

\tilde{u}_n

The diagram illustrates the relationship between three types of errors in optimization: optimization error, generalization error, and approximation error. It features a horizontal line with four red circular nodes. From left to right, the nodes are labeled \tilde{u}_n , u_n , u_F , and u^* . Below the line, three double-headed arrows indicate the distances between these nodes: between \tilde{u}_n and u_n is labeled '优化误差' (Optimization Error), between u_n and u_F is labeled '泛化误差' (Generalization Error), and between u_F and u^* is labeled '近似误差' (Approximation Error). A feedback loop is shown as a line starting from the top of the u_F node, going up, then left, then down, and finally left to the top of the \tilde{u}_n node.

优化误差

u_n

泛化误差

u_F

近似误差

u^*