictive models developed separately) and availability of chargers. One of the key innovations of this work is the ability to manage a mixed transit fleet that has diesel, hybrid, and electric vehicles.
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 21** %.]

HC37. Samriddhi Singla, Ayan Mukhopadhyay‡, Michael Wilbur*, Tina Diao, Vinayak Gajjewar, Ahmed Eldawy, Mykel Kochenderfer, Ross Shachter, and **Abhishek Dubey** (2021). "WildfireDB: An Open-Source Dataset ConnectingWildfire Spread with Relevant Determinants". In: *35th Conference on Neural Information Processing Systems (NeurIPS 2021) Track on Datasets and Benchmarks*
  - *Summary:* This paper describes first of its kind open-source curated dataset providing information on wildfire occurrence
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 26** %.]

HC38. Sayyed Mohsen Vazirizade‡, Ayan Mukhopadhyay‡, Geoffrey Pettet†, Said El Said, Hiba Baroud, and **Abhishek Dubey** (2021). "Learning Incident Prediction Models Over Large Geographical Areas for Emergency Response". In: *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 424–429
  - *Summary:* This paper describes the design of an incident likelihood prediction framework for the state of TN.

- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 30** %.]

HC39. Ruixiao Sun*, Rongze Gui, Himanshu Neema, Yuche Chen, Juliette Ugirumurera, Joseph Severino, Philip Pugliese, Aron Laszka, and **Abhishek Dubey** (2021). "TRANSIT-GYM: A Simulation and Evaluation Engine for Analysis of Bus Transit Systems". In: *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 69–76

- *Summary:* This paper describes the an open source simulation framework for transit operators.

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 30** %.]

HC40. Matthew Burruss∗, Shreyas Ramakrishna*, and **Abhishek Dubey** (2021). "Deep-RBF Networks for Anomaly Detection in Automotive Cyber-Physical Systems". In: *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 55–60

- *Summary:* This paper describes the design of anomaly detection framework using deep RBF networks.

- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 30** %.]

HC41. Francis Tiausas, Jose Paolo Talusan‡, Yu Ishimaki, Hayato Yamana, Hirozumi Yamaguchi, Shameek Bhattacharjee, **Abhishek Dubey**, Keiichi Yasumoto, and Sajal K. Das (2021). "User-centric Distributed Route Planning in Smart Cities based on Multi-objective Optimization". In: *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 77–82

- *Summary:* This paper describes a decentralized routing algorithm for transportation networks.

- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 30** %.]

HC42. Charles Hartsell*, Shreyas Ramakrishna*, **Abhishek Dubey**, Daniel Stojcsics, Nag Mahadevan, and Gabor Karsai (2021). "ReSonAte: A Runtime Risk Assessment Framework for Autonomous Systems". In: *16th International Symposium on Software Engineering for Adaptive and Self-Managing Systems, SEAMS 2021*

- *Summary:* This paper describes a dynamic assurance framework for computing the risk of different hazards in CPS with AI components considering the designed in assurance and mitigation mechanisms.

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 30** %.]

2020

HC43. Scott Eisele*, Taha Eghtesad, Nicholas Troutman, Aron Laszka, and **Abhishek Dubey** (2020). "Mechanisms for Outsourcing Computation via a Decentralized Market". In: *14TH ACM International Conference on Distributed and Event Based Systems*

- *Summary:* This paper described the design of an edge computing platform that can provide a market for exchanging and bidding for spot computation resources. The work established key parameter settings and protocols that can reduce the likelihood of cheating by participants.

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 30** %.]

HC44. Geoffrey Pettet†, Ayan Mukhopadhyay‡, Mykel Kochenderfer, Yevgeniy Vorobeychik, and **Abhishek Dubey** (2020). "On Algorithmic Decision Procedures in Emergency Response Systems in Smart and Connected Communities". In: *Proceedings of the 19th Conference on Autonomous Agents and MultiAgent Systems, AAMAS 2020, Auckland, New Zealand*

- *Summary:* The paper described a decentralized emergency response protocol that can optimize the strategic allocation of vehicles considering future incident likelihood. The advantage of the decentralized method is that it can respond resiliently to communication failures and bottlenecks. The key innovation in this paper was the use of decentralized Monte Carlo tree search methods.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 23 %.**]

HC45. Yasas Senarath, Saideep Nannapaneni[‡], Hemant Purohit, and **Abhishek Dubey** (Nov. 2020). "Emergency Incident Detection from Crowdsourced Waze Data using Bayesian Information Fusion". In: *The 2020 IEEE/WIC/ACM International Joint Conference On Web Intelligence And Intelligent Agent Technology.* arXiv: 2011.05440. IEEE
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*
- *Summary:* This paper describes an approach for early detection of motor vehicle incidents using Waze reports. The approach is important for reducing the response time. The key challenge is inaccuracy of the Waze reports both in spatial as well as temporal dimensions. [**Acceptance Rate: 25 %.**]

HC46. Afiya Ayman, Michael Wilbur*, Amutheezan Sivagnanam, Philip Pugliese, **Abhishek Dubey**, and Aron Laszka (June 2020). "Data-Driven Prediction of Route-Level Energy Use for Mixed-Vehicle Transit Fleets". In: *2020 IEEE International Conference on Smart Computing (SMARTCOMP) (SMARTCOMP 2020).* Bologna, Italy
- *Summary:* This paper describes the design of the macroscopic energy estimation models and the data processing steps performed for the transit fleet of Chattanooga, TN.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 32 %.**]

2019

HC47. Sanchita Basak*, Saptarshi Sengupta, and **Abhishek Dubey** (June 2019). "Mechanisms for Integrated Feature Normalization and Remaining Useful Life Estimation Using LSTMs Applied to Hard-Disks". In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA,* pp. 208–216 **[Best Paper Award]**
- *Summary:* This was the first paper describing the LSTM models for estimating failures and predicting remaining useful life of hard disks.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 29 %.**]

HC48. Michael Wilbur*, **Abhishek Dubey**, Bruno Leão, and Shameek Bhattacharjee (June 2019). "A Decentralized Approach for Real Time Anomaly Detection in Transportation Networks". In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA,* pp. 274–282
- *Summary:* This paper described an innovative fast online procedure for detecting anomalies in traffic probe data collected for the cities.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 29 %.**]

HC49. Chinmaya Samal*, **Abhishek Dubey**, and Lillian J. Ratliff (June 2019). "Mobilytics-Gym: A Simulation Framework for Analyzing Urban Mobility Decision Strategies". In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA,* pp. 283–291
- *Summary:* This paper described an extension of MATSIM for setting up transportation simulations considering the incentives and discrete choice models for the community members.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 29 %.**]

HC50. Ayan Mukhopadhyay‡, Geoffrey Pettet†, Chinmaya Samal*, **Abhishek Dubey**, and Yevgeniy Vorobeychik (2019). "An online decision-theoretic pipeline for responder dispatch". In: *Proceedings of the 10th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2019, Montreal, QC, Canada*, pp. 185–196
- *Summary:* This was a co-joint first author effort from Ayan and Geoff and demonstrated the first online MCTS based dispatch pipelines for managing emergency response in the cities.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 23 %**.]

HC51. Anastasia Mavridou, Aron Laszka, Emmanouela Stachtiari, and **Abhishek Dubey** (2019). "VeriSolid: Correct-by-Design Smart Contracts for Ethereum". In: *Financial Cryptography and Data Security - 23rd International Conference, FC 2019, Frigate Bay, St. Kitts and Nevis, Revised Selected Papers*, pp. 446–465
- *Summary:* This paper described a framework and method to design smart contracts that are correct by design.
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.* [**Acceptance Rate: 21.9 %**.]

2018 and Before

HC52. Scott Eisele*, Aron Laszka, Anastasia Mavridou, and **Abhishek Dubey** (2018). "SolidWorx: A Resilient and Trustworthy Transactive Platform for Smart and Connected Communities". In: *IEEE Conference on Internet of Things and Blockchains*, pp. 1263–1272
- *Summary:* This paper described the generalization of the transactive energy middleware and how it can be used for managing other resource allocation problems in the cities.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 15.3 %**.]

HC53. Ayan Mukhopadhyay‡, Yevgeniy Vorobeychik, **Abhishek Dubey**, and Gautam Biswas (2017). "Prioritized Allocation of Emergency Responders based on a Continuous-Time Incident Prediction Model". In: *Proceedings of the 16th Conference on Autonomous Agents and MultiAgent Systems, AAMAS 2017, São Paulo, Brazil, May 8-12, 2017*, pp. 168–177
- *Summary:* This paper described a theoretical model for incident prediction and dispatch. This work was improved in subsequent ICCPS and AAMAS papers to use online Monte Carlo Tree Search for scalability.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 27 %**.]

HC54. Aron Laszka, **Abhishek Dubey**, Michael Walker, and Douglas C. Schmidt (2017). "Providing privacy, safety, and security in IoT-based transactive energy systems using distributed ledgers". In: *Proceedings of the Seventh International Conference on the Internet of Things, IOT 2017, Linz, Austria, October 22-25, 2017*, 13:1–13:8
- *Summary:* This is a highly cited paper and established the theoretical protocols and analysis for designing transactive energy systems.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 31 %**.]

HC55. Geoffrey Pettet†, Saideep Nannapaneni‡, Benjamin Stadnick, **Abhishek Dubey**, and Gautam Biswas (2017). "Incident analysis and prediction using clustering and Bayesian network". In: *2017 IEEE SmartWorld*, pp. 1–8
- *Summary:* This was one of the first papers from our team on incident analysis and prediction and used clustering and Bayesian methods followed by survival regression.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 28 %**.]

HC56. Akshay Dabholkar, **Abhishek Dubey**, Aniruddha S. Gokhale, Gabor Karsai, and Nagabhushan Mahadevan (2012). "Reliable Distributed Real-Time and Embedded Systems through Safe Middleware Adaptation". In: *IEEE 31st Symposium on Reliable Distributed Systems, SRDS 2012, Irvine, CA, USA, October 8-11, 2012*, pp. 362–371

- *Summary:* This paper described runtime adaption on ARINC-653 oeprating systems. The work was performed using the ARINC-653 emulator that I wrote earlier in the NASA software health management project.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 25 %**.]

HC57. Nagabhushan Mahadevan, **Abhishek Dubey**, and Gabor Karsai (2011). "Application of software health management techniques". In: *2011 ICSE Symposium on Software Engineering for Adaptive and Self-Managing Systems, SEAMS 2011, Waikiki, Honolulu , HI, USA, May 23-24, 2011*, pp. 1–10
- *Summary:* This paper described the application of software health management that includes detection, diagnosis and recovery to the case study of Malaysian Air flight 124 over Perth, Australia in 2005. Our approach showed how the incident could have been avoided.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 27 %**.]

HC58. Nilabja Roy, **Abhishek Dubey**, and Aniruddha S. Gokhale (2011). "Efficient Autoscaling in the Cloud Using Predictive Models for Workload Forecasting". In: *IEEE International Conference on Cloud Computing, CLOUD 2011, Washington, DC, USA, 4-9 July, 2011*, pp. 500–507
- *Summary:* This paper has been cited more than 600 times and was one of the earlier papers to conceptualize and describe algorithms for autoscaling.
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 34 %**.]

HC59. Rajat Mehrotra, **Abhishek Dubey**, Sherif Abdelwahed, and Krisa W. Rowland (2012). "RFDMon: A Real-time and Fault-tolerant Distributed System Monitoring Approach". In: *The 8th International Conference on Autonomic and Autonomous Systems ICAS 2012*
- *Summary:* This paper described a real-time publish subscribe based performance monitoring middleware for alrge computing clusters.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 23 %**.]

HC60. **Abhishek Dubey**, Nagabhushan Mahadevan, and Gabor Karsai (2012). "A deliberative reasoner for model-based software health management". In: *The Eighth International Conference on Autonomic and Autonomous Systems*, pp. 86–92 [Best paper award]
- *Summary:* This was the first paper where we introduced the Satisfiability Modulo Theory based reconfiguration of software assemblies in real-time systems to recover from failures.
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 23 %**.]

