

## TABLE OF CONTENT

### Contents

<b>APPROVAL PAGE.....</b>	<b>i</b>
<b>STATEMENT OF ORIGINALITY.....</b>	<b>ii</b>
<b>ABSTRACT .....</b>	<b>iii</b>
<b>ABSTRAK.....</b>	<b>iv</b>
<b>GRATITUDE NOTE .....</b>	<b>v</b>
<b>AUTHOR'S FOREWORD .....</b>	<b>vi</b>
<b>TABLE OF CONTENT.....</b>	<b>vii</b>
<b>LIST OF FIGURES .....</b>	<b>x</b>
<b>LIST OF TABLES .....</b>	<b>xi</b>
<b>LIST OF ABBREVIATIONS.....</b>	<b>xii</b>
<b>CHAPTER 1 .....</b>	<b>1</b>
<b>1.1 Background .....</b>	<b>1</b>
<b>1.2 Problem Formulation .....</b>	<b>3</b>
<b>1.3 Objectives .....</b>	<b>3</b>
<b>1.4 Scope of the Work.....</b>	<b>3</b>
<b>1.5 Research Method .....</b>	<b>4</b>
<b>1.6 Bachelor Thesis Organization.....</b>	<b>4</b>
<b>1.6 Milestone.....</b>	<b>5</b>
<b>CHAPTER 2 .....</b>	<b>6</b>
<b>2.1 Internet of Things .....</b>	<b>6</b>
<b>2.2 Smart Parking.....</b>	<b>6</b>
<b>2.3 QR-code .....</b>	<b>7</b>

<b>2.4 Servo.....</b>	<b>8</b>
<b>2.5 ESP32 CAM .....</b>	<b>8</b>
<b>2.7 Raindrop Sensor .....</b>	<b>9</b>
<b>2.8 Arduino IDE.....</b>	<b>10</b>
<b>2.9 Android Studio.....</b>	<b>11</b>
<b>2.10 Quality of Service (QoS).....</b>	<b>11</b>
<b>2.10.1 Packet Loss .....</b>	<b>11</b>
<b>2.10.2 Delay.....</b>	<b>12</b>
<b>2.11 Wireshark.....</b>	<b>12</b>
<b>2.12 Maps.....</b>	<b>13</b>
<b>2.13 Database.....</b>	<b>13</b>
<b>CHAPTER 3 .....</b>	<b>15</b>
<b>3.1 System Design.....</b>	<b>15</b>
<b>3.2 System Support Components.....</b>	<b>16</b>
<b>3.3 Applications and Software .....</b>	<b>16</b>
<b>3.4 Hardware Design .....</b>	<b>17</b>
<b>3.5 Flowchart.....</b>	<b>18</b>
<b>3.5.1 User Flowchart .....</b>	<b>18</b>
<b>3.5.2 Admin Flowchart .....</b>	<b>19</b>
<b>CHAPTER 4 .....</b>	<b>21</b>
<b>4.1 Application Implementation .....</b>	<b>21</b>
<b>4.1.1 Implementation of the Android Application Interface for Users ...</b>	<b>21</b>
<b>4.1.2 Android Application Interface Implementation for Admin.....</b>	<b>27</b>
<b>4.2 Hardware Testing .....</b>	<b>29</b>
<b>4.3 QoS (Quality of Services) Measurement.....</b>	<b>31</b>
<b>4.3.1 Packet Loss .....</b>	<b>31</b>
<b>4.3.2 Delay.....</b>	<b>32</b>

<b>CHAPTER 5 .....</b>	<b>33</b>
<b>5.1 Conclusion .....</b>	<b>33</b>
<b>5.2 Suggestion .....</b>	<b>33</b>
<b>BIBLIOGRAPHY.....</b>	<b>34</b>