

An Orchestrator: A Cloud-Based Shared-Memory Multi-User Architecture for Robotic Process Automation


Omprakash Tembhurne, MIT-ADT University, India*

Sonali Milmlile, MIT-ADT University, India

Ganesh R. Pathak, MIT-ADT University, India

Atul O. Thakare, Koneru Lakshmaiah Education Foundation University, India

Abhijeet Thakare, Shri Ramdeobaba College of Engineering and Management, India

 <https://orcid.org/0000-0003-1096-6418>

ABSTRACT

A development of an orchestrator that manages multiusers and shared resources is extremely useful for automaton of jobs on the multiple machines. Many companies such as UiPath, Blue Prism, Automation Anywhere, etc. have their own orchestrator, but their orchestration services have some drawbacks (i.e., huge cost of yearly subscription, lack of user defined flexibility in architecture, and third-party security issues). The manuscript contains the design and analysis of orchestrator using open-source programming language and cloud platform (i.e., Python and OpenStack). The main focus of this paper is design and development of the orchestrator with shared resources and distribute environment management system that help to manage the multiuser, multi-machine environment in an efficient way. The overall examination delights that design and development of inhouse orchestrator application using open-source assets is not only useful in terms of colossal expense slicing, but also the development of free and flexible robotic process automation applications.

KEYWORDS

Multi-Tenancy, Open Stack, Orchestrator, Python, Robotic Process Automation, Unattended Robots

INTRODUCTION

RPA represents Robotic Process Automation. It alludes to “programming robots” which are modified to implement repetitive tasks similarly as a like human administrator. In straightforward words, RPA includes the utilization of programming that emulates human activities while connecting with applications in a PC and achieving rule-based undertakings. RPA can likewise duplicate the activities performed by a client as a workflow. Virtual advanced labor force is characterized as computerized

DOI: 10.4018/ijossp.308792

*Corresponding Author

programming robots which executes a specific repetitive task with improved efficiency. Subsequently, we can say that it is digitized labor force. They are known as virtual force which is simply digitized and play out a similar movement what individual does. The fundamental contrast among RPA and conventional robotization is, RPA robot is prepared using steps which are illustrative rather than using guidance in light of code (Van der Aalst et al., 2018).

The historical backdrop of computerization started over 2300 years prior. The Greeks, the Arabs, and the Egyptians made endeavors to robotize water timekeepers. Toward the start of the nineteenth century,

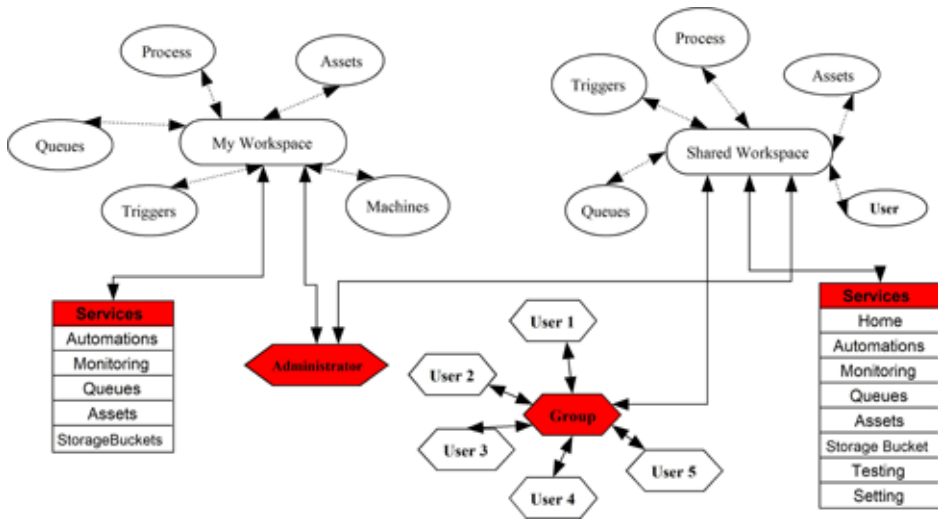
numerous ways for an incorporated control over the many repetitive tasks was discovered. The principal endeavors were straightforward on/off systems.

The advancement of RPA is going on with the incorporation of Latest innovation like Artificial Intelligence, OCR Tools and Enhanced improvement in VM and Citrix Automations etc. The term Automation was instituted by a specialist working for passage engines, DS Harder. The idea of Automation was first utilized in Automobile Industry (Ivančić et al., 2019).

Automation is an approach to further developing the cycle system by eliminating the undesirable or repetitive tasks so the general execution is upgraded. Mechanization impacts the general effectiveness and efficiency of any business cycle by liberating the human laborers from the tedium of redundant work. These assets can be better used in more useful work. The best example of robotization in the business and innovation field is assembling process, which required human work, however is presently turning out to be more mechanized. There are sure exercises in which hazard is implied making life powerless against risk. Robotization has taken over such unsafe assignments in this manner, defending valuable human existence. Robotization likewise prompted an improvement in expense and time for executing any task (Hofmann et al., 2020; Vajgel et al., 2021).

Three innovative progressions that aided in development of process of RPA are: Screen Scrapping, Work Flow Automation, and Artificial Intelligence. 1. **Screen Scraping** programming empowers robots to collaborate with various UI components and archives, for example, .pdf documents, to extricate information for additional handling. The extraction of information is worked with by OCR engines and Computer Vision libraries. 2. **Work Flow Automation** tools give visual portrayals of business, limit the human intervention needed in their execution, and wipe out the excess advances, subsequently expanding their effectiveness. 3. **Artificial Intelligence** comprises of innovations like

Figure 1. Overview of uipath orchestrator application for multi-user shared environment



15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/an-orchestrator/308792

Related Content

Evidence-Based Assurance to Support Process Quality in the F/OSS Community

Anas Tawileh, Omer F. Rana, Wendy Ivinsand Stephen McIntosh (2007). *Emerging Free and Open Source Software Practices* (pp. 120-146).

www.irma-international.org/chapter/evidence-based-assurance-support-process/10085

An Empirical Analysis of Inferences From Commit, Fork, and Branch Rates of Top GitHub Projects

Ekbal Rashidand Mohan Prakash (2022). *International Journal of Open Source Software and Processes* (pp. 1-16).

www.irma-international.org/article/an-empirical-analysis-of-inferences-from-commit-fork-and-branch-rates-of-top-github-projects/300751

Enhancing the Software Clone Detection in BigCloneBench: A Neural Network Approach

Amandeep Kaurand Munish Saini (2021). *International Journal of Open Source Software and Processes* (pp. 17-31).

www.irma-international.org/article/enhancing-the-software-clone-detection-in-bigclonebench/286650

Open Source Web Portals

Vanessa P. Braganholoand Bernardo Miranda (2007). *Handbook of Research on Open Source Software: Technological, Economic, and Social Perspectives* (pp. 211-226).

www.irma-international.org/chapter/open-source-web-portals/21190

What's all the FOSS?: How Freedom and Openness are Changing the Face of Our Educational Landscape

Jason B. Huett, Jason H. Sharpend Kimberly C. Huett (2011). *Free and Open Source Software for E-Learning: Issues, Successes and Challenges* (pp. 24-38).

www.irma-international.org/chapter/all-foss-freedom-openness-changing/46305