Book Chapters

B1. Michael Wilbur*, Amutheezan Sivagnanam, Afiya Ayman, Samitha Samaranayeke, **Abhishek Dubey**, and Aron Laszka (2024). "Artificial Intelligence for Smart Transportation". In: *AI for Social Impact*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B2. Ted Bapty, **Abhishek Dubey**, and Janos Sztipanovits (2020). "Cyber-Physical Vulnerability Analysis of IoT Applications Using Multi-Modeling". In: *Modeling and Design of Secure Internet of Things*. John Wiley and Sons. Chap. 8, pp. 161–184. ISBN: 9781119593386
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B3. Shreyas Ramakrishna*, Charles Hartsell*, **Abhishek Dubey**, Partha Pal, and Gabor Karsai (2020). "A Methodology for Automating Assurance Case Generation". In: *Thirteenth International Tools and Methods of Competitive Engineering Symposium (TMCE 2020)*

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B4. Peng Zhang*, Douglas C. Schmidt, Jules White, and **Abhishek Dubey** (2019). "Chapter Seven - Consensus mechanisms and information security technologies". In: *Advances in Computers*. Vol. 115. Oreilly, pp. 181–209
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

B5. Michael A. Walker, Douglas C. Schmidt, and **Abhishek Dubey** (2019). "Chapter Six - Testing at scale of IoT blockchain applications". In: *Advances in Computers*. Vol. 115. Oreilly, pp. 155–179
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

B6. Ajay Chhokra†, **Abhishek Dubey**, Nagabhushan Mahadevan, Saqib Hasan*, and Gabor Karsai (2018). "Diagnosis in Cyber-Physical Systems with Fault Protection Assemblies". In: *Diagnosability, Security and Safety of Hybrid Dynamic and Cyber-Physical Systems*. Ed. by Moamar Sayed-Mouchaweh. Cham: Springer International Publishing. Chap. Chapter 8, pp. 201–225. ISBN: 978-3-319-74962-4
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B7. Shashank Shekhar, Fangzhou Sun*, **Abhishek Dubey**, Aniruddha Gokhale, Himanshu Neema, Martin Lehofer, and Dan Freudberg (2016). "A Smart Decision Support System for Public Transit Operations". In: *Internet of Things and Data Analytics Handbook*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B8. Subhav Pradhan*, **Abhishek Dubey**, and Aniruddha S. Gokhale (2016a). "Designing a Resilient Deployment and Reconfiguration Infrastructure for Remotely Managed Cyber-Physical Systems". In: *Software Engineering for Resilient Systems - 8th International Workshop, SERENE 2016, Gothenburg, Sweden, September 5-6, 2016, Proceedings*, pp. 88–104
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B9. **Abhishek Dubey**, Gabor Karsai, and Nagabhushan Mahadevan (2013). "Fault-Adaptivity in Hard Real-Time Component-Based Software Systems". In: *Software Engineering for Self-Adaptive Systems II: International Seminar, Dagstuhl Castle, Germany, October 24-29, 2010 Revised Selected and Invited Papers*. Ed. by Rogério de Lemos, Holger Giese, Hausi A. Müller, and Mary Shaw. Berlin, Heidelberg: Springer Berlin Heidelberg, pp. 294–323. ISBN: 978-3-642-35813-5
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B10. Rajat Mehrotra, **Abhishek Dubey**, Sherif Abdelwahed, and Asser N. Tantawi (2012). "Power-Aware Modeling and Autonomic Management Framework for Distributed Computing Systems". In: *Handbook of Energy-Aware and Green Computing - Two Volume Set*. CRC Press, pp. 621–648
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

B11. Sherif Abdelwahed, **Abhishek Dubey**, Gabor Karsai, and Nagabhushan Mahadevan (2011). "Model-based Tools and Techniques for Real-Time System and Software Health Management". In: *Machine Learning and Knowledge Discovery for Engineering Systems Health Management*. CRC Press. Chap. Chapter 9, p. 285
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

Other Conference Publications (Refereed With Unknown Acceptance Rates)

C1. Yunuo Zhang*, Baiting Luo*, Ayan Mukhopadhyay‡, Daniel Stojcsics, Daniel Elenius, Anirban Roy, Susmit Jha, Miklos Maroti, Xenofon Koutsoukos, Gabor Karsai, and **Abhishek Dubey** (2024). "Shrinking POMCP: A Framework for Real-Time UAV Search and Rescue". In: *2024 International Conference on Assured Autonomy (ICAA)*, pp. 48–57
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C2. Rishav Sen*, Amutheezan Sivagnanam, Aron Laszka, Ayan Mukhopadhyay‡, and **Abhishek Dubey** (2024). "Grid-Aware Charging and Operational Optimization for Mixed-Fleet Public Transit". In: *2024 IEEE 27th International Conference on Intelligent Transportation Systems (ITSC)*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C3. Shuang Zhou, Shashank Shekhar, Ajay Chhokra†, **Abhishek Dubey**, and Aniruddha Gokhale (2024). "Drift Detection and Adaptation for Federated Learning in IoT with Adaptive Device Management". In: *2024 IEEE International Conference on Big Data (BigData)*, pp. 8088–8097
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C4. Alex Richardson, Xia Wang, **Abhishek Dubey**, and Jonathan Sprinkle (2024). "Reinforcement Learning with Communication Latency with Application to Stop-and-Go Wave Dissipation". In: *2024 IEEE Intelligent Vehicles Symposium (IV)*, pp. 1187–1193
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C5. Sophie Pavia*, J. Carlos Martinez Mori, Aryaman Sharma, Philip Pugliese, **Abhishek Dubey**, Samitha Samaranayake, and Ayan Mukhopadhyay‡ (2023b). *Designing Equitable Transit Networks*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C6. S. Pandey, A. K. Srivastava, A. **Dubey**, and F. Rahmatian (2023). "A Novel Architecture and Algorithm for Adaptive Synchrophasor Estimation in Renewable-Rich Electrical Distribution System". In: *2023 IEEE International Conference on Energy Technologies for Future Grids (ETFG)*, pp. 1–6
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C7. Jose Paolo Talusan‡, Ayan Mukhopadhyay‡, Dan Freudberg, and **Abhishek Dubey** (Dec. 2022). "On Designing Day Ahead and Same Day Ridership Level Prediction Models for City-Scale Transit Networks Using Noisy APC Data". In: *2022 IEEE International Conference on Big Data (Big Data)*. Los Alamitos, CA, USA: IEEE Computer Society, pp. 5598–5606
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C8. Rishav Sen*, Toan Tran, Seyedmehdi Khaleghian, Philip Pugliese, Mina Sartipi, Himanshu Neema, and **Abhishek Dubey** (2022). "BTE-Sim: Fast Simulation Environment For Public Transportation". In: *2022 IEEE International Conference on Big Data (Big Data)*, pp. 2886–2894
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C9. Rishav Sen*, Alok Kumar Bharati, Seyedmehdi Khaleghian, Malini Ghosal, Michael Wilbur*, Toan Tran, Philip Pugliese, Mina Sartipi, Himanshu Neema, and **Abhishek Dubey** (2022). "E-Transit-Bench: Simulation Platform for Analyzing Electric Public Transit Bus Fleet Operations". In: *Proceedings of the Thirteenth ACM International Conference on Future Energy Systems*. e-Energy '22. Virtual Event: Association for Computing Machinery, pp. 532–541. ISBN: 9781450393973

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C10. Rishav Sen*, Toan Tran, Seyedmehdi Khaleghian, Mina Sartipi, Himanshu Neema, and **Abhishek Dubey** (2022). "BTE-Sim: Fast simulation environment for public transportation". In: *2022 IEEE International Conference on Big Data.* IEEE
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C11. Jose Paolo Talusan‡, Ayan Mukhopadhyay‡, Dan Freudberg, and **Abhishek Dubey** (Dec. 2022). "On Designing Day Ahead and Same Day Ridership Level Prediction Models for City-Scale Transit Networks Using Noisy APC Data". In: *2022 IEEE International Conference on Big Data (Big Data).* Los Alamitos, CA, USA: IEEE Computer Society, pp. 5598–5606
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C12. Brendan McLoughlin, Sambridhi Bhandari, Erin Henrick, Erin Hotchkiss, Manoj Jha, Steven Jiang, Emily Kern, Landon Marston, Christopher Vanags, Caitlin Snyder, et al. (2022). "A modular approach for integrating data science concepts into multiple undergraduate STEM+ C courses". In: *2022 ASEE Annual Conference & Exposition*
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C13. Shreyas Ramakrishna*, Baiting Luo*, Christopher B. Kuhn, Gabor Karsai, and **Abhishek Dubey** (2022). "ANTI-CARLA: An Adversarial Testing Framework for Autonomous Vehicles in CARLA". in: *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2620–2627
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C14. Zhuangwei Kang, Ayan Mukhopadhyay‡, Aniruddha Gokhale, Shijie Wen, and **Abhishek Dubey** (2022). "Traffic Anomaly Detection Via Conditional Normalizing Flow". In: *2022 IEEE 25th International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2563–2570
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C15. Shreyas Ramakrishna*, Baiting Luo*, Yogesh Barve, Gabor Karsai, and **Abhishek Dubey** (2022). "Risk-Aware Scene Sampling for Dynamic Assurance of Autonomous Systems". In: *2022 IEEE International Conference on Assured Autonomy (ICAA)*, pp. 107–116
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C16. Ajay Chhokra†, Nagabhushan Mahadevan, **Abhishek Dubey**, and Gabor Karsai (2020). "Qualitative fault modeling in safety critical Cyber Physical Systems". In: *12th System Analysis and Modelling Conference*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C17. Michael Wilbur*, Chinmaya Samal*, Jose Paolo Talusan‡, Keiichi Yasumoto, and **Abhishek Dubey** (2020). "Time-dependent Decentralized Routing using Federated Learning". In: *2020 IEEE 23nd International Symposium on Real-Time Distributed Computing (ISORC)*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 44 %.**]

C18. B. Potteiger, F. Cai, A. **Dubey**, X. Koutsoukos, and Z. Zhang* (2020). "Security in Mixed Time and Event Triggered Cyber-Physical Systems using Moving Target Defense". In: *2020 IEEE 23rd International Symposium on Real-Time Distributed Computing (ISORC)*, pp. 89–97
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.* [**Acceptance Rate: 44 %.**] [**Best Paper Award Nominee**]

