

CASCON24-Workshop Proposal

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Authors

	Author 1	Author 2	Author 2	Author 3	Author 4
First Name	Hausi A.	Marin	Ian	Laura	Luis F. (Felipe)
Last Name	Müller	Litoiu	Watts	Shwartz	Rivera
Email	hausi@uvic.ca	mlitoiu@yorku.ca	ifwatts@ca.ibm.com	lshwart@us.ibm.com	rivera@uvic.ca
Country\ Region	Canada	Canada	Canada	United States	Canada
Affiliation	University of Victoria	York University	IBM	IBM	University of Victoria
Web page	http://webhome.cs.uvic.ca/~hausi/	https://profiles.laps.yorku.ca/profiles/mlitoiu/	https://ca.linkedin.com/in/ian-watts-5a42546	https://www.linkedin.com/in/laura-shwartz-2368b71b	https://ca.linkedin.com/in/lf-rivera

Workshop Title & Acronym

Title

2nd CASCON Workshop on Proactive Continuous Operations using Large Language Models (LLMs) and AIOps: Generative AI as a Catalyst for Innovation

Acronym

PACOLA: ProActive Continuous Operations using Large Language Models (LLMs) and AIOps

Abstract

A brief abstract of the goals and format of the workshop (250 words max). If your workshop is accepted, this information will appear on the CASCON website.

Increasingly demanding user expectations on modern cloud systems' performance, reliability, and offered value lead to increased complexities and uncertainties in system operations. DevOps teams often face complex operational challenges that exceed human abilities, resulting in inefficient or ineffective issue-resolution actions. Most of these challenges stem from the required orchestration of diverse technologies and the interpretation of vast data streams. Consequently, recent data-driven, automation-oriented, and reasoning-focused technological breakthroughs such as AIOps, Digital Twins (DTs), and Generative AI (GenAI) pose a significant opportunity to enhance risk mitigation, root cause analysis, problem resolution, and operational optimization for cloud systems. The "2nd CASCON Workshop on Proactive Continuous Operations using Large Language Models (LLMs) and AIOps: Generative AI as a Catalyst for Innovation" aims to explore the cutting-edge blend of GenAI, AIOps and DTs in modern IT environments. This workshop provides a dynamic platform for exchanging innovative ideas, recent advancements, and practical insights into these transformative technologies for academic researchers and industry practitioners. The primary workshop goals are: i) to foster discussions on how GenAI can drive further enhancing Proactive AIOps through DTs; ii) to identify research opportunities and challenges and uncover potential case studies; and iii) to set a roadmap for future development and commercialization of AIOps and DT technologies empowered by GenAI. The workshop will feature a combination of keynote presentations, invited talks, and interactive panels designed to highlight the latest research and practical applications. Participants will be able to engage in collaborative activities, analyze relevant case studies, and discuss the real-world impact of these technologies.

Workshop Theme, Goals, and Relevance

Provide a clear statement of why members of the CASCON community will be interested in this workshop and what impact your workshop will have on them. Also, state your success criteria for the workshop (500 words max)

Similarly to the first edition [1], the second edition of this workshop is a joint effort between the 16th CASCON Workshop on Cloud Computing and the 4th CASCON Workshop on Proactive AIOps through Digital Twins. Respectable members of the precious CASCON community will find this workshop highly relevant as it addresses some of the most pressing challenges and opportunities in emerging technologies that currently permeate and revolutionize several domains across the Software Engineering discipline. Integrating Proactive AIOps, Digital Twins (DTs), and Generative AI (GenAI) represents the forefront of innovation in managing and optimizing complex IT systems. As these technologies become increasingly

critical in ensuring modern software systems' reliability, efficiency, and autonomy, professionals and researchers must stay abreast of the latest developments and methodologies.

Goals

By participating in this workshop, attendees will:

1. Obtain insights into the latest research and advancements in AIOps, Digital Twins, and Generative AI, which will give attendees a competitive edge in their work.
2. Gain exposure to real-world case studies and demonstrations that showcase the tangible benefits and challenges of implementing these technologies.
3. Interact with leading experts, practitioners, and researchers in the field, fostering collaborations that could lead to new projects, research, and innovations.
4. Understand how these technologies will shape the future of software engineering and IT operations, thus anticipating and preparing for upcoming trends.

