

Méthodes de Fusion de Cartes de Caractéristiques pour la Détection Multispectrale par Réseaux de Neurones Profonds

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Résumé

L'utilisation d'images multispectrales (par exemple des paires d'images en bandes spectrales visible et infrarouge) peut s'avérer particulièrement utile lorsque l'on cherche à détecter des objets dans des environnements variés (par exemple des scènes extérieures capturées de jour ou de nuit). Pour utiliser ces différentes bandes spectrales, le principal problème technique est la fusion des informations complémentaires issues des différentes bandes. Si cette fusion peut, en théorie, être mise en oeuvre à différents niveaux (précoce, intermédiaire, tardive), les méthodes récentes d'apprentissage profond ont montré que la fusion à mi-parcours (intermédiaire) dans le réseau était celle donnant le meilleur gain de performances. Cet article propose deux nouvelles approches intitulées PS-Fuse et Cyclic Fuse-and-Refine pour fusionner au mieux les caractéristiques multispectrales au sein d'un réseau de neurones profond. Nos expériences montrent que ces deux contributions conduisent à des améliorations significatives de précision par rapport aux méthodes existantes en détection d'objets sur des jeux de données multispectrales.

Mots clés

Détection d'objets sur des images multi-spectrales, fusion multi-spectrale, apprentissage profond.

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