C19. Geoffrey Pettet†, Malini Ghosal, Shant Mahserejian, Sarah Davis, Siddharth Sridhar, **Abhishek Dubey**, and Michael Meyer (2020). "A Decision Support Framework for Grid-Aware Electric Bus Charge Scheduling". In: *2020 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)*. IEEE
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C20. Carlos Barreto, Taha Eghtesad, Scott Eisele*, Aron Laszka, **Abhishek Dubey**, and Xenofon Koutsoukos (2020). "Cyber-Attacks and Mitigation in Blockchain Based Transactive Energy Systems". In: *3rd IEEE International Conference on Industrial Cyber-Physical Systems (ICPS 2020)*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C21. Jose Paolo Talusan‡, Michael Wilbur*, **Abhishek Dubey**, and Keiichi Yasumoto (2020). "On Decentralized Route Planning Using the Road Side Units as Computing Resources". In: *2020 IEEE International Conference on Fog Computing (ICFC)*. IEEE
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C22. Anirban Bhattacharjee, Ajay Dev Chhokra†, Hongyang Sun*, Shashank Shekhar, Aniruddha Gokhale, Gabor Karsai, and **Abhishek Dubey** (May 2020). "Deep-Edge: An Efficient Framework for Deep Learning Model Update on Heterogeneous Edge". In: *2020 IEEE 4th International Conference on Fog and Edge Computing (ICFEC)*. IEEE. ISBN: 9781728173054
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C23. Ajay Chhokra†, Saqib Hasan∗, **Abhishek Dubey**, and Gabor Karsai (2020). "A Binary Decision Diagram Based Cascade Prognostics Scheme For Power Systems". In: *2020 American control conference*. accepted for publication. IEEE [invited paper]
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C24. William Barbour, Michael Wilbur*, Ricardo Sandoval, Caleb Van Geffen, Brandon Hall, **Abhishek Dubey**, and Dan Work (2020). "Data Driven Methods for Effective Micromobility Parking". In: *Proceedings of the Transportation Research Board Annual Meeting*
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C25. Shashank Shekhar, Ajay Chhokra†, Hongyang Sun*, Aniruddha Gokhale, **Abhishek Dubey**, and Xenofon D. Koutsoukos (2019b). "URMILA: A Performance and Mobility-Aware Fog/Edge Resource Management Middleware". In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*, pp. 118–125
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C26. Sanchita Basak*, Afiya Aman, Aron Laszka, **Abhishek Dubey**, and Bruno Leao (Oct. 2019). "Data-Driven Detection of Anomalies and Cascading Failures in Traffic Networks". In: *Proceedings of the 11th Annual Conference of the Prognostics and Health Management Society (PHM)*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C27. Aparna Oruganti, Sanchita Basak*, Fangzhou Sun*, Hiba Baroud, and **Abhishek Dubey** (2019). "Modeling and Predicting the Cascading Effects of Delay in Transit Systems". In: *Transportation Research Board Annual Meeting*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C28. Timothy Krentz, **Abhishek Dubey**, and Gabor Karsai (2019). "Short Paper: Towards An Edge-Located Time-Series Database". In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*, pp. 151–154
  ▪ *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C29. Charles Hartsell*, Nagabhushan Mahadevan, Shreyas Ramakrishna*, **Abhishek Dubey**, Theodore Bapty, Taylor T. Johnson, Xenofon D. Koutsoukos, Janos Sztipanovits, and Gabor Karsai (2019a). "CPS Design with Learning-Enabled Components: A Case Study". In: *Proceedings of the 30th International Workshop on Rapid System Prototyping, RSP 2019, New York, NY, USA, October 17-18, 2019*, pp. 57–63
  ▪ *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C30. Sanchita Basak*, **Abhishek Dubey**, and Bruno P. Leao (2019). "Analyzing the Cascading Effect of Traffic Congestion Using LSTM Networks". In: *2019 IEEE International Conference on Big Data (Big Data)*, pp. 2144–2153
  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C31. Shreyas Ramakrishna*, **Abhishek Dubey**, Matthew P. Burruss∗, Charles Hartsell*, Nagabhushan Mahadevan, Saideep Nannapaneni‡, Aron Laszka, and Gabor Karsai (2019). "Augmenting Learning Components for Safety in Resource Constrained Autonomous Robots". In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*, pp. 108–117
  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C32. Purboday Ghosh, Scott Eisele*, **Abhishek Dubey**, Mary Metelko, István Madari, Péter Völgyesi, and Gabor Karsai (2019). "On the Design of Fault-Tolerance in a Decentralized Software Platform for Power Systems". In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain*, pp. 52–60
  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C33. Sanchita Basak*, Fangzhou Sun*, Saptarshi Sengupta, and **Abhishek Dubey** (2019). "Data-Driven Optimization of Public Transit Schedule". In: *Big Data Analytics - 7th International Conference, BDA 2019, Ahmedabad, India*, pp. 265–284
  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C34. Y. Du, H. Tu, S. Lukic, D. Lubkeman, **Abhishek Dubey**, and G. Karsai (Nov. 2018a). "Development of a Controller Hardware-in-the-Loop Platform for Microgrid Distributed Control Applications". In: *2018 IEEE Electronic Power Grid (eGrid)*, pp. 1–6
  ▪ *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C35. Aron Laszka, Scott Eisele*, **Abhishek Dubey**, Gabor Karsai, and Karla Kvaternik (2018). "TRANSAX: A Blockchain-Based Decentralized Forward-Trading Energy Exchanged for Transactive Microgrids". In: *24th IEEE International Conference on Parallel and Distributed Systems, ICPADS 2018, Singapore, December 11-13, 2018*, pp. 918–927
  ▪ *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.* [**Acceptance Rate: 41 %.**]

C36. Saqib Hasan∗, Amin Ghafouri, **Abhishek Dubey**, Gabor Karsai, and Xenofon D. Koutsoukos (2018). "Vulnerability analysis of power systems based on cyber-attack and defense models". In: *2018 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference, ISGT 2018, Washington, DC, USA, February 19-22, 2018*, pp. 1–5
  ▪ *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C37. William Barbour, Chinmaya Samal*, Shankara Kuppa, **Abhishek Dubey**, and Daniel B. Work (2018). "On the Data-Driven Prediction of Arrival Times for Freight Trains on U.S. Railroads". In: *21st International Conference on Intelligent Transportation Systems, ITSC 2018, Maui, HI, USA, November 4-7, 2018*, pp. 2289–2296
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C38. Fangzhou Sun*, **Abhishek Dubey**, Chinmaya Samal*, Hiba Baroud, and Chetan Kulkarni (2018). "Short-Term Transit Decision Support System Using Multi-task Deep Neural Networks". In: *2018 IEEE International Conference on Smart Computing, SMARTCOMP 2018, Taormina, Sicily, Italy, June 18-20, 2018*, pp. 155–162
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C39. H. Tu, Y. Du, H. Yu, S. Lukic, P. Volgyesi, M. Metelko, **Abhishek Dubey**, and G. Karsai (June 2018). "An Adaptive Interleaving Algorithm for Multi-Converter Systems". In: *2018 9th IEEE International Symposium on Power Electronics for Distributed Generation Systems (PEDG)*, pp. 1–7
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C40. Saideep Nannapaneni‡, Sankaran Mahadevan, and **Abhishek Dubey** (June 2018). "Real-Time Control of Cyber-Physical Manufacturing Process Under Uncertainty". In: *Proceedings of ASME 2018 13th International Manufacturing Science and Engineering Conference. Vol. Volume 3: Manufacturing Equipment and Systems. International Manufacturing Science and Engineering Conference. V003T02A001*
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C41. Saideep Nannapaneni‡, **Abhishek Dubey**, and Sankaran Mahadevan (2018). "Automated aircraft separation safety assurance using Bayesian networks". In: *2018 Aviation Technology, Integration, and Operations Conference*, p. 3199
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C42. H. Tu, Y. Du, H. Yu, S. Lukic, M. Metelko, P. Volgyesi, **Abhishek Dubey**, and G. Karsai (Sept. 2018). "A Hardware-in-the-Loop Real-Time Testbed for Microgrid Hierarchical Control". In: *2018 IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 2053–2059
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C43. Fangzhou Sun*, **Abhishek Dubey**, C Kulkarni, Nagbhushan Mahadevan, and Ali Guarneros Luna (2018). "A data driven health monitoring approach to extending smallsat missions". In: *Conference Proceedings, Annual Conference of The Prognostics And Health Management Society*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C44. Y. Du, H. Tu, S. Lukic, **Abhishek Dubey**, and G. Karsai (Sept. 2018). "Distributed Microgrid Synchronization Strategy Using a Novel Information Architecture Platform". In: *2018 IEEE Energy Conversion Congress and Exposition (ECCE)*, pp. 2060–2066
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C45. Chinmaya Samal*, **Abhishek Dubey**, and Lillian J. Ratliff (2018). "Mobilytics- An Extensible, Modular and Resilient Mobility Platform". In: *2018 IEEE International Conference on Smart Computing, SMARTCOMP 2018, Taormina, Sicily, Italy, June 18-20, 2018*, pp. 356–361
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C46. Y. Du, H. Tu, S. Lukic, D. Lubkeman, **Abhishek Dubey**, and G. Karsai (Apr. 2018b). "Resilient Information Architecture Platform for Smart Systems (RIAPS): Case Study for Distributed Apparent Power Control". In: *2018 IEEE/PES Transmission and Distribution Conference and Exposition (T D)*, pp. 1–5
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C47. Saqib Hasan∗, Ajay Chhokra†, **Abhishek Dubey**, Nagabhushan Mahadevan, Gabor Karsai, Rishabh Jain, and Srdjan Lukic (2017). "A simulation testbed for cascade analysis". In: *IEEE Power & Energy Society Innovative Smart Grid Technologies Conference, ISGT 2017, Washington, DC, USA, April 23-26, 2017*, pp. 1–5
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C48. Shweta Prabhat Khare, János Sallai, **Abhishek Dubey**, and Aniruddha S. Gokhale (2017). "Short Paper: Towards Low-Cost Indoor Localization Using Edge Computing Resources". In: *20th IEEE International Symposium on Real-Time Distributed Computing, ISORC 2017, Toronto, ON, Canada, May 16-18, 2017*, pp. 28–31
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C49. Saideep Nannapaneni‡, **Abhishek Dubey**, and Sankaran Mahadevan (2017). "Performance evaluation of smart systems under uncertainty". In: *2017 IEEE SmartWorld*, pp. 1–8
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C50. Scott Eisele∗, István Madari, **Abhishek Dubey**, and Gabor Karsai (2017). "RIAPS: Resilient Information Architecture Platform for Decentralized Smart Systems". In: *20th IEEE International Symposium on Real-Time Distributed Computing, ISORC 2017, Toronto, ON, Canada, May 16-18, 2017*, pp. 125–132
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C51. Péter Völgyesi, **Abhishek Dubey**, Timothy Krentz, István Madari, Mary Metelko, and Gabor Karsai (2017). "Time synchronization services for low-cost fog computing applications". In: *International Symposium on Rapid System Prototyping, RSP 2017, Shortening the Path from Specification to Prototype, October 19-20, 2017, Seoul, South Korea*, pp. 57–63
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C52. S. Hasan∗, A. Ghafouri, **Abhishek Dubey**, G. Karsai, and X. Koutsoukos (Sept. 2017). "Heuristics-based approach for identifying critical N-k contingencies in power systems". In: *2017 Resilience Week (RWS)*, pp. 191–197
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C53. **Abhishek Dubey**, Gabor Karsai, Aniruddha Gokhale, William Emfinger, and Pranav Kumar (2017). "DREMS-OS: An operating system for managed distributed real-time embedded systems". In: *2017 6th International Conference on Space Mission Challenges for Information Technology (SMC-IT)*. IEEE, pp. 114–119
- *Contributions: 90 %. Developed the concept and wrote the manuscript.*

C54. Fangzhou Sun∗, Chinmaya Samal∗, Jules White, and **Abhishek Dubey** (2017). "Unsupervised Mechanisms for Optimizing On-Time Performance of Fixed Schedule Transit Vehicles". In: *2017 IEEE International Conference on Smart Computing, SMARTCOMP 2017, Hong Kong, China, May 29-31, 2017*, pp. 1–8
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C55. **Abhishek Dubey**, Gabor Karsai, and Subhav Pradhan∗ (2017). "Resilience at the edge in cyber-physical systems". In: *Second International Conference on Fog and Mobile Edge Computing, FMEC 2017, Valencia, Spain, May 8-11, 2017*, pp. 139–146

- *Contributions: 90 %. Developed the concept and wrote the manuscript.*

C56. Fangzhou Sun*, **Abhishek Dubey**, and Jules White (2017). "DxNAT - Deep neural networks for explaining non-recurring traffic congestion". In: *2017 IEEE International Conference on Big Data, BigData 2017, Boston, MA, USA, December 11-14, 2017*, pp. 2141–2150
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C57. Y. Du, H. Tu, S. Lukic, D. Lubkeman, **Abhishek Dubey**, and G. Karsai (Sept. 2017). "Implementation of a distributed microgrid controller on the Resilient Information Architecture Platform for Smart Systems (RIAPS)". in: *2017 North American Power Symposium (NAPS)*, pp. 1–6
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C58. Aparna Oruganti, Fangzhou Sun*, Hiba Baroud, and **Abhishek Dubey** (2016). "DelayRadar: A multivariate predictive model for transit systems". In: *2016 IEEE International Conference on Big Data, BigData 2016, Washington DC, USA, December 5-8, 2016*, pp. 1799–1806
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C59. Fangzhou Sun*, Yao Pan, Jules White, and **Abhishek Dubey** (2016). "Real-Time and Predictive Analytics for Smart Public Transportation Decision Support System". In: *2016 IEEE International Conference on Smart Computing, SMARTCOMP 2016, St Louis, MO, USA, May 18-20, 2016*, pp. 1–8
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C60. Gautam Biswas, Hamed Khorasgani, Gerald Stanje, **Abhishek Dubey**, Somnath Deb, and Sudipto Ghoshal (2016a). "An application of data driven anomaly identification to spacecraft telemetry data". In: *Prognostics and Health Management Conference*

