WiFi localization with Root-MUSIC

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- Guidelines to review the report for Question 1-3 below: https://dl.acm.org/journal/dgov/reviewer-guidelines
- Guidelines to review the code artifacts for Question 4-8 below: https://conferences.sigcomm.org/sigcomm/2022/cf-artifacts.html

1. Summary

Provide a brief summary of the project in your own words.

This project compares the performance of RSSI and Root-MUSIC ranging algorithms for indoor Wi-Fi localization across various IEEE 802.11 TGn channel models. Simulations show that while Root-MUSIC achieves superior accuracy and robustness in low-complexity channels compared to the estimates from RSSI, its performance in multipath environments relies heavily on selecting a model order substantially larger than the actual number of signal paths.

2. Strengths

Provide strengths or positive aspects of the project.

The project provides a very comprehensive and thorough performance comparison between RSSI-based ranging and Root-MUSIC under , utilizing the IEEE 802.11 TGn channel models to simulate a variety of indoor environments.

3. Weakness

Provide any weakness or aspects that can be further improved.

The results are based solely on MATLAB simulations with statistical channel models, a hardware experiment could have substantially helped validate results.

4. **Documentation: Is the artifact/code sufficiently documented?**

   Rate from 0% to 100%, where 0% means "documentation is completely insufficient" and 100% means "documentation is absolutely sufficient". If you need to assess both a dataset and tools, please take the average and comment below. In assessing tools, please consider if they are easy or difficult to install/set up and get to run. In assessing datasets, please consider if the meta data is sufficient.

   Choices are:
   - **1.** 0%
   - **2.** 20%
   - **3.** 40%
   - **4.** 60%
   - **5.** 80%
   - **6.** 100%

   Documentation: Comment on/explain your choice above:

README and report are very thorough

5. **Completeness: Do the submitted artifacts/code include all of the key components described in the report?**

   Rate from 0% to 100%, where 0% means "does not include any key components" and 100% means "includes all key components".

   Choices are:
   - **1.** 0%
   - **2.** 20%
   - **3.** 40%
   - **4.** 60%
   - **5.** 80%
   - **6.** 100%

   Completeness: Comment on/explain your choice above

All of the code detailed in the report is present on the GitHub

6. **Exercisability: Do the submitted artifacts/code include the scripts and data needed to run the experiments described in the paper, and can the software be successfully executed?**

   Rate from 0% to 100%, where 0% means "the scripts/software cannot be successfully executed and/or no data is included" and 100% means "the artifact includes all necessary scripts/software and data, and scripts/software (if present) can be successfully executed".

   Choices are:
   - **1.** 0%
   - **2.** 20%
   - **3.** 40%
   - **4.** 60%
   - **5.** 80%
   - **6.** 100%

   Excitability: Comment on/explain your choice above

Software compiles

7. **Results attainable: Does the artifact/code make it possible, with reasonable effort, to obtain the key results from the artifact/code?**

   Rate from 0% to 100%, where 0% means "no results can be obtained" and 100% means "all results can be obtained".

   Choices are:
   - **1.** 0%
   - **2.** 20%
   - **3.** 40%
   - **4.** 60%
   - **5.** 80%
   - **6.** 100%

   Results attainable: Comment on/explain your choice above

All results can be obtained

8. **Results completeness: How many key results of the paper/report is the provided code meant to support?**

   Rate from 0% to 100%, where 0% means "the artifact is meant to support no key results" and 100% means "the artifact is meant to support all key results".

   Choices are:
   - **1.** 0%
   - **2.** 20%
   - **3.** 40%
   - **4.** 60%
   - **5.** 80%
   - **6.** 100%

Results completeness: Comment on/explain your choice above

Report is entirely supported by data and MATLAB code.

Reviewer Name, Signature

Joseph Pizzimenti,