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#2 APPROXIMATION OF SOUND PROPAGATION BY NN | EUGENE

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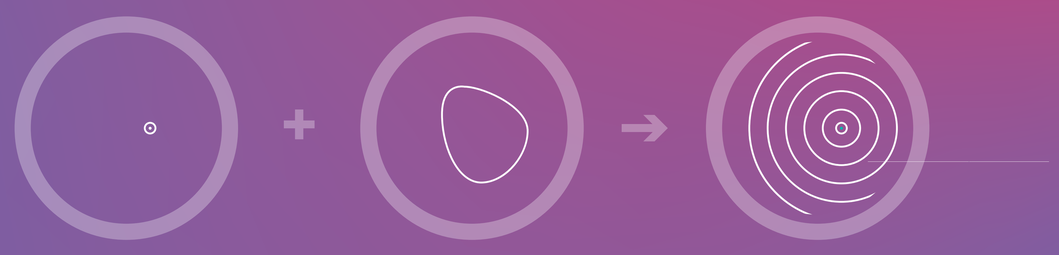

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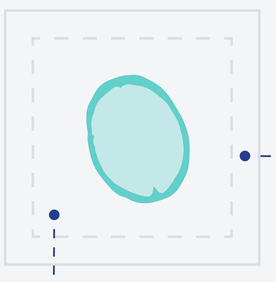
OBJECTIVE

§1.1 Helmholtz Equation

$$\left[\Delta + \left(\frac{\omega}{c}\right)^2\right] u = \rho$$

Speed of Sound (SOS) — Wavefield (unknown) — Source

§1.2 Computational Domain

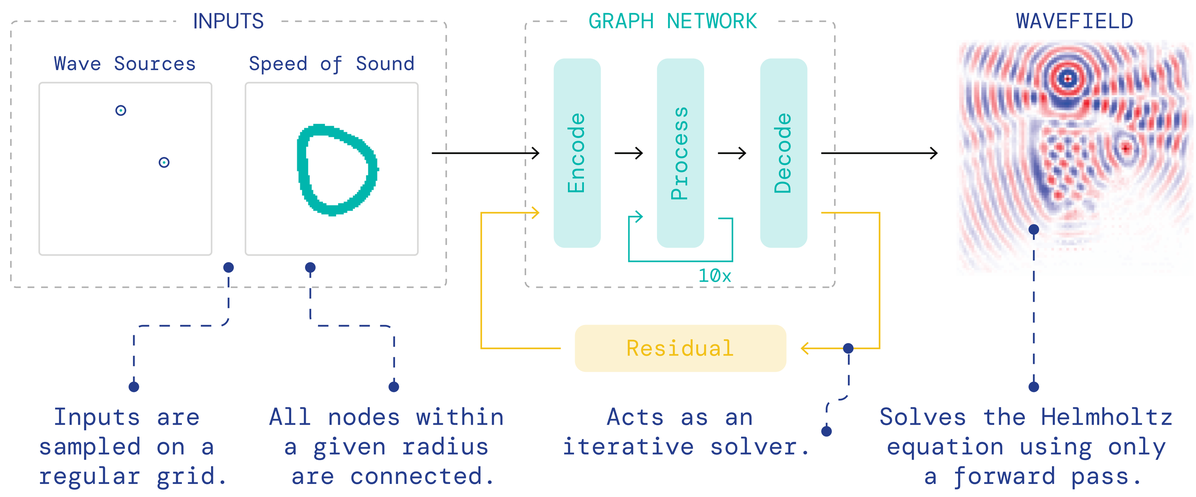


Domain Ω
For each point x there is defined a speed of sound c(x).

