[Proposal] Generic Benchmark Kit for Mapping Tools #4509

Unanswered **berkaysahinaskar** asked this question in **Ideas**

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Generic Benchmark Kit for Mapping Tools

Objective

The goal is to develop a comprehensive benchmark software kit designed for evaluating and comparing mapping tools that are compatible with both KITTI and TUM data formats.

Key Features

1. Support for Multiple Formats

- Inclusion of parsers for KITTI (.txt) and TUM (.txt files) datasets.
- Conversion utilities to switch between KITTI and TUM formats, ensuring cross-compatibility.

2. Data Preprocessing

- Consistent data representation across different mapping tools.

3. Modular Testing Framework

- Generic modular design to integrate various mapping tools.
- Plug-and-play module design for easy addition or removal of tools under test.

4. Performance Metrics

- A set of performance metrics such as accuracy, speed, memory usage, robustness, etc.
- Detailed logs and reports generation for in-depth analysis.

5. Visualization Tools

- Real-time visualization of mapping results for qualitative assessment.
- Comparative visualization features for side-by-side tool evaluation.

6. Automated Testing Pipeline

- Scripts to automate the entire testing process from data import to metric evaluation.

7. Documentation and User Guides

Category

Ideas

Labels

None yet

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- Comprehensive documentation covering installation, usage, and extension of the benchmarking kit.
- Step-by-step user guides for setting up benchmarking scenarios.

8. Community Input and Collaboration

- Structured feedback mechanisms for users to report issues or suggest improvements.
- Support for collaborative development and extension by the community.

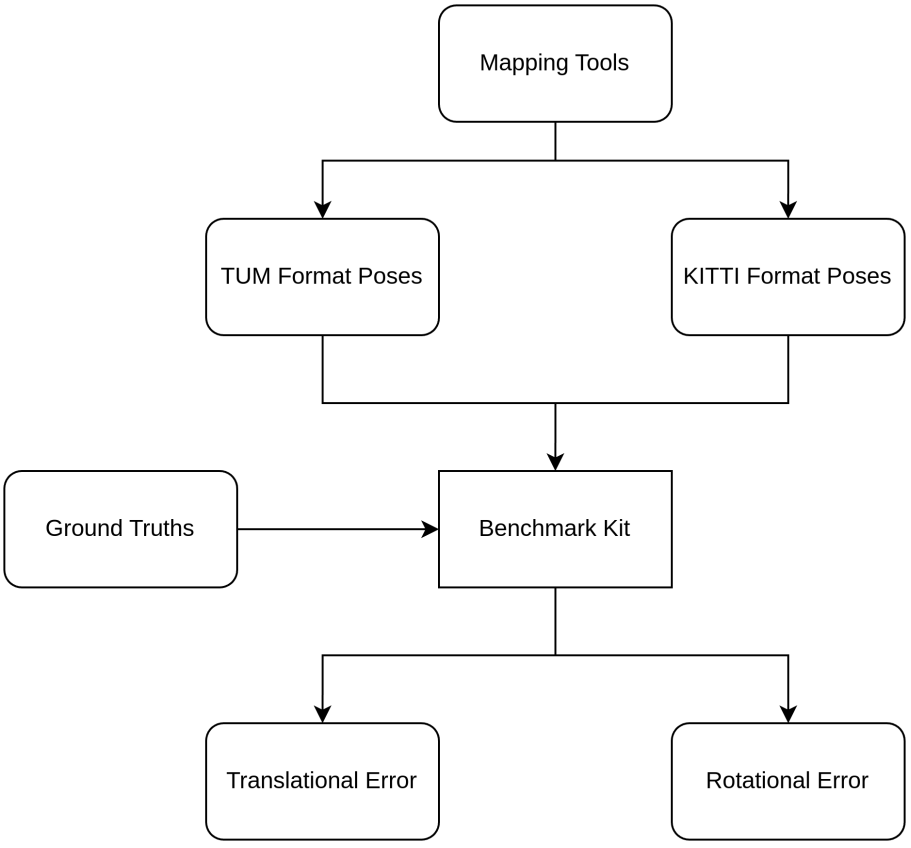
Development Phases

1. Requirements Gathering

- Consultation with industry experts and researchers to identify key requirements.
- Analysis of existing benchmarking practices for mapping tools.

2. Design & Prototyping

- Architectural design of the software kit adhering to modularity and extensibility.
- Developing a proof of concept.



3. Implementation

- Coding of modules according to the design specifications.
- Iterative testing and refinement of the kit's components.

4. Validation & Verification

- Rigorous validation against known benchmarks and ground truth data.
- Verification of toolkit functionalities and performance in various scenarios.

Conclusion

This benchmark software kit will serve as an invaluable tool for developers and researchers working on mapping solutions. Providing standardized evaluation measures and tools, will facilitate advancements in the field of mapping technologies and contribute to more robust and efficient systems. Also thanks to the tum format it will compare and calculate errors despite different pose numbers.

For more detailed planning or customization of the benchmark software kit to specific needs, please feel free to reach out.

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