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Fuzzy Logic-Based Washing Machine Controller

1. Linguistic Variables

| Fuzzy Set for Input Variable degree_dirt | |
|--|------------------------------|
| Linguistic Terms | Universe of Discourse(0-100) |
| Low | [0,0,50] |
| Medium | [0,50,100] |
| High | [50,100,100] |

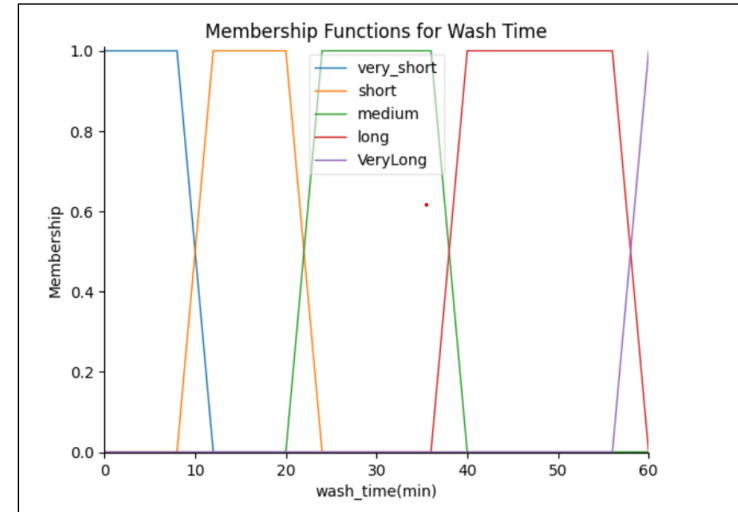
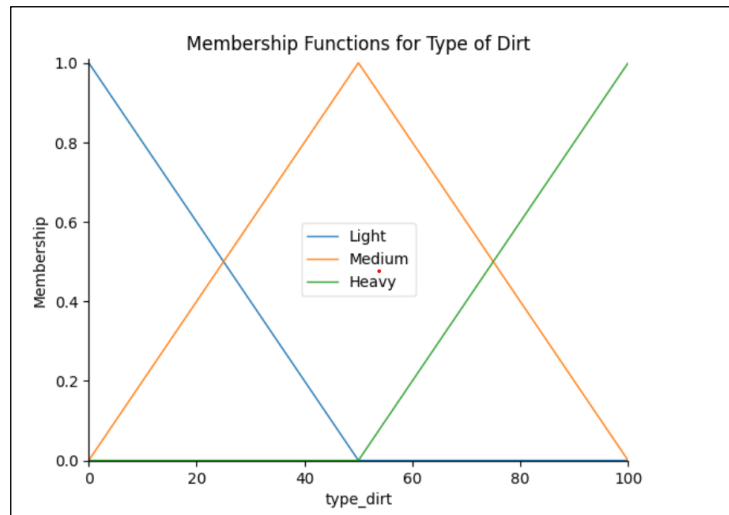
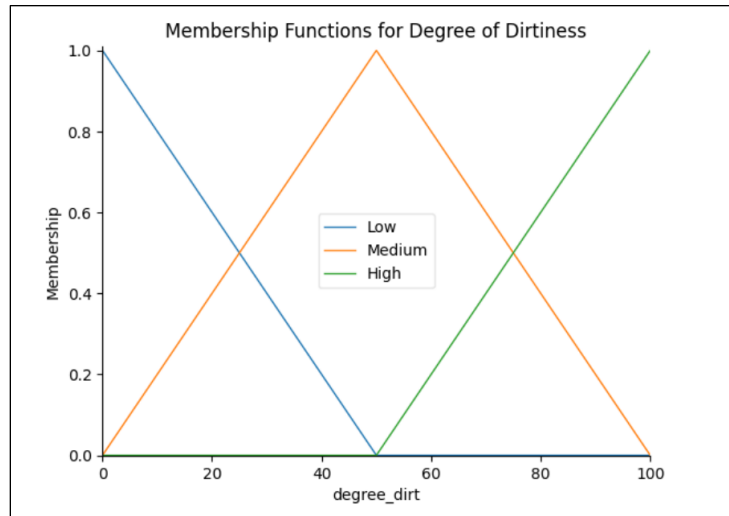
| Fuzzy Set for Input Variable type_dirt | |
|--|------------------------------|
| Linguistic Terms | Universe of Discourse(0-100) |
| Light | [0,0,50] |
| Medium | [0,50,100] |
| Heavy | [50,100,100] |

| Fuzzy Set for Output Variable wash_time | |
|---|------------------------------|
| Linguistic Terms | Universe of Discourse(0-100) |
| Very Short | [0, 0, 8, 12] |
| Short | [8, 12, 20, 24] |
| Medium | [20, 24, 36, 40] |
| Long | [36, 40, 56, 60] |
| Very Long | [56, 60, 61, 61] |

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2. Membership Functions



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3. Membership Functions

| Fuzzy Set of Rules | | |
|--------------------|-------------|------------|
| type_dirt | degree_dirt | wash_time |
| Light | High | medium |
| | Medium | short |
| | Low | very_short |
| Medium | High | long |
| | Medium | medium |
| | Low | medium |
| Heavy | High | very_long |
| | Medium | long |
| | Low | long |