Paper Review

**Summary:**

In this paper, the authors introduce attentive kernel (AK), that injects nonstationarity into a kernel-based Gaussian Process Regression technique for enhanced uncertainty estimation and path planning for robotic information gathering (RIG) tasks. In this setting, they use a probabilistic model to estimate the model uncertainty given a location input. The aim is to effectively map a previously unknown environment using sparse samples, an automated agent and an online planner.

**Strengths:**

The paper is well-written and well-organized. The provided complexity analysis, benchmarks, and extensive review of existing work draw a clear picture of the authors knowledge in the field and provide a concrete foundation for their claims and contributions. The ablation studies add significant value to the paper. The results appear to be highly reproducible. Includes a discussion of hyperparameters. The appendix, source code, test-run video, and sound theory are the strengths of this paper. aper.

**Weaknesses:**

Outliers and heteroscedastic noise may affect RIG and the performance of non-stationary kernels. Their degree of impact is something that can be further explored to further understand the resiliency of non-stationary kernels in different real-world scenarios. There is some discussion of the limitations of this work in the sensitivity analysis and ablation studies sections which may require further attention. Although it is probably not necessary, there could be some discussion of societal impacts. This understanding can lead to further improvements in methods for selecting or learning kernels in Gaussian Process modeling problems.