Impact

We expect the workshop to impact both academics and industry practitioners by catalyzing the advancement of the state-of-the-art and the state-of-the-practice in IT operations. It will drive the conversation on how to effectively harness the power of GenAI and digital technologies to create more robust, autonomous, and intelligent systems. Moreover, the workshop will also define a clear research agenda that could guide future studies toward addressing the most critical challenges in this rapidly evolving field.

Success Criteria

The success of this workshop will be measured by:

1. **High Participation and Engagement:** A strong turnout from both academia and industry, with active participation in discussions, Q&A sessions, and hands-on activities.
2. **Quality of Contributions:** The presentation of high-quality talks, case studies, and demonstrations that provide valuable insights and innovative solutions to current challenges.
3. **Collaborative Outcomes:** The establishment of new collaborations, partnerships, and projects that extend beyond the workshop, potentially leading to joint research initiatives, publications, and real-world applications.
4. **Knowledge Dissemination:** The effective dissemination of the workshop's findings and discussions through published proceedings, follow-up meetings, or special journal issues, ensuring that the insights gained have a lasting impact on the community.
5. **Feedback and Future Direction:** Positive feedback from participants, indicating that the workshop met or exceeded their expectations, and identification of new areas for exploration and improvement in future editions of the workshop.

Workshop Structure

The "2nd CASCON Workshop on Proactive AI-driven Operations: Generative AI as a Catalyst for Innovation" will be structured to maximize participant engagement, knowledge exchange, and collaborative opportunities. The workshop will be divided into several key components:

1. Invited Keynote Talks

The workshop will open with a series of keynote presentations from leading experts in AIOps, Digital Twins, and Generative AI. These talks will provide a high-level overview of the current state of the field, emerging trends, and future directions. Secured keynote speakers include

- Ian Watts, Product Owner, Program Director for IBM CloudPack for AIOps
- Dr. Hausi Müller, University of Victoria
- Felipe Rivera, PhD Candidate at University of Victoria

These speakers will set the stage for the workshop by highlighting critical challenges and innovative solutions in Proactive AIOps and the integration of Digital Twins and Generative AI.

2. Invited Presentations

The workshop will feature invited presentation sessions where selected researchers and practitioners will present their latest work. Each presentation will be followed by a Q&A session, allowing for in-depth discussions and feedback from the audience.

3. Interactive (Fishbowl) Panels

Two panel discussions will bring together experts from academia and industry to debate and discuss the most pressing challenges and opportunities in the field. The first panel will focus on "The Future of AIOps: Moving from Predictive to Proactive," while the second will explore "The Role of Generative AI in Shaping the Next Generation of Digital Twins for AIOps."

These panels are designed to encourage audience participation, ensuring that a wide range of perspectives are considered and that the discussions are grounded in both theoretical and practical concerns.

4. Working Sessions and Breakout Groups

To foster collaboration and idea generation, the workshop will include a working session where participants can engage in small group discussions on specific topics. Breakout groups will be formed around key themes for AIOps, DTs, and GenAI. T

This session will allow participants to delve deeper into their areas of interest, share insights, and brainstorm potential solutions to shared challenges.

Achieving Workshop Goals

This multi-faceted structure is designed to achieve the workshop's goals by facilitating knowledge exchange, fostering collaboration, and driving innovation. The keynote talks will inspire participants and set a strategic vision, while invited presentations will share cutting-edge research and practical insights. Panels will provide a forum for debate and discussion, ensuring that diverse viewpoints are heard.

Working sessions will engage participants in hands-on activities, allowing them to collaboratively apply concepts in real-world contexts and explore new ideas.

By combining these elements, the workshop will advance the understanding of Proactive AIOps, DTs, and GenAI and help build a robust and interconnected community of researchers and practitioners poised to lead future developments in this field.

Workshop Duration

Half day

References

[1] Müller Hausi A., Marin Litoiu, Luis F. Rivera, Mohammadreza Rasolroveicy, Norha M. Villegas, Gabriel Tamura, Ian Watts, Eric Erpenbach, and Laura Shwartz. 2023. **Proactive Continuous Operations using Large Language Models (LLMs) and AIOps**. In Proceedings of the 33rd Annual International Conference on Computer Science and Software Engineering (CASCON '23). IBM Corp., USA, 198–199.