**EFFICIENT TIME MANAGEMENT IN THE DIGITAL ERA: REINFORCEMENT LEARNING IN ACTION**

**A Project Report**

***Submitted by:***

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***in partial fulfillment for the award of the degree***

***of***

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

at

****

**Under the esteemed guidance of**

**Mrs. Gummadi Subhashini**

**Assistant Professor**

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**GANGURU, A.P. (INDIA) - 521139**

**AFFILIATED TO JNTUK, KAKINADA, ANDHRA PRADESH (INDIA)**

**APRIL & 2024**

**DECLARATION**

I hereby declare that the project entitled “**EFFICIENT TIME MANAGEMENT IN THE DIGITAL ERA: REINFORCEMENT LEARNING IN ACTION**” submitted for the B. Tech. (CSE) degree is my original work and the project has not formed the basis for the award of any other degree, diploma, fellowship, or any other similar titles.

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**DHANEKULA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

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**CERTIFICATE**

This is to certify that the project titled “**EFFICIENT TIME MANAGEMENT IN THE DIGITAL ERA : REINFORCEMENT LEARNING IN ACTION**” is the bonafide work carried out by **N. Nagasatya Sai (208T1A05G4), T. Srihari (208T1A05I1), K. Bindu Sri (208T1A05F0), L. Manogna Swetha (208T1A05F4), D. Lakshmi Sasi Rekha (208T1A05D8)** are students of B Tech (CSE) of Dhanekula Institute of Engineering and Technology, affiliated to JNT University, Kakinada, AP(India) during the academic year 2020-24, in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology(Computer Science and Engineering) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

**SIGNATURE OF THE GUIDE SIGNATURE OF THE HOD**

Mrs. Gummadi Subhashini Dr. K. Sowmya

(Asst. Professor, CSE) (HOD & Professor)

**EXTERNAL EXAMINER**

**VISION – MISSION - PEOs**

|  |  |
| --- | --- |
| Institute Vision | Pioneering Professional Education through Quality |
| Institute Mission | Providing Quality Education through state-of-art infrastructure, laboratories and committed staff.  Moulding Students as proficient, competent, and socially responsible engineering personnel with ingenious intellect.  Involving faculty members and students in research and development works for betterment of society. |
| Department Vision | To empower students of Computer Science and Engineering Department to be technologically adept, innovative, global citizens possessing human values. |
| Department Mission | Encourage students to become self-motivated and problem-solving individuals.  Prepare students for professional career with academic excellence and leadership skills.  Empower the rural youth with computer education.  Create Centre’s of excellence in Computer Science and Engineering |
| Program Educational Objectives  (PEOs) | Graduates of B.Tech (Computer Science & Engineering) will be able to  **PEO1:** Excel in Professional career by demonstrating the capabilities of solving real time problems through Computer-based system, Machine learning and allied software applications.  **PEO2:** Able to pursue higher education and research.  **PEO3:** Communicate effectively, recognize, and incorporate appropriate tools and technologies in the chosen profession.  **PEO4:** Adapt to technological advancements by continuous learning, team collaboration and decision making. |

**POs**

|  |  |
| --- | --- |
| 1 | **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems. |
| 2 | **Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| 3 | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations |
| 4 | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| 5 | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.’ |
| 6 | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| 7 | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| 8 | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| 9 | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| 10 | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| 11 | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| 12 | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **Program Specific Outcome Statements (PSO`s):** | |
| 1 | Have expertise in algorithms, networking, web applications and software engineering for efficient design of computer-based systems of varying complexity. |
| 2 | Qualify in national international level competitive examinations for successful higher studies and employment. |

**PROJECT MAPPINGS**

| **Batch No:** | **C4** |
| --- | --- |
| **Project Title** | **EFFICIENT TIME MANAGEMENT IN THE DIGITAL ERA: REINFORCEMENT LEARNING IN ACTION** |
| **Project Domain** | **Machine Learning** |
| **Type of the Project** | **Application** |
| **Guide Name** | **Mrs. Gummadi Subhashini** |
| **Student Roll No** | **Student Name** |
| **208T1A05G4** | **N. Nagasatya Sai** |
| **208T1A05I1** | **T. Srihari** |
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| **208T1A05D8** | **D. Lakshmi Sasi Rekha** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CO. No** | **Course Outcomes (COs)** | **POs** | **PSOs** | **Blooms Taxonomy & Level** |
| **R20C501.1** | Identify the real-world problem with a set of requirements to design a solution. | 1,2,3,6, 7, 8, 9, 10, 11 | 1,2 | Level-3 Applying |
| **R20C501.2** | Implement, Test and Validate the solution against the requirements for a given problem. | 1,2,3,4,5,6,7, 9, 10 | 1,2 | Level-4 Analyzing |
| **R20C501.3** | Lead a team as a responsible member in developing software solutions for real world problems and societal issues with ethics. | 1,3,4,8,9,10,11,12 | 1,2 | Level-4  Analyzing |
| **R20C501.4** | Participate in discussions to bring technical and behavioral ideas for good solutions. | 1,2,3,4,5,6,9,10 | 1,2 | Level-5 Evaluating |
| **R20C501.5** | Express ideas with good communication skills during presentations. | 7,9,10,11,12 | 1,2 | Level-6  Creating |
| **R20C501.6** | Learn new technologies to contribute in the software industry for optimal solutions | 3, 11, 12 | 1,2 | Level-6  Creating |

