

TechFusion 2025 - AI, Cybersecurity, and Emerging Trends in Computer Sciences

Conference Proceedings

November 27-28, 2025 - Singapore

AI for Access Control Policy Mining: Challenges and Opportunities

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Abstract:

AI for Access Control Policy Mining: Challenges and Opportunities Access control plays a central role in securing modern information systems, but designing effective policies remains a difficult and time-consuming task. Traditional policy mining approaches face challenges such as limited datasets, incomplete information, and the difficulty of balancing accuracy with interpretability. These obstacles make it difficult to develop policies that are both precise and understandable, particularly in large or dynamic systems. Recent advances in AI provide new opportunities to address these challenges. AI methods can assist in discovering patterns in permissions, generating candidate policies, and refining rules to achieve greater accuracy and clarity. Moreover, AI can help automate parts of the policy mining workflow, reducing manual effort and enabling researchers and practitioners to handle more complex systems. At the same time, introducing AI into this process brings new challenges: ensuring correctness, avoiding overfitting to noisy data, and maintaining transparency and trustworthiness in AI-assisted policy generation. This talk will explore the promise and pitfalls of applying AI to the policy mining problem. We will discuss how AI techniques can support the discovery of high-level access control rules, highlight the risks of relying on opaque models in security-critical contexts, and outline future directions for integrating AI into access control research and practice.