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&

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MathWorks Virtual Internship Program

Get Started with Artificial Intelligence

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About the Program

{*Please read the entire document}*

MathWorks, makers of MATLAB and Simulink, in collaboration with All India Council for Technical Education (AICTE), has launched this virtual internship program titled 'Get started with Artificial Intelligence (AI)' to upskill 5000 students

Program Webpage published on AICTE webpage:

https://internship.aicte-india.org/mathworks.php

The program revolves around 5 self-paced courses as shown below. It is interactive; however, it requires a MathWorks account to access all the below resources. The steps for the same is shown below.

By enrolling in these courses, students can gain a solid foundation in AI concepts, methods, and tools that will help students get started with AI.

Some of the keyways in which AI courses can help students get started with AI:

Comprehensive Course Content: This AI courses cover the fundamentals of AI concepts such as deep learning, machine learning, and data analysis. Students will also learn how to use MATLAB, a powerful mathematical software tool, to design and execute AI algorithms.

Interactive Learning Experience: The courses are designed with interactive modules, audio-visual presentations, quizzes, and assessments that promote an engaging learning experience. The courses also provide hands-on exercises that allow students to work through real-world AI problems.

Flexibility: The courses can be taken at your own pace and on your own schedule. Students can learn from anywhere at any time, using your computer, tablet, or mobile phone.

E-Certification: By completing the courses, students can earn a e-certificate that verifies your proficiency in AI. This can be added to your resume and used to showcase your skills to potential employers or clients.

In summary, these courses will help students get started with AI by providing them with a comprehensive and interactive learning experience, that will give them a strong foundation in AI concepts and tools.

Duration:

- Available for duration of 4 months(15th May to 15th Sept 2023)
  (Registration closes on 15th Aug 2023)

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Key Highlights:

- Short course on practical techniques and learn by working through an example
- Short videos, hands-on exercises, automated assessments, & immediate feedback
- On completion of each of the five courses, the student will be provided with a e-certificate for each of the courses.
- On 100% completion of all the five courses, students need to submit(process defined below) all the five e-certificate links to get an AICTE-MathWorks joint virtual internship completion certificate.
- Students also have the opportunity to apply for MathWorks Excellence in Innovation projects on completion of the virtual internship

Eligibility:

B.Tech / B.E / M.Tech / M.E / MCA / B.Sc /BCA / Diploma (any specialization)

Perks:

- Joint Virtual Internship e-certificate on 100% completion from AICTE and MathWorks
- Top three campuses with the maximum virtual internships, receives a plaque
- Top three faculty SPOCS to receive an acknowledgement certificate
- Students can submit the certificate to apply for academic credits subject to approval from their college/university or affiliated state/central university as per UGC/AICTE norms and guidelines

Terms of Engagement:

This is the virtual internship program and is NOT to be confused with MathWorks Standard Internship Program (managed through MathWorks career page).

About MathWorks:

MathWorks is the leading developer of mathematical computing software. MATLAB®, the language of engineers and scientists, is a programming environment for algorithm development, data analysis, visualization, and numeric computation. Simulink® is a block diagram environment for simulation and Model-Based Design of multidomain and embedded engineering systems. Engineers and scientists worldwide rely on these products to accelerate the pace of discovery, innovation, and development in automotive, aerospace, communications, electronics, industrial automation, and other industries. MATLAB and Simulink are also fundamental teaching and research tools in the world's universities and learning institutions. Founded in 1984, MathWorks employs more than 5000 people in 16 countries, with headquarters in Natick, Massachusetts, USA. For additional info, visit www.mathworks.com.

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Steps to access virtual internship program, creation of MathWorks account and submission process

Four steps to enrol and complete the MathWorks Virtual Internship Program:

1. Students must complete the registration process on AICTE Virtual Internship portal for MathWorks program

   *{**Note**: I hope all the students have finished the above mentioned activity. Otherwise, we will be unable to issue the final e-certificate. Please register by clicking the "Apply Now" button.*

2. Go through the five courses available in this program

3. Create a MathWorks single sign-on (SSO) account to enrol to complete all the five courses

   *{**Note:** MathWorks SSO credentials can be used for accessing any information on the MathWorks portal in the future}*

4. Submit in all five-course e-certificate links to receive the final joint virtual internship e-certificate

   *{**Note:** Submission process is shared below }*

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Course Details

MathWorks through the virtual internship program offers the below set of self-paced courses which will help the students get ramped up on “Get started with Artificial Intelligence”.

MATLAB® Onramp:

A self-paced online course that teaches the basics of MATLAB®. This course is very beneficial to those who have never used the industry standard tool ‘MATLAB®’ before and is a pre-requisite to the below courses.