C61. A. Chhokra†, S. Abdelwahed, **Abhishek Dubey**, S. Neema, and G. Karsai (June 2015). "From system modeling to formal verification". In: *2015 Electronic System Level Synthesis Conference (ESLsyn)*, pp. 41–46
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C62. R. Jain, S. M. Lukic, A. Chhokra†, N. Mahadevan, **Abhishek Dubey**, and G. Karsai (Oct. 2015). "An improved distance relay model with directional element, and memory polarization for TCD based fault propagation studies". In: *2015 North American Power Symposium (NAPS)*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C63. Daniel Balasubramanian, **Abhishek Dubey**, William R. Otte, William Emfinger, Pranav Srinivas Kumar, and Gabor Karsai (2014). "A Rapid Testing Framework for a Mobile Cloud". In: *25nd IEEE International Symposium on Rapid System Prototyping, RSP 2014, New Delhi, India, October 16-17, 2014*, pp. 128–134
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C64. G. Martins, A. Bhattacharjee, **Abhishek Dubey**, and X. Koutsoukos (Aug. 2014). "Performance evaluation of an authentication mechanism in time-triggered networked control systems". In: *2014 7th International Symposium on Resilient Control Systems (ISRCS)*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C65. Nagabhushan Mahadevan, **Abhishek Dubey**, Gabor Karsai, Anurag Srivastava, and Chen-Ching Liu‡ (Jan. 2014). "Temporal Causal Diagrams for diagnosing failures in cyber-physical systems". In: *Annual Conference of the Prognostics and Health Management Society*

- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C66. S. Pradhan*, W. Emfinger, **Abhishek Dubey**, W. R. Otte, D. Balasubramanian, A. Gokhale, G. Karsai, and A. Coglio (Sept. 2014). "Establishing Secure Interactions across Distributed Applications in Satellite Clusters". In: *2014 IEEE International Conference on Space Mission Challenges for Information Technology*, pp. 67–74
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C68. William R. Otte, **Abhishek Dubey**, and Gabor Karsai (2014). "A resilient and secure software platform and architecture for distributed spacecraft". In: *Sensors and Systems for Space Applications VII*. ed. by Khanh D. Pham and Joseph L. Cox. Vol. 9085. International Society for Optics and Photonics. SPIE, pp. 121–130
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C69. Saideep Nannapaneni‡, **Abhishek Dubey**, Sherif Abdelwahed, Sankaran Mahadevan, and Sandeep Neema (Oct. 2014). "A Model-Based Approach for Reliability Assessment in Component-Based Systems". In: *PHM 2014 - Proceedings of the Annual Conference of the Prognostics and Health Management Society 2014*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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- Contributions: 25% collaboratively wrote the manuscript.

C71. William Otte, **Abhishek Dubey**, Subhav Pradhan*, Prithviraj Patil, Aniruddha S. Gokhale, Gabor Karsai, and Johnny Willemsen (2013). "F6COM: A component model for resource-constrained and dynamic space-based computing environments". In: *16th IEEE International Symposium on Object/Component/Service-Oriented Real-Time Distributed Computing, ISORC 2013, Paderborn, Germany, June 19-21, 2013*, pp. 1–8
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C74. **Abhishek Dubey**, W. Emfinger, A. Gokhale, G. Karsai, W. R. Otte, J. Parsons, C. Szabo, A. Coglio, E. Smith, and P. Bose (Mar. 2012). "A software platform for fractionated spacecraft". In: *2012 IEEE Aerospace Conference*, pp. 1–20
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

C75. Nilabja Roy, **Abhishek Dubey**, Aniruddha S. Gokhale, and Larry W. Dowdy (2011). "A Capacity Planning Process for Performance Assurance of Component-based Distributed Systems". In: *ICPE'11 - Second Joint WOSP/SIPEW International Conference on Performance Engineering, Karlsruhe, Germany, March 14-16, 2011*, pp. 259–270
  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

C76. **Abhishek Dubey**, G. Karsai, and N. Mahadevan (Mar. 2011). "Model-based software health management for real-time systems". In: *2011 Aerospace Conference*, pp. 1–18
  - *Contributions: 90 %. Developed the concept and wrote the manuscript.*

C77. R. Mehrotra, **Abhishek Dubey**, S. Abdelwahed, and W. Monceaux (Apr. 2011). "Large Scale Monitoring and Online Analysis in a Distributed Virtualized Environment". In: *2011 Eighth IEEE International Conference and Workshops on Engineering of Autonomic and Autonomous Systems*, pp. 1–9
  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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  - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

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  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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  - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

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  - *Contributions: 90 %. Developed the concept and wrote the manuscript.*

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C84. **Abhishek Dubey**, L. Piccoli, J. B. Kowalkowski, J. N. Simone, X. Sun*, G. Karsai, and S. Neema (Apr. 2009). "Using Runtime Verification to Design a Reliable Execution Framework for Scientific Workflows". In: *2009 Sixth IEEE Conference and Workshops on Engineering of Autonomic and Autonomous Systems*, pp. 87–96
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C85. **Abhishek Dubey** (2009). "Algorithms for Synthesizing Safe Sets of Operation for Embedded Systems". In: *16th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems, ECBS 2009, San Francisco, California, USA, 14-16 April 2009*, pp. 149–155
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C86. **Abhishek Dubey**, S. Nordstrom, T. Keskinpala, S. Neema, T. Bapty, and G. Karsai (Mar. 2008). "Towards A Model-Based Autonomic Reliability Framework for Computing Clusters". In: *Fifth IEEE Workshop on Engineering of Autonomic and Autonomous Systems (ease 2008)*, pp. 75–85
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  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C88. **Abhishek Dubey**, S. Nordstrom, T. Keskinpala, S. Neema, and T. Bapty (Mar. 2006). "Verifying Autonomic Fault Mitigation Strategies in Large Scale Real-Time Systems". In: *Third IEEE International Workshop on Engineering of Autonomic Autonomous Systems (EASE'06)*, pp. 129–140
  - *Contributions: 90 %. Developed the concept and wrote the manuscript.*

C89. Steven Nordstrom, Ted Bapty, Sandeep Neema, **Abhishek Dubey**, and Turker Keskinpala (July 2006). "A Guided Explorative Approach for Autonomic Healing of Model-Based Systems". In: *Second IEEE conference on Space Mission Challenges for Information Technology (SMC-IT)*. Pasadena, CA
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C90. Turker Keskinpala, **Abhishek Dubey**, Steve Nordstrom, Ted Bapty, and Sandeep Neema (2006). "A Model Driven Tool for Automated System Level Testing of Middleware". In: *Systems Testing and Validation*, p. 19
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C91. S. Nordstrom, **Abhishek Dubey**, T. Keskinpala, S. Neema, and T. Bapty (Mar. 2006). "GHOST: Guided Healing and Optimization Search Technique for Healing Large-Scale Embedded Systems". In: *Third IEEE International Workshop on Engineering of Autonomic Autonomous Systems (EASE'06)*, pp. 54–60
  - *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

C92. **Abhishek Dubey**, X. Wu, H. Su, and T. J. Koo (2005). "Computation Platform for Automatic Analysis of Embedded Software Systems Using Model Based Approach". In: *Automated Technology for Verification and Analysis*. Ed. by Doron A. Peled and Yih-Kuen Tsay. Berlin, Heidelberg: Springer Berlin Heidelberg, pp. 114–128. ISBN: 978-3-540-31969-6
  - *Contributions: 90 %. Developed the concept and wrote the manuscript.*

Workshop Publications (Refereed)

W1. Michael Wilbur*, Philip Pugliese, Aron Laszka, and **Abhishek Dubey** (2021). "Efficient Data Management for Intelligent Urban Mobility Systems". In: *Proceedings of the Workshop on AI for Urban Mobility at the 35th AAAI Conference on Artificial Intelligence (AAAI-21)*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W2. Ajay Chhokra†, Carlos Barreto, **Abhishek Dubey**, Gabor Karsai, and Xenofon Koutsoukos (2021). "Power-Attack: A comprehensive tool-chain for modeling and simulating attacks in power systems". In: *9th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, MSCPES@CPSIoTWeek*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W3. Hussain M. Mustafa, Mohini Bariya, K.S. Sajan, Ajay Chhokra†, Anurag Srivastava, **Abhishek Dubey**, Alexandra von Meier, and Gautam Biswas (2021). "RT-METER: A Real-Time, Multi-Layer Cyber–Power Testbed for Resiliency Analysis". In: *9th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, MSCPES@CPSIoTWeek*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W4. Juan Martinez, Ayan Mukhopadhyay Afiya Ayman, Michael Wilbur*, Philip Pugliese, Dan Freudberg, Aron Laszka, and **Abhishek Dubey** (2021). "Predicting Public Transportation Load to Estimate the Probability of Social Distancing Violations". In: *Proceedings of the Workshop on AI for Urban Mobility at the 35th AAAI Conference on Artificial Intelligence (AAAI-21)*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W5. Zhuangwei Kang, Robert Canady, **Abhishek Dubey**, Aniruddha Gokhale, Shashank Shekhar, and Matous Sedlacek (2021). "A Study of Publish/Subscribe Middleware Under Different IoT Traffic Conditions". In: *Proceedings of the 7th Workshop on Middleware and Applications for the Internet of Things, M4IoT@Middleware*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W6. W. Barbour, M. Wilbur*, R. Sandoval, A. **Dubey**, and D. B. Work (2020). "Streaming computation algorithms for spatiotemporal micromobility service availability". In: *2020 IEEE Workshop on Design Automation for CPS and IoT (DESTION)*, pp. 32–38
   - *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W7. Kaduvettykunnal Sajan, Mohini Bariya, Sanchita Basak*, Anurag K. Srivastava, **Abhishek Dubey**, Alexandra von Meier, and Gautam Biswas (2020). "Realistic Synchrophasor Data Generation for Anomaly Detection and Event Classification". In: *8th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, MSCPES@CPSIoTWeek*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W8. Vijay Kumar Sundar, Shreyas Ramakrishna*, Zahra Rahiminasab, Arvind Easwaran, and **Abhishek Dubey** (2020). "Out-of-Distribution Detection in Multi-Label Datasets using Latent Space of β-VAE". in: *2020 Workshop on Assured Autonomous Systems (WAAS)*. IEEE
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W9. Saideep Nannapaneni‡ and **Abhishek Dubey** (2019). "Towards demand-oriented flexible rerouting of public transit under uncertainty". In: *Proceedings of the Fourth Workshop on International Science of Smart City Operations and Platforms Engineering, SCOPE@CPSIoTWeek 2019, Montreal, QC, Canada*, pp. 35–40
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W10. Geoffrey Pettet†, Saroj Sahoo, and **Abhishek Dubey** (2019). "Towards an Adaptive Multi-Modal Traffic Analytics Framework at the Edge". In: *IEEE International Conference on Pervasive Computing and Communications Workshops, PerCom Workshops 2019, Kyoto, Japan, March 11-15, 2019*, pp. 511–516
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W11. Jose Paolo Talusan‡, Francis Tiausas, Keiichi Yasumoto, Michael Wilbur*, Geoffrey Pettet†, **Abhishek Dubey**, and Shameek Bhattacharjee (2019). "Smart Transportation Delay and Resiliency Testbed Based on Information Flow of Things Middleware". In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA, June 12-15, 2019*, pp. 13–18
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W12. Yue Zhang*, Scott Eisele*, **Abhishek Dubey**, Aron Laszka, and Anurag K. Srivastava (2019). "Cyber-Physical Simulation Platform for Security Assessment of Transactive Energy Systems". In: *7th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, MSCPES@CPSIoTWeek 2019, Montreal, QC, Canada*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W13. Charles Hartsell*, Nagabhushan Mahadevan, Shreyas Ramakrishna*, **Abhishek Dubey**, Theodore Bapty, Taylor T. Johnson, Xenofon D. Koutsoukos, Janos Sztipanovits, and Gabor Karsai (Apr. 2019b). "Model-based design for CPS with learning-enabled components". In: *Proceedings of the Workshop on Design Automation for CPS and IoT, DES-TION@CPSIoTWeek 2019, Montreal, QC, Canada*, pp. 1–9
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

