



PROJECT REPORT
IMPLEMENTATION OF TEMPLATE
MATCHING METHODS FOR TRAFFIC SIGNS
RECOGNITION

MELDA NOPHIA
16.K1.0012

Faculty of Computer Science
Soegijapranata Catholic University
2020



HALAMAN PENGESAHAN

Judul Tugas Akhir: : Implementation of Template Matching Methods for Traffic Signs
Recognition

Diajukan oleh : Melda Nophia

NIM : 16.K1.0012

Tanggal disetujui : 03 Juli 2020

Telah setuju oleh

Pembimbing : Rosita Herawati S.T., M.I.T.

Penguji 1 : R. Setiawan Aji Nugroho S.T., MCompIT., Ph.D

Penguji 2 : Rosita Herawati S.T., M.I.T.

Penguji 3 : Hironimus Leong S.Kom., M.Kom.

Penguji 4 : Y.b. Dwi Setianto

Ketua Program Studi : Rosita Herawati S.T., M.I.T.

Dekan : R. Setiawan Aji Nugroho S.T., MCompIT., Ph.D

Halaman ini merupakan halaman yang sah dan dapat diverifikasi melalui alamat di bawah ini.

sintak.unika.ac.id/skripsi/verifikasi/?id=16.K1.0012

HALAMAN PERNYATAAN PUBLIKASI KARYA ILMIAH UNTUK KEPENTINGAN AKADEMIS

Yang bertanda tangan dibawah ini:

Nama : Melda Nophia

Program Studi : Teknik Informatika

Fakultas : Ilmu Komputer

Jenis Karya : Skripsi

Menyetujui untuk memberikan kepada Universitas Katolik Soegijapranata Semarang Hak Bebas Royalti Noneksklusif atas karya ilmiah yang berjudul “**Implementation of Template Matching Methods for Traffic Signs**” beserta perangkat yang ada (jika diperlukan). Dengan Hak Bebas Royalti Noneksklusif ini Universitas Katolik Soegijapranata berhak menyimpan, mengalihkan media/formatkan, mengelola dalam bentuk pangkalan data (*database*), merawat, dan mempublikasikan tugas akhir ini selama tetap mencantumkan nama saya sebagai penulis / pencipta dan sebagai pemilik Hak Cipta.

Demikian pernyataan ini saya buat dengan sebenarnya.

Semarang, 3 Juli 2020

Yang menyatakan



Melda Nophia

ACKNOWLEDGEMENTS

All praise to Almighty God who never stops pouring out His mercy and compassion on the universe. With God's ease and help, finally the writer can finish the thesis entitled "Implementation of Template Matching Methods for Traffic Signs". In the preparation of this thesis, the author is aware of the limitations, abilities, and knowledge of the author in its preparation. However, these difficulties can be helped by several parties. Therefore, the authors say many thanks to various parties who have provided assistance in the form of energy and thought. Acknowledgments, the author goes to:

1. Mrs. Rosita Herawati S.T., M.I.T. as supervisor at lecturer at Unika Soegijapranata majoring in informatics engineering
2. Lectures in Unika Soegijapranata majoring in informatics engineering for valuable knowledge, guidance, and advices during the years of my study.
3. My big family that could not be mentioned one by one, thanks for all of your support and unconditionally love.
4. My entire best friends, especially for everyone that included in the banana family group, thanks for your support, kindness, and the great and wonderful friendship. Thank you for always being there.
5. A special person who gives me strength and realizes that life is nice and beautiful.

The author is fully aware, that in the preparation of this thesis there are still many shortcomings, even though the writer has tried his best. Therefore, constructive criticism and suggestions, the authors expect to improve the preparation and writing of this thesis. The author hopes that this thesis is useful and can expand and increase knowledge for all of us.

Semarang, July, 03, 2020



Melda Nophia

STATEMENT OF ORIGINALITY

I, the undersigned:

Name : Melda Nophia

ID : 16.K1.0012

Certify that this project was made by myself and not copy or plagiarize from other people, except that in writing expressed to the other article. If it is proven that this project was plagiarizes or copy the other, I am ready to accept a sanction.



Semarang, July, 03, 2020



Melda Nophia
16.K1.0012

ABSTRACT

In daily life, we often find traffic signs that we did not know before. When we do not know what the sign is, we will look for it one by one on Google and it is very time consuming. Not only that, we frequently find some signs in poor condition. Therefore, the problem to be solved are how to detect signs that contain noise and detect various kinds of signs in Indonesia.