Image Processing Onramp:

Learn the basics of practical image processing techniques in MATLAB®. Some of the topics that will be covered are working with Images in MATLAB®, Segmenting an Image, Pre and Postprocessing techniques and Classification and Batch processing image data.

Signal Processing Onramp:

This course provides the basics of practical signal processing techniques in MATLAB®. Use spectral analysis and filtering techniques to pre-process, analyse, and extract information from signal data.

Machine Learning Onramp:

This course provides an interactive introduction to practical machine learning methods. Apply different types of machine learning models for clustering, classification, and regression in MATLAB®. Explore how different techniques can optimize your model performance.

Deep Learning Onramp:

The deep learning tutorial provides an interactive introduction to practical deep learning methods. Through this course students will learn to use deep learning techniques for image classification problems in MATLAB®. In here students get to learn the fundamental of Artificial Intelligence using a deep neural network that they will customize to group your images in pre-defined categories with the support of the industry standard tools like MATLAB®.

For additional information on these courses, go the page18- 22.

Instructions to access the links for the five courses are shared in the next page.

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Instructions to initiate “Get Started with Artificial Intelligence” Courses

Click the below link to find the different courses

[IMPORTANT: BELOW LINKS OR QR CODE SHOULD BE USED TO LAUNCH THE FIVE COURSES]

Course Links	Scan QR Code
MATLAB Onramp	
Image Processing Onramp	
Signal Processing Onramp	
Machine Learning Onramp	
Deep Learning Onramp	

To begin the courses, please make sure you have a MathWorks account. If not, please proceed to the next page.

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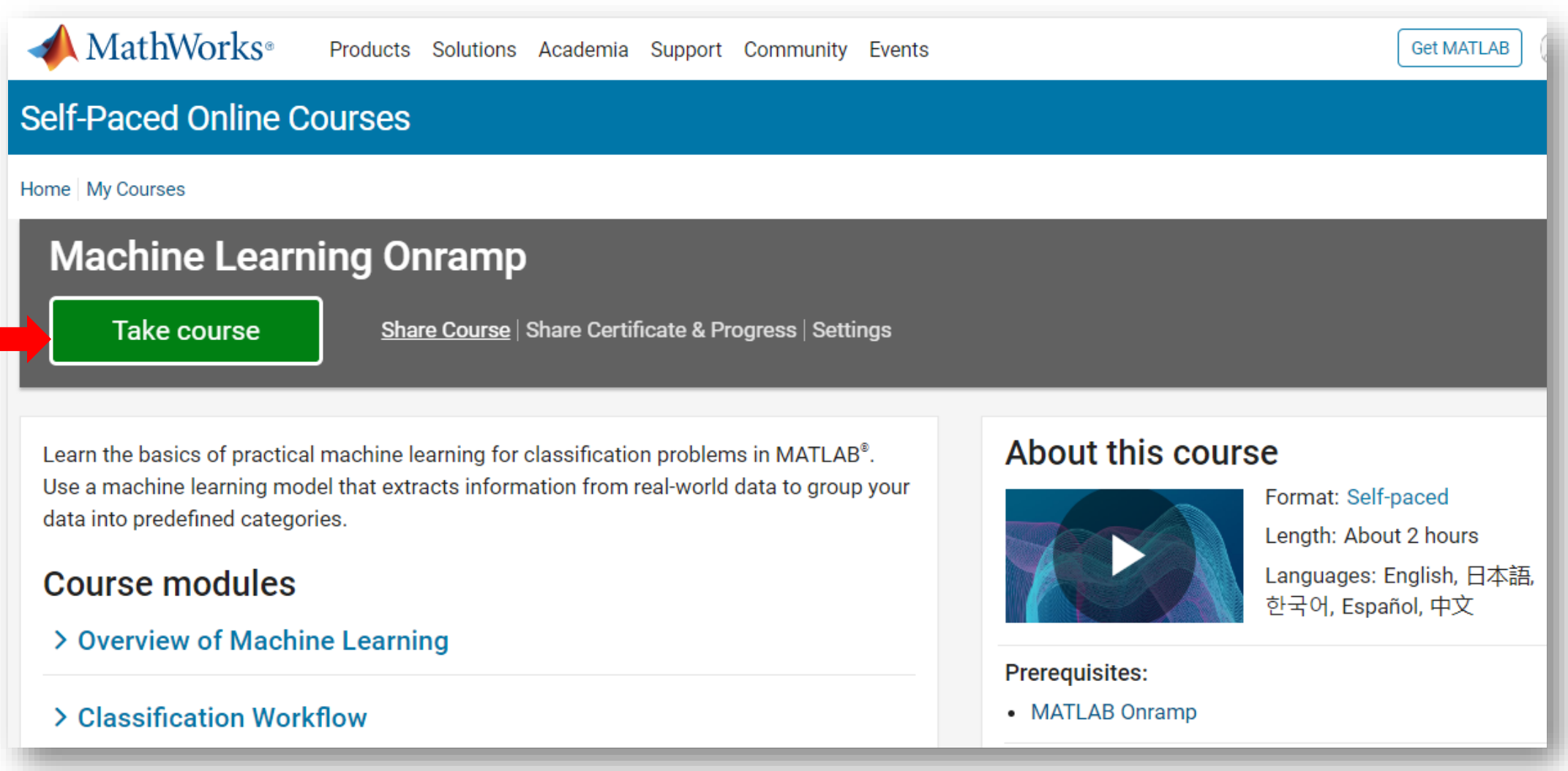
Create a MathWorks Account