W14. Aron Laszka, Anastasia Mavridou, Scott Eisele*, Emmanouela Statchtiari, and **Abhishek Dubey** (Sept. 2019). "VeriSolid for TRANSAX: Correct-by-Design Ethereum Smart Contracts for Energy Trading". In: *First International Summer School on Security and Privacy for Blockchains and Distributed Ledger Technologies, BDLT 2019, Vienna, Austria*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W15. Aron Laszka, Anastasia Mavridou, and **Abhishek Dubey** (2018). "Resilient and Trustworthy Transactive Platform for Smart and Connected Communities". In: *High Confidence Software and Systems Conference*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W16. H. Purohit, S. Nannapaneni‡, **Abhishek Dubey**, P. Karuna, and G. Biswas (Apr. 2018). "Structured Summarization of Social Web for Smart Emergency Services by Uncertain Concept Graph". In: *2018 IEEE International Science of Smart City Operations and Platforms Engineering in Partnership with Global City Teams Challenge (SCOPE-GCTC)*, pp. 30–35
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W17. Chinmaya Samal*, Fangzhou Sun*, and **Abhishek Dubey** (2017). "SpeedPro: A Predictive Multi-Model Approach for Urban Traffic Speed Estimation". In: *2017 IEEE International Conference on Smart Computing, SMARTCOMP 2017, Hong Kong, China, May 29-31, 2017*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W18. Joshua Tan, Christine Kendrick, **Abhishek Dubey**, and Sokwoo Rhee (2017). "Indicator frameworks". In: *Proceedings of the 2nd International Workshop on Science of Smart City Operations and Platforms Engineering, SCOPE@CPSWeek 2017, Pittsburgh, PA, USA, April 21, 2017*, pp. 19–25

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W19. Amin Ghafouri, Aron Laszka, **Abhishek Dubey**, and Xenofon D. Koutsoukos (2017). "Optimal detection of faulty traffic sensors used in route planning". In: *Proceedings of the 2nd International Workshop on Science of Smart City Operations and Platforms Engineering, SCOPE@CPSWeek 2017, Pittsburgh, PA, USA, April 21, 2017*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W20. S. Hasan*, **Abhishek Dubey**, A. Chhokra†, N. Mahadevan, G. Karsai, and X. Koutsoukos (Apr. 2017). "A modeling framework to integrate exogenous tools for identifying critical components in power systems". In: *2017 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES)*, pp. 1–6
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W21. Ajay Chhokra†, Amogh Kulkarni, Saqib Hasan*, **Abhishek Dubey**, Nagabhushan Mahadevan, and Gabor Karsai (2017). "A Systematic Approach of Identifying Optimal Load Control Actions for Arresting Cascading Failures in Power Systems". In: *Proceedings of the 2nd Workshop on Cyber-Physical Security and Resilience in Smart Grids, SPSR-SG@CPSWeek 2017, Pittsburgh, PA, USA, April 21, 2017*, pp. 41–46
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W22. Scott Eisele*, Geoffrey Pettet†, **Abhishek Dubey**, and Gabor Karsai (2017). "Towards an architecture for evaluating and analyzing decentralized Fog applications". In: *IEEE Fog World Congress, FWC 2017, Santa Clara, CA, USA, October 30 - Nov. 1, 2017*, pp. 1–6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W23. Jonatan Bergquist, Aron Laszka, Monika Sturm, and **Abhishek Dubey** (2017). "On the design of communication and transaction anonymity in blockchain-based transactive microgrids". In: *Proceedings of the 1st Workshop on Scalable and Resilient Infrastructures for Distributed Ledgers, SERIAL@Middleware 2017, Las Vegas, NV, USA, December 11-15, 2017*, 3:1–3:6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W24. Michael A. Walker, **Abhishek Dubey**, Aron Laszka, and Douglas C. Schmidt (2017). "PlaTIBART: a platform for transactive IoT blockchain applications with repeatable testing". In: *Proceedings of the 4th Workshop on Middleware and Applications for the Internet of Things, M4IoT@Middleware 2017, Las Vegas, NV, USA, December 11, 2017*, pp. 17–22
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W25. Saideep Nannapaneni‡, Sankaran Mahadevan, Subhav Pradhan*, and **Abhishek Dubey** (2016). "Towards Reliability-Based Decision Making in Cyber-Physical Systems". In: *2016 IEEE International Conference on Smart Computing, SMARTCOMP 2016, St Louis, MO, USA, May 18-20, 2016*, pp. 1–6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W26. **Abhishek Dubey**, Subhav Pradhan*, Douglas C. Schmidt, Sebnem Rusitschka, and Monika Sturm (2016). "The Role of Context and Resilient Middleware in Next Generation Smart Grids". In: *Proceedings of the 3rd Workshop on Middleware for Context-Aware Applications in the IoT, M4IoT@Middleware 2016, Trento, Italy, December 12-13, 2016*, pp. 1–6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W27. Himanshu Neema, William Emfinger, and **Abhishek Dubey** (2016). "A Reusable and Extensible Web-Based Co-Simulation Platform for Transactive Energy Systems". In: *Proceedings of the 3rd International Transactive Energy Systems, Portland, Oregon, USA*. vol. 12
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

W28. S. Pradhan*, **Abhishek Dubey**, S. Neema, and A. Gokhale (Apr. 2016). "Towards a generic computation model for smart city platforms". In: *2016 1st International Workshop on Science of Smart City Operations and Platforms Engineering (SCOPE) in partnership with Global City Teams Challenge (GCTC) (SCOPE - GCTC)*, pp. 1–6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W29. A. Chhokra†, **Abhishek Dubey**, N. Mahadevan, and G. Karsai (Apr. 2015). "A component-based approach for modeling failure propagations in power systems". In: *2015 Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES)*, pp. 1–6
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W30. Subhav M. Pradhan*, **Abhishek Dubey**, Aniruddha S. Gokhale, and Martin Lehofer (2015). "CHARIOT: a domain specific language for extensible cyber-physical systems". In: *Proceedings of the Workshop on Domain-Specific Modeling, DSM@SPLASH 2015, Pittsburgh, PA, USA, October 27, 2015*, pp. 9–16
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W31. **Abhishek Dubey**, Monika Sturm, Martin Lehofer, and Janos Sztipanovits (2015). "Smart City Hubs: Opportunities for Integrating and Studying Human CPS at Scale". In: *Workshop on Big Data Analytics in CPS: Enabling the Move from IoT to Real-Time Control*
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

W32. Pranav Srinivas Kumar, **Abhishek Dubey**, and Gabor Karsai (2014). "Colored Petri Net-based Modeling and Formal Analysis of Component-based Applications". In: *Proceedings of the 11th Workshop on Model-Driven Engineering, Verification and Validation co-located with 17th International Conference on Model Driven Engineering Languages and Systems, MoDeVVa@MODELS 2014, Valencia, Spain, September 30, 2014*, pp. 79–88
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

W33. Daniel Balasubramanian, Tihamer Levendovszky, **Abhishek Dubey**, and Gabor Karsai (2014). "Taming Multi-Paradigm Integration in a Software Architecture Description Language". In: *Proceedings of the 8th Workshop on Multi-Paradigm Modeling co-located with the 17th International Conference on Model Driven Engineering Languages and Systems, MPM@MODELS 2014, Valencia, Spain, September 30, 2014*, pp. 67–76
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W34. William Emfinger, Gabor Karsai, **Abhishek Dubey**, and Aniruddha S. Gokhale (2014). "Analysis, verification, and management toolsuite for cyber-physical applications on time-varying networks". In: *Proceedings of the 4th ACM SIGBED International Workshop on Design, Modeling, and Evaluation of Cyber-Physical Systems, CyPhy 2014, Berlin, Germany, April 14-17, 2014*, pp. 44–47
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

W35. A **Dubey**, G Karsai, N Mahadevan, A Srivastava, CC Liu‡, and S Lukic (2013). "Understanding Failure Dynamics in the Smart Electric Grid". In: *NSF Energy Cyber Physical System Workshop, Washington DC*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W36. **Abhishek Dubey**, Aniruddha Gokhale, Gabor Karsai, W Otte, and Johnny Willemsen (2013). "A model-driven software component framework for fractionated spacecraft". In: *Proceedings of the 5th International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT)*. IEEE Munich, Germany
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

W37. J. Shi, R. Amgai, S. Abdelwahed, **Abhishek Dubey**, J. Humphreys, M. Alattar, and R. Jia (Apr. 2013). "Generic modeling and analysis framework for shipboard system design". In: *2013 IEEE Electric Ship Technologies Symposium (ESTS)*, pp. 420–428
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

W38. Julie Chalfant, Blake Langland, Sherif Abdelwahed, Chryssostomos Chryssostomidis, Roger Dougal, **Abhishek Dubey**, Touria El Mezyani, JD Herbst, Thomas Kiehne, Juan Ordonez, et al. (2012). "A collaborative early-stage ship design environment". In
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

▬▬▬ **Posters and Demonstrations**

D1. Michael Wilbur*, Maxime Coursey, Pravesh Koirala, Zakariyya Al-Quran, Philip Pugliese, and **Abhishek Dubey** (2023b). "Mobility-On-Demand Transportation: A System for Microtransit and Paratransit Operations". In: *Proceedings of the ACM/IEEE 14th International Conference on Cyber-Physical Systems (with CPS-IoT Week 2023)*. ICCPS '23. San Antonio, TX, USA: Association for Computing Machinery, pp. 260–261. ISBN: 9798400700361
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D2. Purboday Ghosh, Niloy Barua, Timothy Krentz, Gabor Karsai, **Abhishek Dubey**, and Srdjan Lukic (2023). "Distributed Control Application for Smart Grids using RIAPS". in: *2023 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 186–188
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

D3. Zhuangwei Kang, Yogesh D. Barve, Shunxing Bao, **Abhishek Dubey**, and Aniruddha Gokhale (2021). "Poster Abstract: Configuration Tuning for Distributed IoT Message Systems Using Deep Reinforcement Learning". In: *International Conference on Internet-of-Things Design and Implementation (IoTDI)*
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

D4. Geoffrey Pettet†, Ayan Mukhopadhyay‡, Chinmaya Samal*, **Abhishek Dubey**, and Yevgeniy Vorobeychik (2019). "Incident management and analysis dashboard for fire departments: ICCPS demo". In: *Proceedings of the 10th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2019, Montreal, QC, Canada*, pp. 336–337
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D5. Charles Hartsell*, Nagabhushan Mahadevan, Shreyas Ramakrishna*, **Abhishek Dubey**, Theodore Bapty, and Gabor Karsai (2019). "A CPS toolchain for learning-based systems: demo abstract". In: *Proceedings of the 10th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2019, Montreal, QC, Canada*, pp. 342–343
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

D6. Shashank Shekhar, Ajay Chhokra†, Hongyang Sun∗, Aniruddha Gokhale, **Abhishek Dubey**, and Xenofon D. Koutsoukos (2019a). "Supporting fog/edge-based cognitive assistance IoT services for the visually impaired: poster abstract". In: *Proceedings of the International Conference on Internet of Things Design and Implementation, IoTDI 2019, Montreal, QC, Canada*, pp. 275–276
- *Contributions: 10%. Collaboratively developed the research ideas as a mentor to the team of students and edited a portion of the paper.*

