



Sri Lanka Institute of Information Technology

PROJECT REGISTRATION FORM

The purpose of this form is to allow final year students of the B.Sc. (Hon) degree program to enlist in the final year project group. Enlisting in a project entails specifying the project title and the details of four members in the group, the internal supervisor (compulsory), external supervisor (may be from the industry) and indicating a brief description of the project. The description of the project entered on this form will not be considered as the formal project proposal. It should however indicate the scope of the project and provide the main potential outcome.

| | |
|----------------|--|
| PROJECT TITLE | Intelligent load balancer for Micro Services |
| RESEARCH GROUP | Virtualization, Cloud-based Integration, Machine Learning, Deep Reinforcement Learning |
| PROJECT NUMBER | |

PROJECT GROUP MEMBER DETAILS:

| | STUDENT NAME | STUDENT NO. | CONTACT NO. | EMAIL ADDRESS |
|---|----------------------------|-------------|-------------|--------------------------|
| 1 | Dinesh Priyankara Liyanage | IT13148478 | 0783448970 | dinesh.pl.dl@gmail.com |
| 2 | Sinthujan Ganeshalingam | IT14056826 | 0772323892 | gsinthujan@yahoo.com |
| 3 | Aleem Mohamed Firnas | IT14064432 | 0770458636 | aleem.firnas22@gmail.com |

SUPERVISOR

| | | |
|------------------------------|-----------|------|
| Dr. Dharshana Kasthurirathna | | |
| Name | Signature | Date |

CO-SUPERVISOR (will be assigned by the Supervisor, if necessary)

| | | |
|------|-----------|------|
| | | |
| Name | Signature | Date |

EXTERNAL SUPERVISOR (if any, may be from the industry)

| | | | | |
|------|-------------|-----------------|-----------------|----------------|
| | | | | |
| Name | Affiliation | Contact Address | Contact Numbers | Signature/Date |

ACCEPTANCE BY CDAP MEMBER

| | | |
|------|-----------|------|
| | | |
| Name | Signature | Date |

PROJECT DETAILS

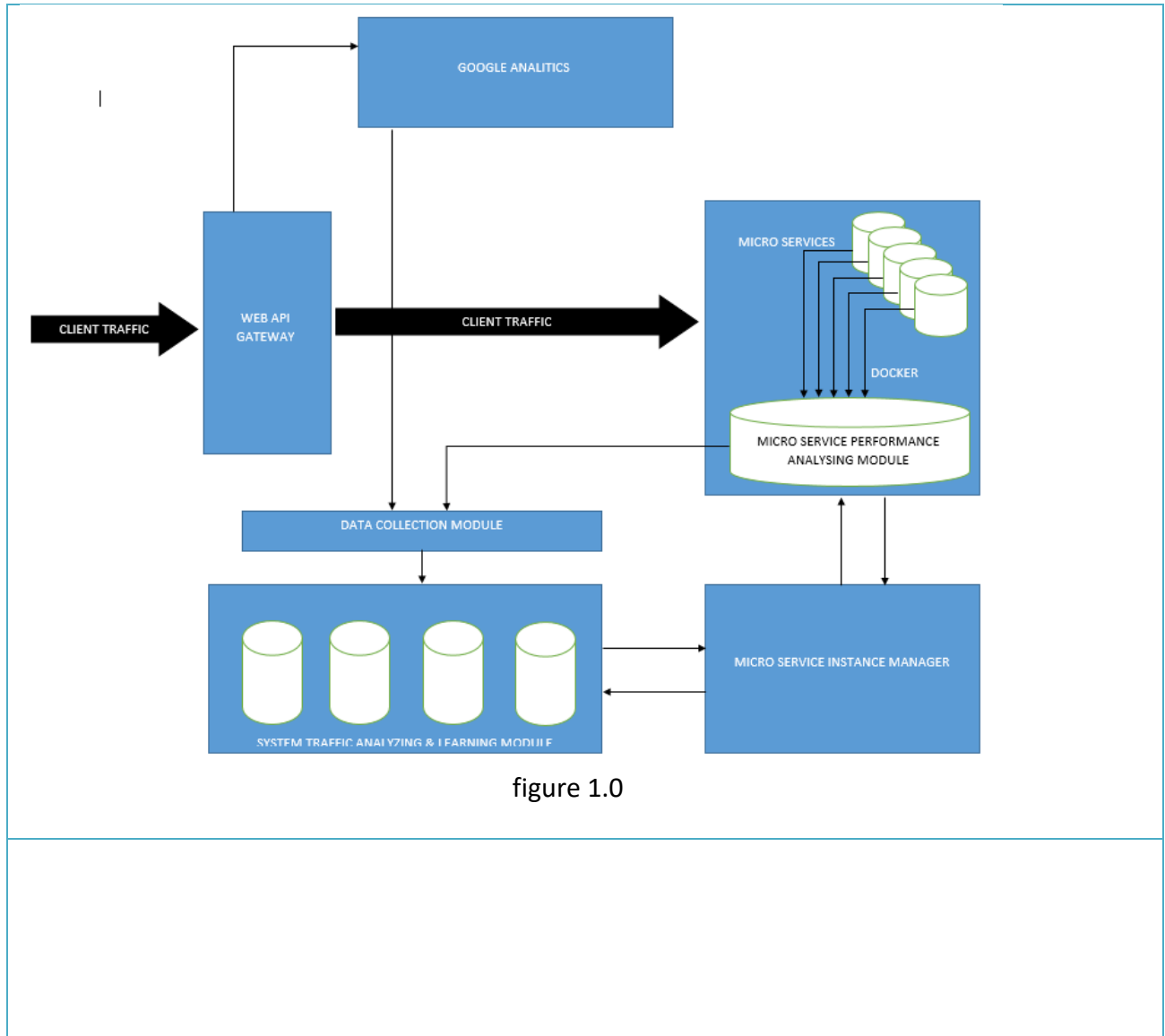
Brief Description of your Research Problem:

