**SCTR’s PUNE INSTITUTE OF COMPUTER TECHNOLOGY, PUNE - 411043**

**Department of Computer Engineering**

**S.No.-27, Pune Satara Road, Dhankawadi, Pune-411043**

Laboratory Practice-IV (AY 2021-22)

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**SCOA MINI PROJECT 2**

**TEAM MEMBERS:** Aniket Rathod - 41204, bhavik Patalia - 41211, Naad Borole – 41215

**TEACHER:** PROF. POOJA KOHOK

**TITLE:**

**Solve Greg Viot’s Fuzzy Cruise Controller using MATLAB Fuzzy Logic Toolbox or Octave or Python**

**1. INTRODUCTION**

**1.1. MOTIVATION**

Fuzzy logic provides a simple yet effective way to solve real life problems with uncertainty. Cruise controlling is a really common problem in which throttle can be determined easily using fuzzy logic.

**1.2. OBJECTIVE**

The objective of the project is to understand the cruise controller problem and find an automated way to determine the throttle of the system. This can be achieved by using a Mamdani fuzzy inference system.

**1.3. SCOPE OF PROJECT**

Cruise controlling is a very popular problem. It can provide the users with an automated way to determine the throttle needed for the system when provided with other parameters such as speed difference and acceleration of the system. This can be extended to more complex problems such as autonomous cars.

**1.4. INTENDED AUDIENCE**

The targeted audience of the project would be research scientists who work on finding optimal solutions to problems which must be automated to reduce manual labour.

**2. OVERALL DESCRIPTION**

**2.1. FUNCTION REQUIREMENTS**

The system only consists of one functional requirement. It expects the speed difference and acceleration as the input and the output would be throttle of the system.

**2.2. NON-FUNCTIONAL REQUIREMENTS**

The non-functional requirements of the system would be to ensure that the system has sufficient processing power to run the algorithm for fuzzy logic.

**2.3. OPERATING ENVIRONMENT**

The algorithm was run on the following environment:

1. Intel i5 7th Generation

2. 16 GB RAM

3. Windows 10 Home

**3. FLOWCHART**

Diagram

Description automatically generated

**4. IMPLEMENTATION AND SCREENSHOTS**

Implementation was done using Python with the help of NumPy for computations.

Graphical user interface, text

Description automatically generated

**5. CONCLUSION**

Thus, we were able to solve the cruise controller problem using fuzzy logic.

**6. REFERENCES**

1. <https://www.youtube.com/c/CodeCrucks/>