privacy of such devices. Machine Learning (ML) and Deep Learning (DL) techniques, integrated with IDS, have gained momentum for their high classification accuracy. However, privacy and security concerns arise from the necessity to transmit and store data to centralised servers. Federated Learning (FL) emerges as a fitting solution, preserving privacy by locally training models on devices and transmitting only model parameters to a centralized server. This paper provides a comprehensive review of FL in intrusion detection systems, discussing various types of IDS, applicable ML approaches, also associated challenges. It offers a detailed overview of FL implementation in anomaly detection, identifies challenges, and proposes plausible solutions, serving as a foundational reference for future research.

84. VIBE-SIPSYNC

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Revolutionizing beverage delivery, VIBE-SipSync is a Voice-Activated Intelligent Beverage Dispenser, seamlessly blending cutting-edge technology for a customized experience. Powered by voice commands and advanced sensors, it engages users in selecting hot coffee, tea, or cold water, with sophisticated pouring mechanics. Prioritizing inclusion, it offers a hands-free interface for the visually impaired and is kid-friendly, striking a balance between deliberate inclusion and state-of-the-art automation.

85. SIMULATIVE ANALYSIS OF INCONEL 718 BASED BRAKE DISC

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The research work focuses on the suitability of brake discs printed by Selective Laser Melting (SLM) for 2-Wheeler Vehicles. Inconel 718 powder material is being studied in this research work along with its comparison with the already existing Stainless Steel based brake disc that is currently under use in the industry. The design mainly focused on using slotted grooves in place of radial grooves for more weight reduction. For the testing of disc designs and material comparison, ANSYS Workbench 22R2 has been used. The Steady-state thermal, Static-Structural, and Modal modules of the software have been used for analyzing the mechanical and thermal properties of the material under study in the current research. Moreover, comparisons have been done with commercially printed/available brake discs with the 3D printed brake disc. The difference between the minimum temperatures for Inconel and Stainless Steel for thermal analysis was found to be 4°C. For the same comparison for radial and slotted groove disc the difference was 14°C. For Stress analysis the difference between maximum stresses generated in Inconel disc and Stainless-Steel disc is 137.74 MPa while the same comparison in case of radial and slotted groove discs yielded a difference of 13.29 MPa. The results showed that for most part Inconel 718 is a far better choice for brake discs as it showed less deformation under static loading and friction conditions and better heat dissipation compared to Stainless Steel.

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