**COURSE OUTCOMES**: At the end of the Course/Subject, the students will be able to

**Course Outcomes vs PO`s Mapping:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Courses Out Comes** | **P01** | **P02** | **P03** | **P04** | **P05** | **P06** | **P07** | **P08** | **P09** | **P10** | **P011** | **P012** |
| **R20C501.1** | 3 | 3 | 3 | - | - | 3 | 3 | 3 | 3 | 3 | 3 | - |
| **R20C501.2** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | - | 3 | 3 | - | - |
| **R20C501.3** | 3 | - | 3 | 3 | - | - | - | 3 | 3 | 3 | 3 | 3 |
| **R20C501.4** | 3 | 3 | 3 | 3 | 3 | 3 | - | - | 3 | 3 | - | - |
| **R20C501.5** | - | - | - | - | - | - | 3 | - | 3 | 3 | 3 | 3 |
| **R20C501.6** | - | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| **Total** | 12 | 9 | 15 | 9 | 6 | 9 | 9 | 6 | 15 | 15 | 12 | 9 |
| **Average** | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

**Justification of Mapping of Course Outcomes with Program Outcomes:**

1. R20C501.1 is strongly linked with PO1, PO2, PO3, PO6, PO7, PO8, PO9, PO10, and PO11 because we are using engineering knowledge, doing problem analysis, design and development of solutions, building the solutions which bridge gap between engineer and society, developing solutions which useful environment and promoting sustainable development, following ethics, performing the tasks both individually and teamwork, communicating for synchronizing the work, managing project and taking the requirements which are financially feasible.
2. R20C501.2 is strongly mapped with PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9 and PO10 because we use engineering concepts and research solutions for time management problem by implement, test and validate for problem. Also, we use the latest tools, follow professional ethics, communicate effectively & manage the project.
3. R20C501.3 is strongly linked with PO1, PO3, PO4, PO8, PO9, PO10, PO11, and PO12 because engineering knowledge is applied to solve time management problems while considering society and the environment. Also, we follow professional ethics, communicate in team for solutions and manage project.
4. R20C501.4 is like PO1, PO2, PO3, PO4, PO5, PO6, PO9, PO10, because we apply engineering knowledge to solve problems, select the right formulas, consider society and the environment, as well as safety and ethics. Also, each individual communicates with one another for good solutions and manages project.
5. R20C501.5 is strongly connected to PO7, PO9, PO10, PO11 and PO12 because use solution created is helpful for the individual in the environment, follow professional rules, work alone or in a team, communicate to solve problems, and understand the importance of learning newer technological change.
6. R20C501.6 is strongly mapped with PO3, PO11, and PO12 because we are designing and developing the solution and learn new technologies to contribute in the software industry for optimal solutions. Also, we understand importance of learning newer technological change.

**Course Outcomes vs PSOs Mapping:**

|  |  |  |
| --- | --- | --- |
| **Courses Outcomes** | **PSO1** | **PSO2** |
| **R20C501.1** | 3 | 3 |
| **R20C501.2** | 3 | 3 |
| **R20C501.3** | 3 | 3 |
| **R20C501.4** | 3 | 3 |
| **R20C501.5** | 3 | 3 |
| **R20C501.6** | 3 | 3 |
| **Total** | 18 | 18 |
| **Average** | 3 | 3 |

**Justification of Mapping of Course Outcomes with Program Specific Outcomes:**

All CO’s are strongly mapped with PSO1 and PSO2 because we have done this project with having expertise in algorithms, networking, web applications and software engineering for efficient design and it is also helpful in national and international level competitive examinations for successful higher studies and employment.

|  |  |
| --- | --- |
| **Mapping Level** | **Mapping Description** |
| 1 | Low Level Mapping with PO & PSO |
| 2 | Moderate Mapping with PO & PSO |
| 3 | High Level Mapping with PO & PSO |

**ACKNOWLEDGEMENT**

Behind every achievement lies an unfathomable sea of gratitude to those who activated it, without whom it would ever have come into existence. To them we lay the words of gratitude imprinted with us.

We would like to thank our respected Principal, **Dr. RAVI KADIYALA** and, **Dr. K. SOWMYA**, Head of the Department, Computer Science and Engineering for their support throughout our major project.

It is our sincere obligation to thank our guide, **Mrs. GUMMADI SUBHASHINI**, Department of Computer Science and Engineering, for her timely valuable guidance and suggestions for this major project.

We would like to express our immense pleasure in expressing an immeasurable sense of gratitude to **Mr. M. RAVIKANTH**, Assistant Professor and Project Coordinators for giving opportunity to make this project a successful one

We also extend our thanks to all the faculty members of the Computer Science & Engineering department for their valuable contributions in this project.

We would like to extend our warm appreciation to all our friends for sharing their knowledge and valuable contributions in this project.

Finally, we express our deep sense of gratitude to our parents for their continuous support throughout our academic career and their encouragement in the completion of this project successfully.

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**ABSTRACT**

In the contemporary digital landscape, effective time management is paramount for individuals across various domains. This project explores a novel approach to tackling time management problems through Actor-Critic Reinforcement learning. Reinforcement learning, a powerful machine learning paradigm, is the core methodology. It serves as the foundation for developing an intelligent time management system that adapts to the unique behaviors and preferences of individuals. This system provides personalized time management strategies, enhancing productivity and overall effectiveness. Unlike conventional methods, which may involve static scheduling models, this project embraces dynamic learning and adaptation through reinforcement learning algorithms. By doing so, it offers a flexible solution for the students to optimally manage their time via efficient planning of tasks. In summary, the project seeks to address the universal issue of efficient time management in the digital age by harnessing the capabilities of reinforcement learning. By introducing this innovative approach, we aim to equip individuals from diverse fields with tools to thrive in an increasingly digitized world.

**Keywords:** Time management, Reinforcement learning, Adaptive Scheduling, through Actor-Critic Reinforcement learning, Create Optimal Schedule.

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