National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Path Planning and Navigation of Legged Robot in Cluttered Environment using Artificial Intelligent Assisted Techniques
Speaker	: Pinaki Das (Rollno : 523me1001)
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Venue	: Mechanical Seminar Room (ME- 001)
Date and Time	: 18 Dec 2024 (10:30 A.M.)
Abstract	: To address the hazardous environment to reduce human risk life, two-legged robots are increasing popularity in the field of robotics. Navigation of a two-legged robot is regarded more complex than the mobile robot navigation as it must maintain stability throughout its gait planning. An ample number of literature were studied for better understanding about the earlier research carried out. Based on the literature reviews, it is clear that numerous optimization strategies have been explored for path navigation of mobile robot, aerial robot and underwater robot however, their applicability is limited when considering two-legged robots. Different artificial intelligence (AI) along with optimization methodologies were also studied. Four optimization methodologies, such as African Vulture Optimization (AVO), Henry Gas Solubility Optimization (HGSO), Kidney Inspired Algorithm (KIA), Volleyball Premier League (VPL), are taken for their pros such as trade off in exploration and exploitation, avoid premature convergence, less time for computation and ability to solve complex and non-linear problems over other conventional swarm techniques. Among those techniques, AVO is improved and applied on the two-legged robot to evaluate the efficiency. Both simulations and experiments were carried out where below 4% deviation was obtained, that was within the suitable limit.