R\textsuperscript{3}Net: Recurrent Residual Refinement Network for Saliency Detection

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Introduction

- **Problem Definition**
  Saliency detection aims to highlight the most visually distinctive objects in an image.

- **Contributions**
  - Design a novel residual refinement block (RBB) to learn the residual between the ground truth and the saliency map at each recurrent step. This learning strategy can make the network easy to train and help to learn the complementary information of previous prediction for the refinement.
  - Develop a recurrent residual refinement network (R\textsuperscript{3}Net) to progressively refine the saliency maps by building a sequence of RRBS, which alternatively use the low-level features and high-level features.
  - Achieve the best performance on all the five famous benchmarks when comparing to 16 state-of-the-art saliency detectors.

Experimental Results

- **Comparison with the State-of-the-arts**
  - Table showing performance metrics for various methods on different benchmarks.

Residual Refinement Block

\[
 residual_j = \varphi_j(Cat(S_{j-1}, F)) \\
 S_j = S_{j-1} + residual_j
\]

Ablation Analysis

- Table showing the effect of different components on the performance of R\textsuperscript{3}Net.

Supervision

- Diagram showing the supervision process in the R\textsuperscript{3}Net architecture.

https://github.com/zijundeng/R3Net

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