African Robotics and Autonomous Systems

Bridging Digital Inclusion Gaps in Rural South Africa: Strategic Approaches and Technologies

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Abstract

Rural communities in South Africa face significant digital inclusion gaps due to limited access to technology infrastructure and skills training. A mixed-methods approach combining surveys, focus groups, and case studies was employed to identify needs and evaluate proposed solutions. Survey results indicated a need for at least 75% of participants in accessing reliable internet services; specific training programmes were found effective in improving digital skills by an average of 40%. The identified strategies, including subsidized broadband access and community-led technology hubs, show promise in addressing the digital inclusion gap. Implement a phased rollout strategy for high-speed internet infrastructure with targeted training programmes to ensure sustainable adoption among rural populations. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, e-inclusion, participatory design, community empowerment, digital divide, socio-technical systems, ethnography*

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