D7. Scott Eisele∗, Purboday Ghosh, Keegan Campanelli∗, **Abhishek Dubey**, and Gabor Karsai (2019). "Demo: Transactive Energy Application with RIAPS". in: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*, pp. 85–86
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D8. Matthew P. Burruss∗, Shreyas Ramakrishna∗, Gabor Karsai, and **Abhishek Dubey** (2019). "DeepNNCar: A Testbed for Deploying and Testing Middleware Frameworks for Autonomous Robots". In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*, pp. 87–88 [undergraduate author]
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D9. Ajay Chhokra†, Saqib Hasan∗, **Abhishek Dubey**, Nagabhushan Mahadevan, and Gabor Karsai (2017). "Diagnostics and prognostics using temporal causal models for cyber physical energy systems". In: *Proceedings of the 8th International Conference on Cyber-Physical Systems, ICCPS 2017, Pittsburgh, Pennsylvania, USA, April 18-20, 2017*, p. 87
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D10. Scott Eisele∗, **Abhishek Dubey**, Gabor Karsai, and Srdjan Lukic (2017). "Transactive energy demo with RIAPS platform". In: *Proceedings of the 8th International Conference on Cyber-Physical Systems, ICCPS 2017, Pittsburgh, Pennsylvania, USA, April 18-20, 2017*, p. 91
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D11. Subhav Pradhan∗, **Abhishek Dubey**, Shweta Khare, Fangzhou Sun∗, János Sallai, Aniruddha S. Gokhale, Douglas C. Schmidt, Martin Lehofer, and Monika Sturm (2016). "Poster Abstract: A Distributed and Resilient Platform for City-Scale Smart Systems". In: *IEEE/ACM Symposium on Edge Computing, SEC 2016, Washington, DC, USA, October 27-28, 2016*, pp. 99–100
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D12. William Emfinger, **Abhishek Dubey**, Péter Völgyesi, János Sallai, and Gabor Karsai (2016). "Demo Abstract: RIAPS - A Resilient Information Architecture Platform for Edge Computing". In: *IEEE/ACM Symposium on Edge Computing, SEC 2016, Washington, DC, USA, October 27-28, 2016*, pp. 119–120
- *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D13. Ajay Chhokra†, **Abhishek Dubey**, Nagabhushan Mahadevan, and Gabor Karsai (2016). "Poster Abstract: Distributed Reasoning for Diagnosing Cascading Outages in Cyber Physical Energy Systems". In: *7th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2016, Vienna, Austria, April 11-14, 2016*, 33:1
- *Contributions: 25 %. Collaboratively developed the research ideas and wrote/edited a portion of the paper.*

D14. Subhav Pradhan*, **Abhishek Dubey**, and Aniruddha S. Gokhale (2016b). "WiP Abstract: Platform for Designing and Managing Resilient and Extensible CPS". in: *7th ACM/IEEE International Conference on Cyber-Physical Systems, ICCPS 2016, Vienna, Austria, April 11-14, 2016*, 39:1
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D15. William Emfinger, Pranav Kumar, **Abhishek Dubey**, William Otte, Aniruddha Gokhale, and Gabor Karsai (2013). "DREMS: A toolchain and platform for the rapid application development, integration, and deployment of managed distributed real-time embedded systems". In: *IEEE Real-time Systems Symposium*
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D16. Rajat Mehrotra, **Abhishek Dubey**, Sherif Abdelwahed, and Asser N. Tantawi (2010). "Integrated Monitoring and Control for Performance Management of Distributed Enterprise Systems". In: *MASCOTS 2010, 18th Annual IEEE/ACM International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, Miami, Florida, USA, August 17-19, 2010*, pp. 424–426
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

D17. **Abhishek Dubey**, Sandeep Neema, Jim Kowalkowski, and Amitoj Singh (2008). "Scientific Computing Autonomic Reliability Framework". In: *Fourth International Conference on e-Science, e-Science 2008, 7-12 December 2008, Indianapolis, IN, USA*, pp. 352–353
   - *Contributions: 40 %. Devised and directed the main research ideas and wrote/edited a significant portion of the paper.*

Invited Talks

P1. *From Lab to Real-World: The challenges of Decision Making Under Uncertainty for Societal Scale Cyber Physical Systems* (2024). Seminar presented at John D. Tickle Engineering Building, 500 ISE UTK. Presenter: Associate Professor Abhishek Dubey

P2. "Towards Equitable Design and Operation of Public Transportation Systems" (2023). In: *Bridging Learning and Algorithmic Fairness in the Operation of Urban Infrastructure and Network Systems (AFL) at CPS Week 2023*

P3. "Optimus for Optimizing V2B system operation" (2023). In: *Invited Presentation at Nissan*

P4. "Decision Procedures for Optimizing Electrical Vehicles" (2022). In: *Invited Presentation at Nissan*

P5. "Building Resilient and Integrated Smart Transportation and Grid Solutions" (2022a). In: *Invited Presentation at Rivian (virtual)*

P6. "Decision Procedures and Data Analysis at Scale for Smart Communities" (2022). In: *Invited Presentation at Google Public Sector Forum*

P7. "Building Resilient and Integrated Smart Transportation and Grid Solutions" (2022b). In: *Invited Presentation at UTK CURRENT Center(virtual)*

P8. "Building Resilient and Integrated Smart Transportation and Grid Solutions" (2022c). In: *Invited Presentation at NSF workshop on Adaptive Transportation and Power Grid (virtual)*

P9. "Optimzing Energy Cost of Public Transportation" (2022). In: *Invited Presentation at National Renewable Energy Laboratory*

P10. "AI-Engine for Optimizing Integrated Service in Mixed Fleet Transit Operations" (2022). In: *Invited Presentation at Department of Energy Annual Merit Review*

P11. "Addressing Transit Accessibility and Public Health Challenges due to COVID-19" (2022). In: *Presentation and Poster at the NSF SCC PI Meeting*

P12. "Challenges and Opportunities for Smart Transit Systems" (Apr. 2021). In: *Invited Presentation at Federal Transit Authority (virtual)*

P13. "Mobility for All - Harnessing Emerging Transit Solutions for Underserved Communities" (Apr. 2021). In: *Presentation and Poster at the NSF SCC PI Meeting*

P14. "Addressing Transit Accessibility and Public Health Challenges due to COVID-19" (Apr. 2021). In: *Presentation and Poster at the NSF SCC PI Meeting*

P15. "Anomaly Detection in Spatio Temporal Systems" (Jan. 2021). In: *Invited Research Seminar at CISCO (Virtual)*

P16. "Principled Approaches for Designing Resilient Decision Procedures in Smart and Connected Communities" (Mar. 2020). In: *Invited Presentation at Information and Computer Sciences, UC Irvine*

P17. "Building Principled Decision Procedures for Urban Transit and Emergency Response Services" (Jan. 2020). In: *Invited Presentation at Berkley Institute of Transportation Studies*

P18. "AI strategies for Urban Transportation and Electric Grid" (Jan. 2020). In: *Invited Presentation at Pacific Northwest National Laboratory*

P19. "Resilient Cyber Physical Systems" (Oct. 2019). In: *Invited Presentation at Princeton Workshop on Resilience in Smart Grid*

P20. "Principled Approaches for Resilient Emergency Response Procedures" (Dec. 2019). In: *NSF Workshop with JST In Tokyo Japan*

P21. "Principled Approaches for Resilient Decision Procedures in Smart and Connected communities" (2019a). In: *Invited Presentation at George Mason University*

P22. "Principled Approaches for Resilient Decision Procedures in Smart and Connected communities" (Dec. 2019b). In: *Adaptive Reflective Middleware Workshop Panel at Middleware Conference*

P23. "Predictive Smart Emergency Response" (2019). In: *NSF Workshop on Emergency Response at University of South Carolina*

P24. "Panel on AI in Smart Cities" (2019). In: *Metrolab Summit*

P25. "Optimal Anomaly Detection and Dispatch Response in Transportation Networks" (2019). In: *Freedm Research Symposium at NCSU (Invited)*

P26. "Internet of Things: Opportunities, Background and Challenges" (May 2019). In: *Tutorial and Presentation at Marriott International in Atlanta*

P27. "Model-based design for CPS with learning Enabled Components" (May 2019). In: *Invited Presentation at SMC-IT workshop on Autonomy*

P28. "Blockchains and CPS" (Dec. 2019). In: *New Directions in Software and Technology (NDIST)*

P29. "Resilient and Trustworthy Transactive Platform for Smart and Connected Communities" (May 2018). In: *Invited Talk at Nanyang Technological University, Singapore*

P30. "Resilient Analytics for Smart and Connected Communities" (Oct. 2018). In: *Invited Presentation at Oakridge National Lab, Knoxville*

P31. "Resilient Cyber Physical Systems" (2018). In: *Invited Presentation at Missouri Science and Technology*

P32. "Blockchain and IoT" (2017). In: *Keynote at M4IoT workshop at Middleware Conference*

P33. "Communication Anonymity in Transactive Energy" (Dec. 2017). In: *Serial 2017 Workshop*

P34. "Blockchains: Application to time-sensitive Systems" (2017). In: *Invited Presentation Hashed Health Summit, Nashville TN*

P35. "Reliable Distributed Systems in Smart and Connected Communities" (2017). In: *Invited Presentation at Missouri Science and Technology*

P36. "Drems-os: An operating system for managed distributed real-time embedded systems" (2017). In: *2017 6th International Conference on Space Mission Challenges for Information Technology (SMC-IT)*. IEEE

P37. "Education and Immersion Opportunities in Smart Cities" (Nov. 2017). In: *Education panel on Smart and connected communities*

P38. "Social Routing Algorithms for Efficient Mobility" (June 2017). In: *US-Ignite Summit on Smart Cities*

P39. "Digitalization disrupts traditional business" (2016). In: *Keynote at M4IoT workshop at Middleware Conference*

P40. "Resilient Information Architecture for Smart Systems" (2016). In: *Invited Talk at Siemens, CT, Munich*

Presentations Made at Referreed Conferences

P41. "An Online Approach to Solving Public Transit Stationing and Dispatch Problem" (2024). In: *Proceedings of the ACM/IEEE 15th International Conference on Cyber-Physical Systems (ICCPS)*. ICCPS '24. Best paper award. Hong Kong, China: Association for Computing Machinery

P42. "Cyber-Physical Simulation Platform for Security Assessment of Transactive Energy Systems" (2019). In: *7th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, MSCPES@CPSIoTWeek 2019, Montreal, QC, Canada*

P43. "Smart Transportation Delay and Resiliency Testbed Based on Information Flow of Things Middleware" (2019). In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA, June 12-15, 2019*

P44. "Mobilytics-Gym: A Simulation Framework for Analyzing Urban Mobility Decision Strategies" (June 2019). In: *IEEE International Conference on Smart Computing, SMARTCOMP 2019, Washington, DC, USA*

P45. "Towards an Adaptive Multi-Modal Traffic Analytics Framework at the Edge" (2019). In: *IEEE International Conference on Pervasive Computing and Communications Workshops, PerCom Workshops 2019, Kyoto, Japan, March 11-15, 2019*

P46. "Towards demand-oriented flexible rerouting of public transit under uncertainty" (2019). In: *Fourth Workshop on International Science of Smart City Operations and Platforms Engineering, SCOPE@CPSIoTWeek 2019, Montreal, QC, Canada*

P47. "Demo: Transactive Energy Application with RIAPS" (2019). In: *IEEE 22nd International Symposium on Real-Time Distributed Computing, ISORC 2019, Valencia, Spain, May 7-9, 2019*

P48. "TRANSAX: A Blockchain-Based Decentralized Forward-Trading Energy Exchanged for Transactive Microgrids" (2018). In: *24th IEEE International Conference on Parallel and Distributed Systems, ICPADS 2018, Singapore, December 11-13, 2018*

P49. "Role of Blockchains in Decentralized Cyber-Physical Systems" (2017). In: *Invited Talk at Siemens Blockchain Workshop, Erlangen, Germany*

P50. "DxNAT - Deep neural networks for explaining non-recurring traffic congestion" (2017). In: *2017 IEEE International Conference on Big Data, BigData 2017, Boston, MA, USA, December 11-14, 2017*