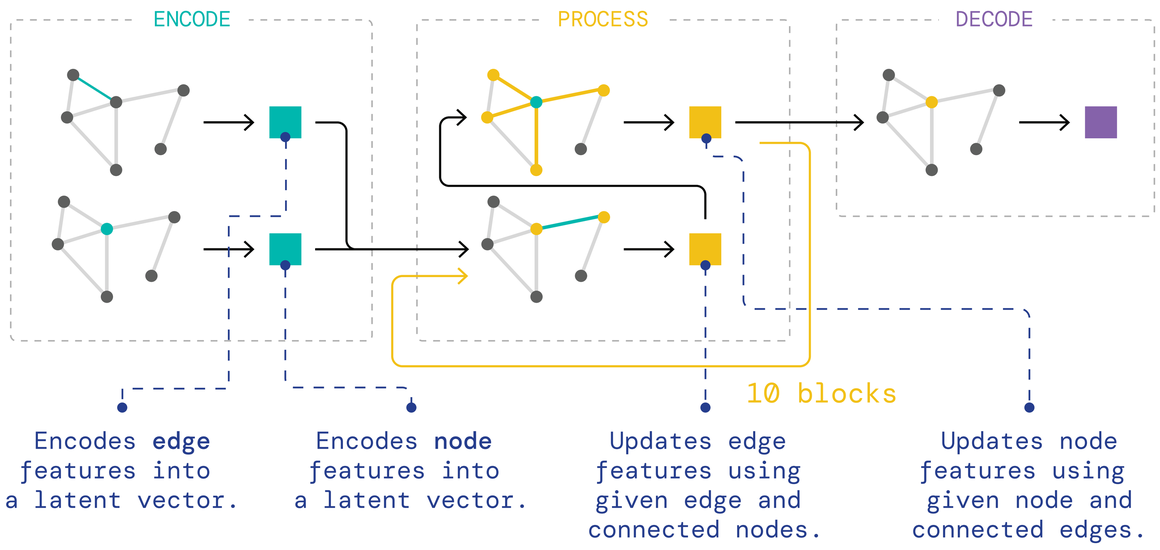
PML
Attenuates all incoming waves to prevent reflections from the borders.

