Carnegie Mellon University

Advances in Robotic Process Automation

(94-886 / 94-486)

Spring 2023 A4 Mini 2 (6 units)
Class times: Thursday 6:30 – 9:20 pm (Eastern time)
Location: In-person (HBH 1007) instruction
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Overview

Today's new generation of sophisticated workforce robots act across business functions, integrate cloud and legacy applications, and are self-managing, scalable and fully dynamic. This course is an introduction into the fundamentals of Robotic Process Automation (RPA) and how it is transforming the world by combining software robotics with the power of artificial intelligence (AI) and machine learning (ML). RPA is software-based robotics that emulate the repetitive work that people do. RPA is changing the way organizations digitize and transform business processes and how they interact with their employees, customers and competitors.

During the course we will dig into the technology, understand how advanced RPA delivers business value, identify processes ripe for this automation, and build an RPA business case. We will also discuss the talent implications of bringing bots to work and the impact it has on the organization and its workforce.

Throughout the course we will be joined by business leaders who will share their experiences and leverage exercises designed to provide hands-on automation opportunities including use of a RPA environment.

https://api.heinz.cmu.edu/courses_api/course_detail/94-886

Course Learnings
The main learning objectives of the course:
1. Describe Intelligent Automation and its impact on the transformation of business
2. Apply the technologies and best practices used to enable process automation
3. Identify areas where Intelligent Automation is applicable and formulate its value (quantify and qualify).

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Recommended Reading/Activities (prior to this class)

Gartner Top Strategic Technology Trends for 2021
https://www.gartner.com/smarterwithgartner/gartner-top-strategic-technology-trends-for-2021/
Video: https://youtu.be/s3rlYWcwdDY

"Will machines replace humans? Daniel Susskind TED 2017
https://www.ted.com/talks/daniel_susskind_3_myths_about_the_future_of_work_and_why_they_re_not_true

The Twelve Mega Themes That Will Drive Our Future World
https://www-forbes-com.cdn.ampproject.org/c/s/www.forbes.com/sites/sarwantsingh/2019/08/28/the-twelve-mega-themes-that-will-drive-our-future-world/amp/

Intelligent Automation: A new era of innovation (Deloitte)
https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/intelligent-automation-a-new-era-of-innovation.html

Intelligent Automation: How Robots and AI Are Redefining The Rules (Forbes)
https://www.forbes.com/sites/cognitiveworld/2019/02/25/intelligent-automation-how-robots-and-ai-are-redefining-the-rules/#3cac99aa1203

The engine at the core of the next-generation operating model (McKinsey)
https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/intelligent-process-automation-the-engine-at-the-core-of-the-next-generation-operating-model

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Course Outline

1. **Introduction to Automation**
   During this session we will look back at the formation of Robotic Process Automation over 10 years ago and its evolution into Intelligent Automation with the addition of cognitive capabilities.

2. **Building the Business Case**
   ROI numbers are 30-200% within the first 12 month. This ROI alone enables companies to self-fund their initiatives. What processes make good business cases? What are the low-hanging fruit for companies to begin their journey? This session will explore the creation of the business case and the different elements for consideration from process brainstorming, candidate selection, and developing different elements of the ROI framework. We will work together to build a case for consideration.

3. **Technology and Toolsets**
   There are many technologies and toolsets available. During this session we will dig into the various stages of RPA and its evolution beyond 1.0, assisted RPA, to where we are today with RPA 4.0 which incorporates cognitive capabilities such as AI/ML and has the ability to handle structured/unstructured data.
   - Part 1 - RPA - We will review the different capabilities of the RPA toolsets available today.
   - Part 2 – Automation's Cognitive Capabilities. What happens when 'bots can take in unstructured/structured data, handle service level agreements regarding priorities, and "learn." This area is leading edge in the ability not only for what 'bots can do within the automation system, but their ability to pair automation with other solutions that will enable true business disruption.

   We will be joined by a special guest – Paul Cavnaugh, a leading RPA Thought Leader for Gartner to learn how AI/Other cognitive capabilities are rapidly enabling the expansion of RPA beyond back-office applications.

4. **Stories from the Field – Best Practices and Lessons Learned**
   CoEs, Scaling the Practice, Best Practices, and Lessons Learned – the flood gates open quickly as an organization realizes the opportunity with automation to reduce costs and create capacity. What is the best way to build and scale an automation practice? What can we learn from the mistakes of others?

   We will be joined by a business leader to discuss their experiences and automation journeys.

5. **Future of Work - Workforce Implications**
   We would be remiss to not address the talent implications of bringing 'bots to work. Traditional RPA had a 3-5:1 person to bot ratio. Cognitive features are driving it closer to 15:1. This dramatic impact will have a substantive impact on the organization and its workforce. HR has an important role to play in mitigating risk and preparing the organization for this type of impact. During this session we will discuss change management, leading a 'bot-based workforce, and workforce planning.

6. **Team Project and Presentation**
   The goal of your final presentation is to demonstrate working knowledge you have gained, working in a small group or team on a project. Teams will work on an actual business process use case focusing on the assessment, design and value of an automation.

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Supplementary Reading:

There are no required texts – all reading materials or links will be posted in Canvas. The following are some supplementary reading and supportive material which can be reviewed on your own:

Intelligent Automation: How Robots and AI are redefining the rules (Forbes)
https://www.forbes.com/sites/cognitiveworld/2019/02/25/intelligent-automation-how-robots-and-ai-are-redefining-the-rules/#3cac99aa1203

Intelligent Automation: A new era of innovation (Deloitte)
https://www2.deloitte.com/us/en/insights/focus/signals-for-strategists/intelligent-automation-a-new-era-of-innovation.html

The business leaders guide to robotic and intelligent automation (Deloitte)
https://www2.deloitte.com/za/en/pages/operations/articles/guide-to-robotic-process-automation-and-intelligent-automation.html

A Framework for RPA Success: Lessons Learned from a Blue Prism Masterclass
https://www.blueprism.com/resources/blog/a-framework-for-rpa-success-lessons-learned-from-a-blue-prism-masterclass/