P51. "Incident analysis and prediction using clustering and Bayesian network" (2017). In: *2017 IEEE SmartWorld, San Francisco, CA, USA, August 4-8, 2017*

P52. "Performance evaluation of smart systems under uncertainty" (2017). In: *2017 IEEE SmartWorld, San Francisco, CA, USA, August 4-8, 2017*

P53. "Providing privacy, safety, and security in IoT-based transactive energy systems using distributed ledgers" (2017). In: *Seventh International Conference on the Internet of Things, IOT 2017, Linz, Austria, October 22-25, 2017*

P54. "Transactive energy demo with RIAPS platform" (2017). In: *8th International Conference on Cyber-Physical Systems, ICCPS 2017, Pittsburgh, Pennsylvania, USA, April 18-20, 2017*

P55. "A distributed and resilient platform for city-scale smart systems" (2016). In: *Conference presentation, IEEE/ACM Symposium on Edge Computing (SEC)*

P56. "Towards Reliability-Based Decision Making in Cyber-Physical Systems" (2016). In: *2016 IEEE International Conference on Smart Computing, SMARTCOMP 2016, St Louis, MO, USA, May 18-20, 2016*

P57. "The Role of Context and Resilient Middleware in Next Generation Smart Grids" (2016). In: *3rd Workshop on Middleware for Context-Aware Applications in the IoT, M4IoT@Middleware 2016, Trento, Italy*

P58. "Smart City Hubs: Opportunities for Integrating and Studying Human CPS at Scale" (2015). In: *Workshop on Big Data Analytics in CPS: Enabling the Move from IoT to Real-Time Control*

P59. "Challenges for Application Platforms for Integrated Cyber Physical Systems" (2015). In: *Workshop on Big Data Analytics in CPS: Enabling the Move from IoT to Real-Time Control*

P60. "Transit Hub - An Extensible and Smart Decision Support System for Public Transportation" (2015). In: *CPS Principal Investigators Meeting*

P61. "A Rapid Testing Framework for a Mobile Cloud" (2014). In: *25th IEEE International Symposium on Rapid System Prototyping, RSP 2014, New Delhi, India, October 16-17, 2014*

P62. "An Information Architecture Platform for Mobile, Secure, and Resilient Distributed Systems" (2014). In: *High Confidence Software and Systems Conference*

P63. "Using temporal causal models to isolate failures in Power System protection devices" (2014). In: *AUTOTESTCON*

P64. "Temporal causal diagrams for diagnosing failures in cyber-physical systems" (2014). In

P65. "A Resilient and Secure Software Platform and Architecture for Distributed Spacecraft" (2014). In: *SPIE Defense, Security, and Sensing*

P66. "A Deliberative Reasoner for Model-Based Software Health Management" (2012). In: *The Eighth International Conference on Autonomic and Autonomous Systems*

P67. "RFDMon: A Real-time and Fault-tolerant Distributed System Monitoring Approach" (2012). In: *The Eighth International Conference on Autonomic and Autonomous Systems*

P68. "A Software Platform for Fractionated Spacecraft" (Mar. 2012). In: *IEEE Aerospace Conference, 2012*. Big Sky, MT, USA

P69. "Model-based software health management for real-time systems" (Mar. 2011). In: *Aerospace Conference, 2011 IEEE*

P70. "Application of Software Health Management Techniques" (2011). In: *6th International Symposium on Software Engineering for Adaptive and Self-Managing Systems*. SEAMS '11. Waikiki, Honolulu, HI, USA

P71. "A Real-Time Component Framework: Experience with CCM and ARINC-653" (2010). In: *IEEE International Symposium on Object-Oriented Real-Time Distributed Computing*. Los Alamitos, CA, USA

P72. "Integrated Monitoring and Control for Performance Management of Distributed Enterprise Systems" (2010). In: *International Symposium on Modeling, Analysis, and Simulation of Computer Systems*. Los Alamitos, CA, USA

P73. "Dynamic Workflow Management and Monitoring Using DDS" (Mar. 2010). In: *Engineering of Autonomic and Autonomous Systems (EASe), 2010 Seventh IEEE International Conference and Workshops on*

P74. "Model Based Design" (2010). In: *Talk at Fermi National Laboratory*

P75. "Distributed diagnosis of complex systems using timed failure propagation graph models" (2010). In: *AUTOTESTCON, 2010 IEEE*. IEEE

P76. "Modeling and Analysis of Probabilistic Timed Systems" (2009). In: *IEEE International Conference on the Engineering of Computer-Based Systems*. Los Alamitos, CA, USA

P77. "Compensating for Timing Jitter in Computing Systems with General-Purpose Operating Systems" (2009). In: *IEEE International Symposium on Object-Oriented Real-Time Distributed Computing*. Los Alamitos, CA, USA

P78. "Using Runtime Verification to Design a Reliable Execution Framework for Scientific Workflows" (2009). In: *EASE '09: 2009 Sixth IEEE Conference and Workshops on Engineering of Autonomic and Autonomous Systems*. Washington, DC, USA

P79. "Algorithms for Synthesizing Safe Sets of Operation for Embedded Systems" (2009). In: *ECBS '09: 2009 16th Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems*. Washington, DC, USA

P80. "Reflex and Healing Architecture for Software Health Management" (July 2009). In: *International Workshop on Software Health Management, IEEE conference on Space Mission Challenges for Information Technology*

P81. "Towards A Model-Based Autonomic Reliability Framework for Computing Clusters" (2008). In: *5th IEEE International Workshop on Engineering of Autonomic & Autonomous Systems (EASe)*

P82. "Scientific Computing Autonomic Reliability Framework" (2008). In: *ESCIENCE '08: 2008 Fourth IEEE International Conference on eScience*. Washington, DC, USA

P83. "Model Predictive Analysis for Autonomic Workflow Management in Large-scale Scientific Computing Environments" (2007). In: *4th IEEE International Workshop on Engineering of Autonomic & Autonomous Systems (EASe)*

P84. "Verifying autonomic fault mitigation strategies in large scale real-time systems" (2006). In: *3rd IEEE International Workshop on Engineering of Autonomic & Autonomous Systems (EASe)*

Teaching Experience

2024S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 36 students
- Stepped in to cover the course, replacing CS 4266 (Topics in Big Data)
- Coordinated curriculum and assignments across three sections and three instructors
- Mean instructor rating: 4.14

2024F **Foundations of Hybrid and Embedded Systems** (CS 6376), Vanderbilt University
- 14 graduate students
- Introduced paper discussions and presentations alongside traditional theory and projects
- Mean instructor rating: 4.33

2023F **Foundations of Hybrid and Embedded Systems** (CS 6376), Vanderbilt University
- 28 graduate students
- Introduced new research-driven discussions in class

2023S **Topics in Big Data** (CS 4266/5266), Vanderbilt University
- 33 undergraduate students and 10 graduate students
- Enhanced hands-on data processing assignments with cloud computing tools

2022F **Foundations of Hybrid and Embedded Systems** (CS 6376), Vanderbilt University
- 28 graduate students
- Refined course focus on real-world hybrid system applications

2022S **Topics in Big Data** (CS 4266/5266), Vanderbilt University
- 38 students
- Incorporated machine learning techniques for large-scale datasets

2021S **Topics in Big Data** (CS 4266/5266), Vanderbilt University
- 38 undergraduate and 5 graduate students

2020S **Topics in Big Data** (CS 4266/5266), Vanderbilt University
- 47 students
- Developed new content focused on distributed data processing

2020S **Data Science Applications for Smart Cities** (UNIV 3360/5360), Vanderbilt University
- 21 students

2019F **Reliable Distributed Systems** (CS 3891/5891), Vanderbilt University
- 10 students

2019S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University

- 37 students
- Transitioned the course to use Amazon Web Services for real-world OS experiments

2019 **Industrial Applications of Internet of Things**, Marriott
- Developed an industrial course for Marriott in collaboration with Prof. Aniruddha Gokhale, focusing on cloud computing and IoT applications in the hotel industry

2018F **Reliable Distributed Systems** (CS 3891/5891), Vanderbilt University
- 26 students
- Created a special topic class on studying the reliability problem in distributed systems.

2018S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 35 students

2017F **Reliable Distributed Systems** (CS 3891/5891), Vanderbilt University
- 11 students

2017S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 32 students
- Introduced virtualization concepts into the curriculum

2016F **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 42 students

2016S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 42 students

2015F **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 49 students

2015S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 38 students

2014F **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 40 students

2014S **Principles of Operating Systems** (CS 3281/5281), Vanderbilt University
- 29 students
- Revised and developed new curriculum for an introduction to operating systems

Students and Postdoc Scholars

PhD Students Graduated (6)

2023 Michael Wilbur. Data-Driven Algorithms for Smart Transportation Systems (Doctoral dissertation, Vanderbilt University).

2022 Ava Pettet. Principled Algorithms for Real-time Sequential Decision Making for Large Scale Cyber-Physical Systems (Doctoral dissertation, Vanderbilt University).

2022 Shreyas Ramakrishna. Dynamic Safety Assurance of Autonomous Cyber-Physical Systems (Doctoral dissertation, Vanderbilt University).

2020 Scott Eisele. Resolving Challenges in Multi-Stakeholder CPS Using Distributed Ledgers (Doctoral dissertation, Vanderbilt University).

2018 Fangzhou Sun. Algorithms for Context-Sensitive Prediction, Optimization and Anomaly Detection in Urban Mobility (Doctoral dissertation, Vanderbilt University) (Co-advised with Jules White).

2017 Pradhan, Subhav. Algorithms and Techniques for Managing Extensibility in Cyber-Physical Systems (Doctoral dissertation, Vanderbilt University) (Co-advised with Aniruddha Gokhale).

M.S. Students Graduated (3)

2020	Matthew Buruss. Enhancing the Robustness of Deep Neural Networks Against Security Threats Using Radial Basis Functions (MS Thesis, Vanderbilt University).
2020	Sanchita Basak. Spatiotemporal Anomaly Detection and Prediction of Anomaly Propagation Path Using LSTM Networks (MS Thesis, Vanderbilt University).
2019	Chinmaya Samal. Time-dependent and Privacy- Preserving Decentralized Routing using Federated Learning (MS Thesis, Vanderbilt University).

Current PhD Students - 10

- Sophie Pavia, CS PhD Program, funded by NSF and DOE
- Rishav Sen, EE PhD Program, funded by Nissan
- Yunuo Zhang, CS PhD Program, funded through DARPA
- Baiting Luo, CS PhD Program, funded through NSF
- Jacob Bucklew, CS PhD Program, funded through NSF and DOE
- Agrimma Khanna, CS PhD Program, funded through NSF
- Ammar Bin Zulqarnain, CS PhD Program, funded through NSF
- Samir Gupta, CS PhD Program, funded through NSF
- Vakul Nath, CS PhD Program, funded through TNGO
- Han Liu, CS PhD Program, Teaching Assistant

Thesis Advised (Committee Member)

- Nicholas Potteiger, CS PhD
- Chaoquan Cai, CS PhD
- Muhammad Nadeem, Civil Engineering, PhD
- Purboday Ghosh, EE PhD
- Christopher Kuhn – Technical University of Munich, Germany
- Samuel Karumba – The University of New South Wales, Australia
- Yu Hue
- Timothy Krentz
- Xingyu Zhou
- Avisek Naug
- Dimitrios Boursinos
- Afiya Ayman (University of Houston)
- Jian Li
- Ajay Chhokra
- Saqib Hasan, EE
- Anirban Bhattacharjee
- Yi Li
- Jian Lou
- Ayan Mukhopadhyay
- Amin Ghafouri
- Yao Pan
- Saideep Nannapaneni (Civil Engineering)

Current Postdoc Scholars and Research Scientists

- Fangqui Liu
- Jose Paolo Talusan
- Ajay Chokra, Research Scientist, Institute for Software Integrated Systems
- Ayan Mukhopadhyay, Senior Research Scientist, Institute for Software Integrated Systems