PROPOSED SOLUTION

§2.1 Model Scheme

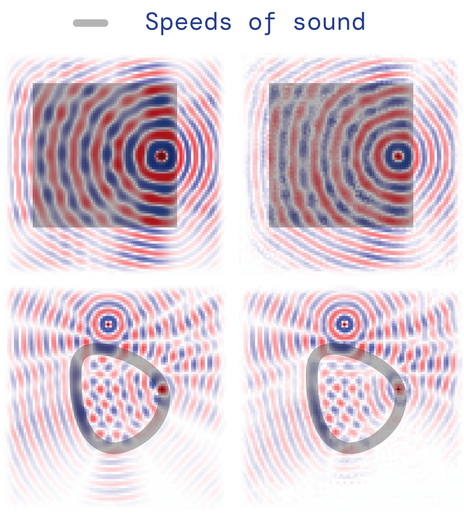


§2.2 Graph Network Scheme



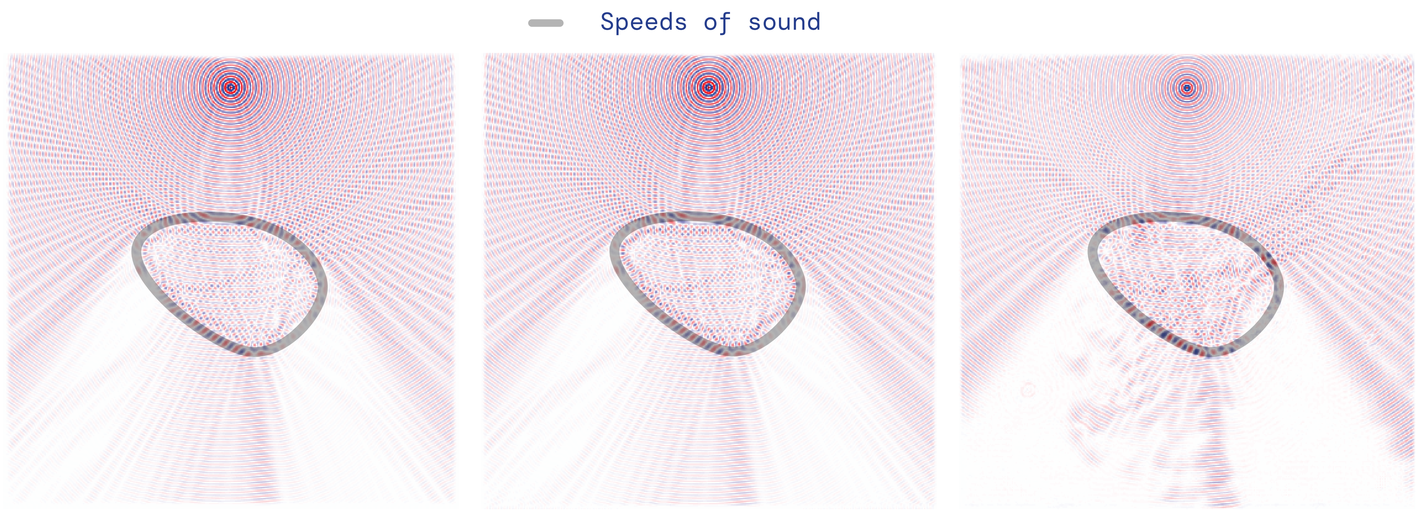
RESULTS

§3.1 Generalization



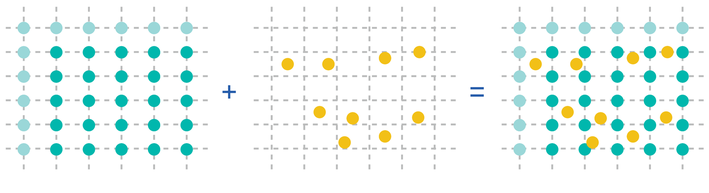
Reference — Our Solution

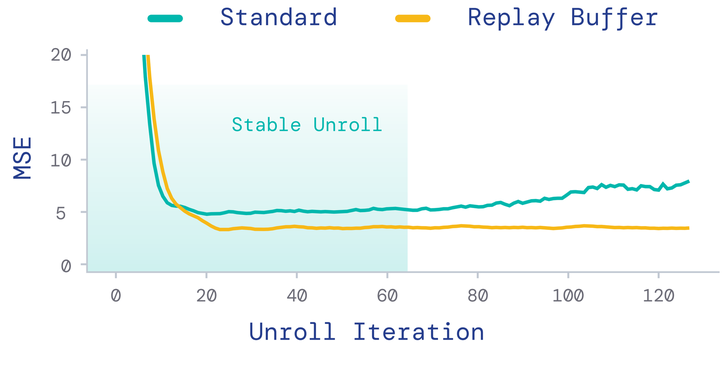
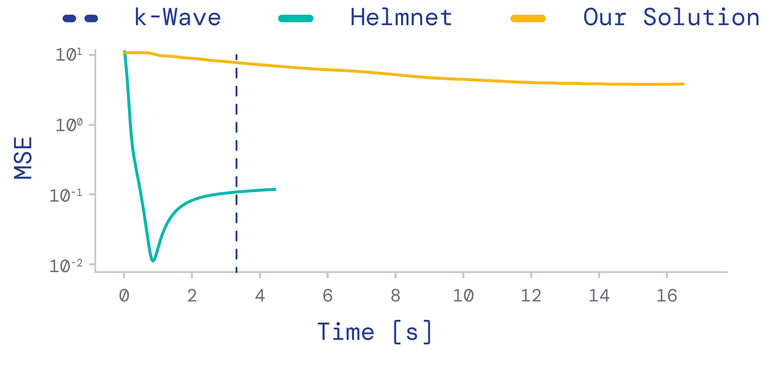
§3.3 Comparison with Helmnet



Reference — Helmnet — Our Solution

§3.2 Super-resolution



Uniform + Random = Super-res

§3.4 Unroll Stability