

Hand Tracking Using Distinct OpenCV Methods and Analysis of their Accuracy and Performance

Francisco Jose Nardi Filho

Lucas Gasparetto Farris

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Abstract

Mean Shift, Adaptative Mean Shift, Camshift using SIFT keys and Particle Filtering are four successful approaches to visual tracking. However, each of them have their particular strengths and weaknesses. In this paper, we intend to present implementations of each distinct method from the OpenCV library and make an accuracy and performance analysis for a hand tracking case. Fifteen videos taken from YouTube showing diverse situations as teaching of the American signal language alphabet, Mudras (gestures from an Indian dance), as well as guitar playing were used as dataset to run the algorithms and perform the hand tracking. Extensive experimental results demonstrate that XXXXX outperforms YYYYY in hand tracking. Our approach produces reliable tracking while effectively handling rapid motion.

1 Introduction

Your introduction goes here! Some examples of commonly used commands and features are listed below, to help you get started. If you have a question, please use the help menu (“?”) on the top bar to search for help or ask us a question.

2 Some L^AT_EX Examples

2.1 How to Leave Comments

2.2 How to Include Figures

First you have to upload the image file (JPEG, PNG or PDF) from your computer to writeL^AT_EX using the upload link the project menu. Then use the `includegraphics` command to include it in your document. Use the `figure` environment and the `caption` command to add a number and a caption to your figure. See the code for Figure ?? in this section for an example.

2.3 How to Make Tables

Use the `table` and `tabular` commands for basic tables — see Table 1, for example.

| Item | Quantity |
|---------|----------|
| Widgets | 42 |
| Gadgets | 13 |

Table 1: An example table.

2.4 How to Write Mathematics

\LaTeX is great at typesetting mathematics. Let X_1, X_2, \dots, X_n be a sequence of independent and identically distributed random variables with $E[X_i] = \mu$ and $\text{Var}[X_i] = \sigma^2 < \infty$, and let

$$S_n = \frac{X_1 + X_2 + \dots + X_n}{n} = \frac{1}{n} \sum_i^n X_i$$

denote their mean. Then as n approaches infinity, the random variables $\sqrt{n}(S_n - \mu)$ converge in distribution to a normal $\mathcal{N}(0, \sigma^2)$.

2.5 How to Make Sections and Subsections

Use section and subsection commands to organize your document. \LaTeX handles all the formatting and numbering automatically. Use `ref` and `label` commands for cross-references.

2.6 How to Make Lists

You can make lists with automatic numbering ...

1. Like this,
2. and like this.

...or bullet points ...

- Like this,
- and like this.

...or with words and descriptions ...

Word Definition

Concept Explanation

Idea Text

We hope you find write \LaTeX useful, and please let us know if you have any feedback using the help menu above.