Intelligent Automation (Elective III)

Credits: 03

Teaching Scheme:			Examination Scheme:	
Lecture : 03hr/week				In-Sem : 30 Marks End-Sem : 70 Marks

Course Objectives:

- To align the students' technical knowledge with the current industry trends in the area of RPA
- To explore the various tools related to Intelligent Automation
- To get a hands on experience on the popular automation tools available in the market
- To explore the future of automation by delving deeper into the product algorithms

Course Outcomes:

On completion of the course, the students will be able to:

- Understand the nuances of Intelligent Automation and the technology behind it
- Develop short automation codes to implement the use cases provided in the text book
- Apply the knowledge of Intelligent Automation in solving real time problems
- Qualify as a certified developer by directly appearing for the certification exams

Unit I: Industry 4.0 & the Rise of Intelligent Automation **5 Hrs**

Industry 1.0, Industry 2.0, Industry 3.0, Automation, Computers & Electronics, Industry 4.0, Cyber Physical Systems, Internet of Things, Networks, Digital Workforce, Introduction to AI: Past, Present & Future, Applications of AI, Enterprise use - Automotive, Manufacturing, Healthcare, Retail, Consumer use - Games, Home Automation.

Unit II: Introduction to RPA Platforms **6Hrs**

Variables & Data Types Introduction, Control Flow, Data Manipulation, Scalar variables, Collections, Tables, Text manipulation, Gathering and assembling data, Introduction to Recording: Basic and Desktop Recording, Web Recording, Introduction to Advanced Ui, Interaction Input/ Output Methods, Screen Scraping, Data Scraping, Selectors: Defining Selectors/ Accessing Selectors, Customization and Debugging, Dynamic selectors, Introduction to Image and Text Automation, Image based automation: Basic Citrix recording, Image based automation: Keyboard Automation, Image based automation: Retrieve Information , Introduction to Advanced Citrix Automation, Advanced Citrix Automation: Best practices, Advanced Citrix Automation: Starting Apps, Introduction to Excel and Data Tables, Excel and Data Tables: Basic Interactions, Excel and Data Tables: Data Process, Email Automation, Debugging and Exception handling, Project Organization

Unit III Natural Language Processing (NLP) **6 Hrs**

Introduction to NLP, Understanding the working of NLP, Components of NLP, NLP and writing systems Logographic, Syllabic, Alphabetic, Implementing NLP, Implementation using Machine Learning Implementation using Statistical Inference, NLP Use Cases, Information retrieval & Web Search, Grammar Correction, Question Answering, Text Summarization, Machine Translation, Sentiment analysis, Future of NLP

Unit IV Chat Bot **5 Hrs**

Introduction to Chat bot, Identifying Intent, Identifying Entity, Creating the Entity Hierarchy, Introduction to Semantics, How to give a higher preference for a semantic?, Introduction to Variation, Understanding the Semantic Sequence, Creating an effective semantic sequence

Unit V OCR **4 Hrs**

Introduction to OCR, Understanding Text Recognition Principles, Recognizing Hand Printed Text, Demonstrating ABBY through Usage Scenarios, Core Recognition Mechanisms, Full Page OCR, Zonal/Field Level Recognition, Field level OCR/ ICR/ OMR/ OBR, Introduction to Automation of Document Processing and Data Capture, ABBYY Flexi Capture, Demonstration for Archiving+ Index Field Extraction, Use Cases: 1 National Graduation Exams in Russia, 2 Henry Ford Health System, 3: PepsiCo 4: Fuji Xerox, Introduction to Intelligent OCR- Intelligent Character Recognition

Unit VI RPA Applications **5 Hrs**

RPA case studies such as Invoice processing, reconciliation, client on boarding, Applications beyond RPA

Text Books:

1. Service Automation: Robots and the Future of Work
2. Robotic Process Automation and Risk Mitigation: The Definitive Guide
3. Robotic Process and Cognitive Automation: The Next Phrase

Reference Books:

1. Julia Kirby and Thomas H. Davenport— Only Humans Need Apply: Winners and Losers in the Age of Smart Machines
2. Rob King — Digital Workforce (Reduce Costs and Improve Efficiency using Robotic Process Automation)
3. Byron Reese—The Fourth Age: Smart Robots, Conscious Computers, and the Future of Humanity
4. Paul Daugherty and H. James Wilson —Human + Machine: Reimagining Work in the Age of AI