



इलेक्ट्रॉनिकी एवं संचार अभियांत्रिकी विभाग राष्ट्रीय प्रौद्योगिकी संस्थान कर्नाटक, सुरत्कल

(राष्ट्रीय महत्व का संस्थान, भारत सरकार के एनआईटीएसईआर अधिनियम के तहत स्थापित)
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Date : 19-12-2025

INTERNSHIP CERTIFICATE

This is to certify that **Mr. Chiranth K**, 4th Year, B.Tech ISE, The National Institute of Engineering, Mysuru successfully completed long-term research Intership from **14th July 2025 to 14th December 2025** at Department of Electronics and Communication Engineering, National Institute of Technology Karnataka, Surathkal, India on the project titled "**Development of Enhanced Building Change Detection Network from High Resolution Remote Sensing Images**". Chiranth proposed an enhanced deep learning framework named Enhanced Building Change Detection Network (EBCDNet) for binary change detection from bi-temporal satellite imagery. EBCDNet model was built upon a U-Net++ backbone and integrates several advanced components, including an attention-based encoder, Multi-Feature Block (MFB), atrous convolutions with multiple dilation rates, Squeeze-and-Excitation (SE) blocks, and a Learnable Fusion Block (LFB). The proposed BCDNet model was evaluated on two benchmark datasets, LEVIR-CD and EGY-BCD, and compared with state-of-the-art models including ERSCDNet and SIEF-Net. EBCDNet consistently outperformed baseline and SOTA methods, achieving notable improvements of 2–3% in IoU and higher F1 scores, indicating superior boundary preservation and reduced false positives. On EGY-BCD, the model achieved Accuracy, F1, Kappa, and IoU scores of 0.9307, 0.8034, 0.7613, and 0.6714, respectively, while on LEVIR-CD it achieved 0.9906, 0.9053, 0.9004, and 0.8270. He has also written draft manuscript which is under correction from my side. His performance was **highly satisfactory** during the internship period.

Thanking you.

Yours Sincerely,

(Dr. Shyam Lal)



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