With the growth of the internet infrastructure it has become necessary to introduce methods of auto scaling the systems based on requirements. There now exist systems which do not follow the monolith architecture, but rather distribute them into multiple modules / components that will perform a highly focused and completely decoupled task such as Unix Commands ex:- ls, While giving out a complete *Business Scenario* by combining each of these components together.

This architecture is known as the micro service architecture. It is by standard deployed onto a system known as the docker. By normal standards, a single micro service will be deployed as a single docker container but it is possible to run multiple micro services in a single container as well. The problem which we have identified with the existing system is that it allows scalability but this requires more human resources as well careful planning and management which is the main reason that many companies do not go for this architecture even with its advantages. So even if they initially begin by developing a micro service architectural application, the product would end up as a monolith application because they do not possess the required technical skills and human resources to manage the application.

Description of the Solution:

The current system needs heavy human interaction to manage each of these docker containers to achieve the expected performance of the system, Our proposed system will be to implement a load balancer which would be able to automatically scale the containers while not requiring any human interaction at all and distribute the load among multiple running instances of the containers based on the analysis performed from the data gathered using our system.



Main expected outcomes of the project:

Create an automatic scalar which will dynamically manage the containers based on the load thus Saving computational power which could be redirected for other purposes.

WORKLOAD ALLOCATION (Please provide a brief description about the workload allocation)

MEMBER 1

Using the data gathered, identification of business scenarios that are there in the Micro Services application and manage the redundancy of containers on the Docker.

MEMBER 2

Identification of execution patterns inside the Docker based on the requests received and analyze the actual resource allocation for particular request.

MEMBER 3

Analyze the data gathered from the web gateway to predict the request load for the application and virtualize the cloud platform in order to demonstrate the product.

DECLARATION

"We declare that the project would involve material prepared by the Group members and that it would not fully or partially incorporate any material prepared by other persons for a fee or free of charge or that it would include material previously submitted by a candidate for a Degree or Diploma in any other University or Institute of Higher Learning and that, to the best of our knowledge and belief, it would not incorporate any material previously published or written by another person in relation to another project except with prior written approval from the supervisor and/or the coordinator of such project and that such unauthorized reproductions will constitute offences punishable under the SLIIT Regulations.

We are aware, that if we are found guilty for the above mentioned offences or any project related plagiarism, the SLIIT has right to suspend the project at any time and or to suspend us from the examination and or from the Institution for minimum period of one year".

| | STUDENT NAME | STUDENT NO. | SIGNATURE |
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