National College of Ireland

Configuration Manual for Improving Quality of Service Metrics and User Perception in VR-based Cloud Gaming

MSc Research Project
Cloud Computing

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Project Submission Sheet
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Configuration Manual for Improving Quality of Service Metrics and User Perception in VR-based Cloud Gaming

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1 System Requirements

This section provides a high level overview of the system requirements to run the iFogSim-2 as mentioned by Mahmud et al. (2022):
Processor: Intel 10th Generation i5 or above
RAM: 32GB(Recommended)
Storage: 500GB (Minimum)
OS: Windows or MAC

2 Datasets and Tools

Here is the description about the Dataset and Tools required for running the application.

2.1 Dataset

Source: Cloud Gaming Study
URL: `https://cloud-gaming-traces.lhs.loria.fr/`
Ethics Approval: The dataset is part of a project funded by the French organization ANR (No ANR-19-CE25-0012)

2.2 Tools Required

Python3: For running Python scripts related to data processing and machine learning
Pandas Library: For handling and mearging CSV files
Editcap(WireShark Tool): To convert 'pcapng' files to 'csv' format
Java Development Kit: Required to run java code
Eclipse IDE: Required to write and execute Java code
iFogSim-2: A simulation framework to simulate fog computing environments

3 Installation

This installation process is for users with Windows OS

3.1 Install Python 3

- Download Python 3 from `https://www.python.org/downloads/`
- Run the installer and ensure you select the option to add Python to your PATH
- Verify installation by running python –version in the Command Prompt

3.2 Install Pandas Library

- Run the following command in the terminal or command prompt: **pip install pandas**

3.3 Install Editcap(Wireshark)

- Download and install Wireshark from `https://www.wireshark.org/download.html`
- Editcap is installed automatically with Wireshark

3.4 Install JDK

- Download JDK from Oracle Website:`https://www.oracle.com/java/technologies/downloads/#java11`
- Run the installer and set the 'JAVA_HOME' environment vairiable

3.5 Install Eclipse IDE

- Download Eclipse from `https://www.eclipse.org/downloads/`
- Install and launch Eclipse. Ensure you have selected the Java Development environment.

3.6 Setting up iFogSim-2

If you are using the given files, submitted with the reasrch, you can skip this and go straight to Eclipse, load the zip as a project, go to 'src', to 'org.fog.test.prefeval' package and run the 'DynamicProvisioningSimulation.java' file. But if you need to set-up everything yourself, then

- Clone the iFogSim-2 repository from GitHub using **git clone** `https://github.com/Cloudslab/iFogSim.git`
- Open Eclipse and import the project
- Create a new class named **'DynamicProvisioningSimulation.java' under the package 'org.fog.test.perfval'** and copy the code from submitted java file to this file
- Execute the Code

References

Mahmud, R., Pallewatta, S., Goudarzi, M. and Buyya, R. (2022). ifogsim2: An extended ifogsim simulator for mobility, clustering, and microservice management in edge and fog computing environments, *Journal of Systems and Software* **190**: 111351.
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