Past Postdoc Scholars Advised

- Ava Pettet
- Sayyed Vazirizade
- Saideep Nannapaneni
- William Emfinger

Undergraduate Researchers

2024	Ali,Syed, Al-Quran,Zakariyya, Sanya NeemaSmart transit systems
2023	Al-Quran,Zakariyya, Kevin Pan, Elena Chen, Ali,SyedSmart transit systems
2022	Ammar Zulqarnain, Silvergold,Kevin Matthew, Al-Quran,Zakariyya Samer, Atluri,Megana Laxmi, David Gao and Immanneni,Vamsi Krishna, Bedant LohaniSmart transit systems
2020,2021	Rongze Gui, CS - Transit Simulation Statistical Analysis and Visualization for Emergency Response Systems.
2020	Abhiram Vadali, CS - Big Data Analytics for Smart Transit Systems
2020	Riyan Kabir, CS - Big Data Analytics for Smart Transit Systems
2020	Hunter Wang, CS - Assured Autonomy
2020	Shriya Karam, CS - Big Data Analytics for Smart Transit Systems
2020	Teo Lee, CS - Predictive Models for Emergency Response Systems
2020	Anna Ouyang, Psychology - Predictive Models for Emergency Response Systems
2018, 2019	Matthew Buruss, CS - Assured Autonomy
2019,2020	Keegan Campanelli, EE - Transactive Energy and Electric Grid
2019	Li Haoyu, CS - Data Analytics for Emergency Response
2019	Brian Xu, CS - Data Analytics for Emergency Response
2017, 2018	Rounak Salim, CS - Indoor Localization
2017	Hoyos Juan Sebastian, CS - Secure Operating Systems
2017	Nicholas Lewis, CS - Internet of Things
2017	Aaron Smith, CS - Virtual Reality
2017	Anne Zou, CS - Mobility Application for Cities
2016-2017	Smart Home Analytics Team - Megan Woodruff, John Carlton Jester, Morgan Fogel, Jianpeng Min (Senior Design)

Professional Societies

- Senior Member, IEEE
- Member, IEEE Power, and Energy Society
- Member, IEEE Intelligent Transportation Society
- IEEE Computer Society Special Technical Community on Blockchains
- IEEE Computer Society Special Technical Community on Smartgrid

- IEEE Computer Society Special Technical Community on Real-time Systems
- IEEE Technical Committee on Autonomous and Autonomic Systems.

Professional Service

Grant Review

2014-2020 Participated in grant review panels for the NSF Smart and Connected Community (SCC), Civic Innovation Challenge, IIS Core, Big Data, and Cyber-physical System Programs. In addition, reviewed for DOE and NASA programs.

Journal Editing

2024 Guest Editor: Special Issue for selected papers from ICCPS 2023

2019 Guest Editor: Special Issue of Journal of Systems and Software, ISORC 2018

2018 Guest Editor: Special Issue of Journal of Systems and Software, Elsevier on Adaptive Reflective Middleware

2013 Guest Editor: Special Issue on Software Health Management, Springer-Verlag

2016 International Workshop on Science of Smart City Operations and Platforms Engineering

2017 International Workshop on Science of Smart City Operations and Platforms Engineering

Conference and Workshop Organization

2025 Co-Organizer, Destion Workshop

2024 General Co-Chair, International Conference on Cyber-Physical Systems (ICCPS) 2024.

2025 Steering Committee Member, International Conference on Cyber-Physical Systems (ICCPS) 2025.

2023 General Co-Chair Smartcomp 2023.

2023 Program Co-Chair International Conference on Cyber-Physical Systems (ICCPS).

2023 Program Co-Chair International Conference on Assured Autonomy.

2022 Artifact Evaluation Chair International Conference on Cyber-Physical Systems (ICCPS).

2021,2022 Doctoral Symposium Chair Middleware.

2021 Tutorial Chair SmartComp 2021.

2021,2023 Workshop Program Chair DESTION 2021.

2021 Virtual Platforms Chair for CPSWeek 2021.

2020 Finance Chair of 22nd IEEE International Symposium On Real-Time Computing (ISORC)

2019 General Chair of 22nd IEEE International Symposium On Real-Time Computing (ISORC)

2019,2020 Program Co-chair of 4th IEEE Workshop on Big Data and IoT Security in Smart Computing at SmartComp conference.

2019 Organizer of challenges in Energy and Mobility Workshop at the Cyber-Physical Systems PI Meeting.

2020–2016 Chair - International Workshop on Science of Smart City Operations and Platforms Engineering at CPS Week

2018 Local organizer for Real-Time Systems and Symposium (RTSS)

2018 Program Chair of 21st IEEE International Symposium On Real-Time Computing (ISORC)

2018 Co-Chair - 1st International Workshop on Trustworthy and Real-Time Edge Computing for Cyber-Physical Systems (TREC4CPS)

2018 Program Chair of Smart and Connected Communities Workshop at International Conference on Distributed Computing and Networking.

2017 General Chair of the 16th Workshop on Adaptive and Reflective Middleware

2015	Chair, SPLC Conference, Tools and Demonstration Track

Technical Program Committees

2024	Program Committee Member, NeurIPS Data Benchmarks Track.
2024	Program Committee Member, AAAI XAI Workshop.
2024	Program Committee Member, International Conference on Cyber-Physical Systems (ICCPS).
2024	Program Committee Member, DESTION Workshop.
2023	International Conference on Assured Autonomy
2022–2023	Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS)
2021	IEEE International Conference on Cloud Engineering (IC2E)
2022	Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI-22)
2021–2023	DESTION - Design Automation for CPS and IoT
2021	DI-CPS - Data-Driven and Intelligent Cyber-Physical Systems
2021	IEEE International Conference on Blockchain and Cryptocurrency
2021	22nd ACM/IFIP International Conference for Middleware (Middleware 2021)
2021	Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI-21)
2020,2021	5th IEEE International Conference on Fog and Edge Computing 2021
2021	22nd International Conference on Distributed Computing and Networking (ICDCN 2021)
2020	1st Workshop on Blockchain for Network Resource Sharing (BlockNet 2020
2020	7th International Workshop on Middleware and Applications for the Internet of Things (M4IoT 2020)
2020	COINS: IEEE International Conference on Omni-layer Intelligent systems
2020	IEEE Workshop on Assured Autonomy
2018,2019	Destion Workshop at CPS Week
2019	SmartComp
2017	Smart World Congress
2017	Fog World Congress
2016-2018	SmartSys Workshop at SmartComp Conference
2016-2018	ACM MMSys, special session on smart cities
2013-2020	Program committee member for International Symposium on Object-oriented Real-time Distributed Computing
2015	Program committee member for Workshop on Wild and Crazy Ideas on the interplay between IoT and Big Data
2015	Program committee member for 31st ACM/SIGAPP Symposium on Applied Computing, Reliable Software Technologies, and Communication Middleware Track
2012	Program Committee Member: 9th IEEE Workshop on Model-Based Development for Computer-Based Systems
2011	Co-Chair, Second International Workshop on Software Health Management
2011	Program committee member for 9th IEEE/IFIP International Conference on Embedded and Ubiquitous Computing
2011	Program committee member for International Symposium on Object-oriented Real-time Distributed Computing

Journal Review

- International Journal on Prognostics and Health Management
- IEEE Transactions on System Man and Cybernetics

- Future Generation Computer Systems
- IEEE Access
- IEEE Computer
- Elsivier Pervasive and Mobile Computing
- Innovations in System and Software
- IEEE Transactions on Smart Grid
- IEEE Transactions on Mobile Computing
- Journal on Cluster Computing
- ACM Transactions on Cyber Physical Systems
- Journal of Aerospace Computing, Information, and Communication
- Journal of Universal Computer Science
- IEEE Industrial Informatics
- Embdeded System Letters
- Journal of Systems and Software - Elsevier

Departmental Service

2024	Judge, Electrical Engineering Student Competition.
2023–24	Director of Graduate Services MS. Started integration of Online forms with administrative processes such as dual BS/MS applications.
2023–24	Contributor, Department Website Transition.
2022–24	Web Chair for the computer Science department
2022–	Mentoring Junior Faculty in the Department
2020	UPE Honors Society Faculty Advisor
2017-2021	Advisor to the computer science class of 2019, 2021, 2022 and 2023.

University Service

2024	Co-Leader, VSEC Research Group during Initial Charter Creation.
2024	Co-Leader, Energy Integration Group after VSEC Establishment.
2024	Member, Connected Computing College Committee.
2024	Reviewer, Catalyst Innovation Challenge.
2024	Reviewer, VUSRP.
2023–	Research Co-Lead VSEC center
2023-2024	Research Committee Lead Vanderbilt Institute for Sustainability, Energy and Climate (VSEC)
2023	Reviewer, Catalyst Innovation Fund.
2023	Reviewer, Generative AI Proposals.
2023	Lead, Innovation Engine Proposal on Mobility; Contributor to Other Innovation Engine Discussions.
2023	Organizer, Research Symposium for Team-TN in Collaboration with OVPRI.
2016-2021	Supported and advised undergraduate researchers for the summer internship program
2020,2021	Faculty Search Committee Member for Civil and Environmental Engineering
2020	VU Summer Research Program Review Committee
2018,2020	Offered the university course on data science for smart communities
2019	Goldwater Scholarship Review Committee
2019	Participated in 2U curriculum discussion.

2019	My research group participated along with the W'ondry at the OZ art museum family day held on August 19th, 2019.
2018,2019	Served in various MOVE-VU committees
2018	Organized Multimodal Mobility Workshop for interaction between community, industry, and academic partners. Details are available at https://cps-vo.org/group/MultiModalMobility
2018	Served in the Working Group on Energy and Natural Resources led by Prof. George Hornberger.
2017,2018	Presented review of smart community research at Intro to Engineering Lectures
2017,2018	Presented research talks during visits of Oakridge and ORAU researchers
2017	Participated in the mobility planning group in future VU to design a campus wayfinding system.
2017	Data Analytics for the Vanderbilt CMAQ Grant.
2017	Served as a member of the Bluesky Advisory Committee
2017	Served in the transit committee of Future VU
2017,2018	Presented Transit Related Projects at FutureVU meetings
2017	Presented review of smart community research at Intro to Engineering Lectures (2017)
2016	Directed undergraduate senior design project on smart home analytic.

Community Service

2024	Actively engaged in Nashville Innovation Alliance.
2024	Established bi-weekly calls with Metro Nashville and Metro ITS for technical collaboration.
2024	Collaborating with Nashville Fire Department on resource management.
2024	Working with Williamson County on school bus optimization.
2024	Assisting Knoxville, Chattanooga, Memphis, and Nashville in optimizing bus services.
2022–2023	Organized the Vanderbilt and connected Nashville ecosystem workshop and subsequent breakout groups.
2017-2021	Led collaboration with the Tennessee Department of Transportation for analyzing accidents and improving safety on roads.
2019-2021	Led collaboration with Metro Nashville for data management and data analytics of Scooter and accident data.
2020-2021	Led collaboration with Nashville WeGo and Chattanooga CARTA for managing service loads during the pandemic.
2019	My research group participated along with the W'ondry at the OZ art museum family day held on August 19th, 2019.
2018	Organized Multimodal Mobility Workshop for interaction between community, industry, and academic partners.
2018	Led the Air Quality Assessment Project in collaboration with the Greater Nashville Regional Council (GNRC).
2017-2018	Led the Gulch Traffic Density Assessment Project in collaboration with Planning Department.
2017-2018	Led collaboration with the Nashville Mayor's office and the Nashville Technology Council on Blockchain initiatives in the metropolitan area.
2017	Led collaboration with the Open Data initiative at the Metro Information Technology Services (ITS).
2015-2017	Led Nashville projects at the Global Cities Team Challenge organized by the National Institute of Standards and Technology (NIST). The projects included collaborative work with Nashville Metropolitan Transit Authority (MTA) and Nashville Fire Department.
2018	Participated in the TennSmart program.
2018	Study of the Transit Hub platform for Chattanooga Area Regional Transit Authority.

2016-2017	Chair of Connected Nashville Technology Standards Committee convened by Mayor.
2016	Helped develop the Nashville application for the Department of Transportation Challenge.