With the huge number of traffic signs in Indonesia, we need a method that can process without seeing the large number of templates that need to be processed. therefore, we utilize the template matching method provided by OpenCV which is integrated with the reading process of many templates.

The final results of this project prove that the template matching provided by OpenCV can work enough to detect traffic signs. With several factors that influence, the success rate of the detection process is quite high. Examples of factors that affect detection is the clarity of the image.

Keyword: traffic signs, noise, OpenCV

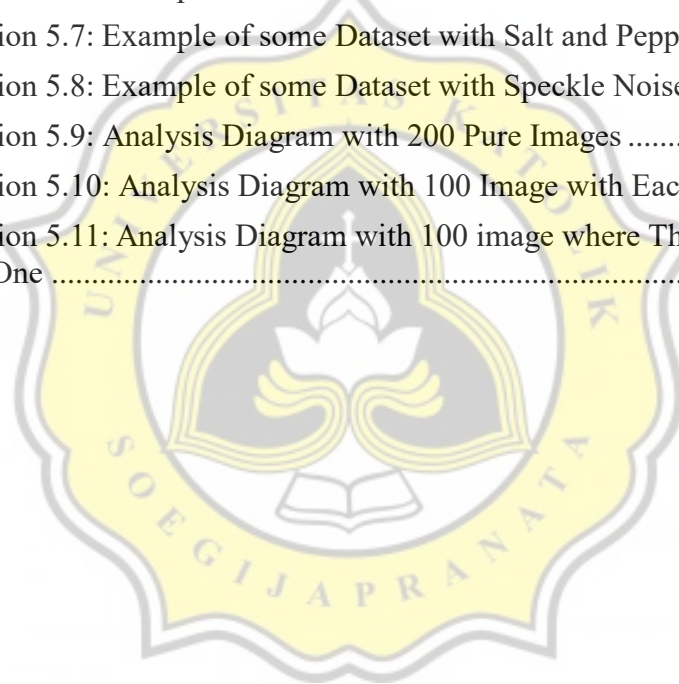


TABLE OF CONTENTS

Cover	i
HALAMAN PERNYATAAN PUBLIKASI KARYA ILMIAH UNTUK KEPENTINGAN AKADEMIS	iii
ACKNOWLEDGEMENTS	iv
STATEMENT OF ORIGINALITY	v
ABSTRACT	vi
TABLE OF CONTENTS	vii
ILLUSTRATION INDEX.....	ix
INDEX OF TABLES.....	x
CHAPTER 1 Introduction.....	1
1.1 Background.....	1
1.2 Problem Formulation.....	2
1.3 Scope	2
1.4 Objective.....	2
CHAPTER 2 Literature Study.....	3
CHAPTER 3 Research Methodology	6
3.1 Research Design.....	6
3.1.1 Collecting Datasets.....	6
3.1.2 Template Matching Method.....	6
3.1.3 Noises.....	7
3.2 Research Process	8
CHAPTER 4 Analysis and Design.....	9
4.1 Analysis	9
4.2 Desain	10
CHAPTER 5 Implementation and Testing	12
5.1 Implementation.....	12
5.2 Testing.....	13
CHAPTER 6 Conclusion	25
References.....	1
Appendix	A

ILLUSTRATION INDEX

Illustration 3.1: Flowchart of Project	8
Illustration 4.1: Example of some output dataset that have tilt on the image ...	10
Illustration 4.2: Flowchart of testing application	10
Illustration 5.1: Square Form of Template	13
Illustration 5.2: Circular Form of Template	16
Illustration 5.3: List of Template Picture	19
Illustration 5.4: List of Template Picture	19
Illustration 5.5: Example of some Dataset that contain pure images	20
Illustration 5.6: Example of some Dataset with Gaussian Blur	20
Illustration 5.7: Example of some Dataset with Salt and Pepper Noise.....	21
Illustration 5.8: Example of some Dataset with Speckle Noise	21
Illustration 5.9: Analysis Diagram with 200 Pure Images	22
Illustration 5.10: Analysis Diagram with 100 Image with Each Noises	23
Illustration 5.11: Analysis Diagram with 100 image where The Template Added One by One	24



INDEX OF TABLES

Table 5.1: Testing Table of Some Data	14
Table 5.2: Testing Table of Some Data	15
Table 5.3: Testing Table of Some Data	16
Table 5.4: Testing Table of Some Data	17