IMPORTANT NOTE:

Student need to create MathWorks account only once as it's a Single Sign-On (SSO)]

We're going to choose **Machine Learning Onramp Course** and create an MathWorks account (Single Sign-On account). Then, using the same MathWorks login credentials, students can finish the other courses.

Step 1: On page 12, click on Machine Learning Onramp course link or scan QR Code to launch the course. This opens the below screen.



Click on "**Take Course**". This opens the login screen and create an account screen

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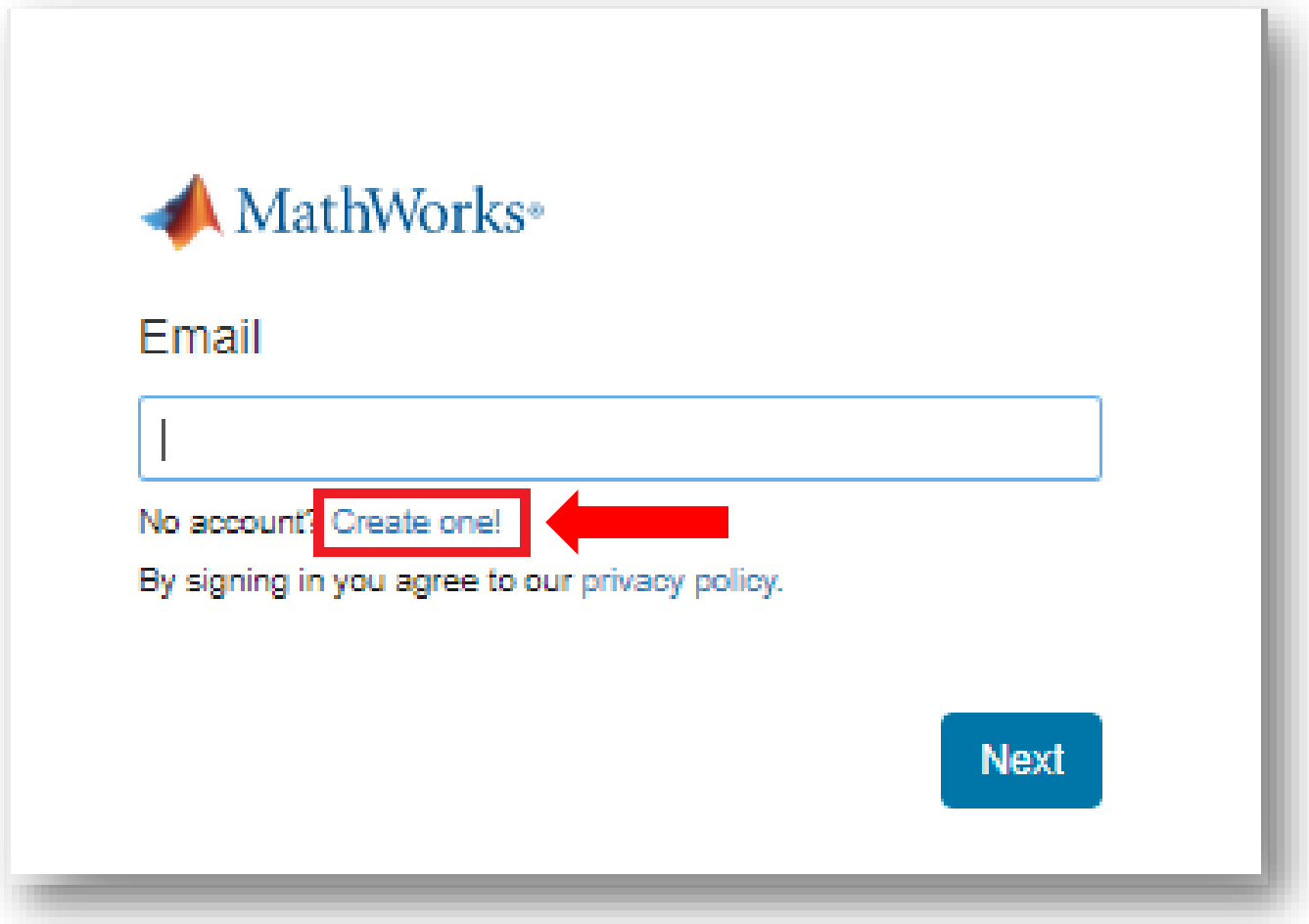
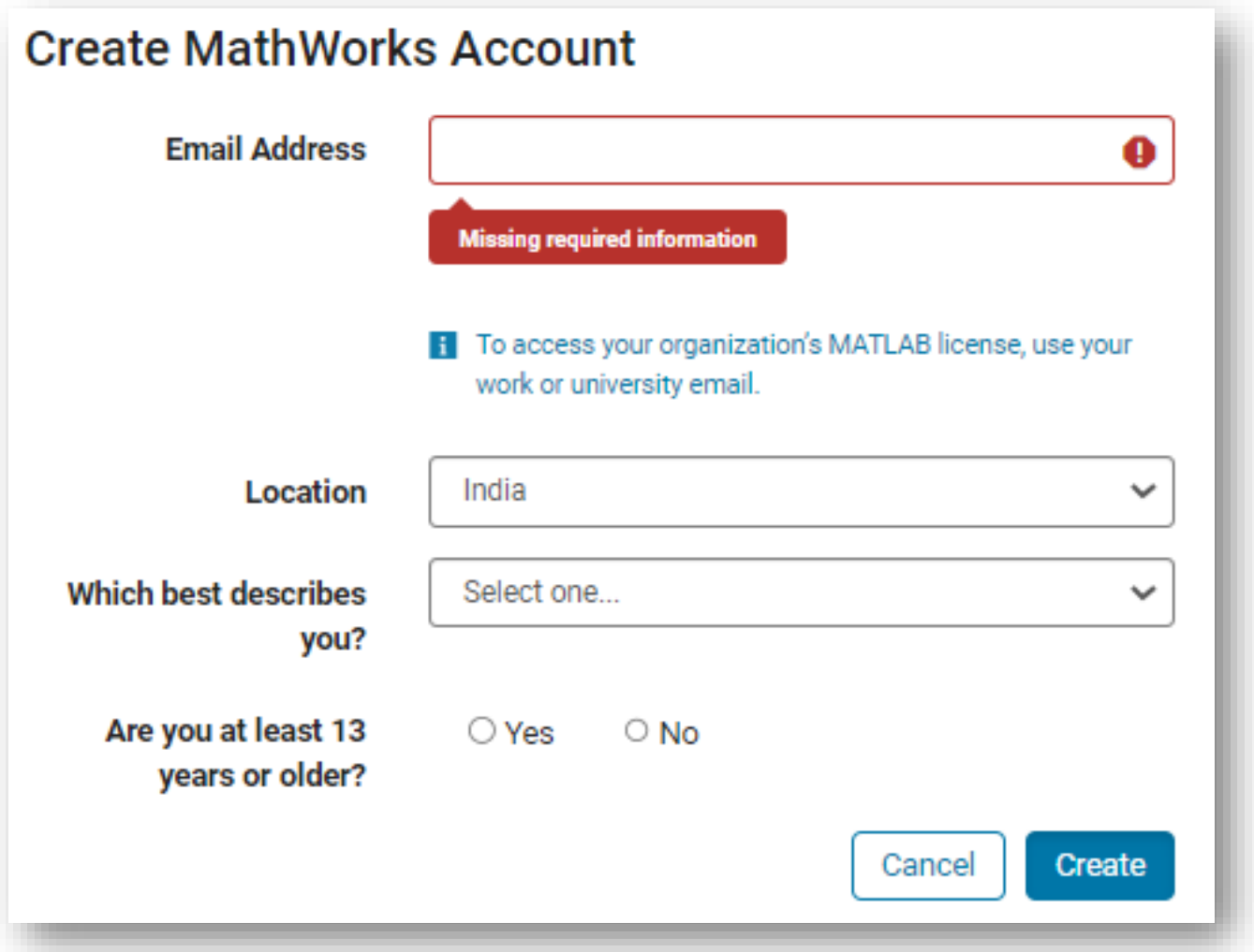
Step 2: Opens the below screen.

If student have already created a MathWorks account, use the registered Email ID and click Next. Then enter Password and this launches the Machine Learning Onramp course home page shown in Step 8. If not.

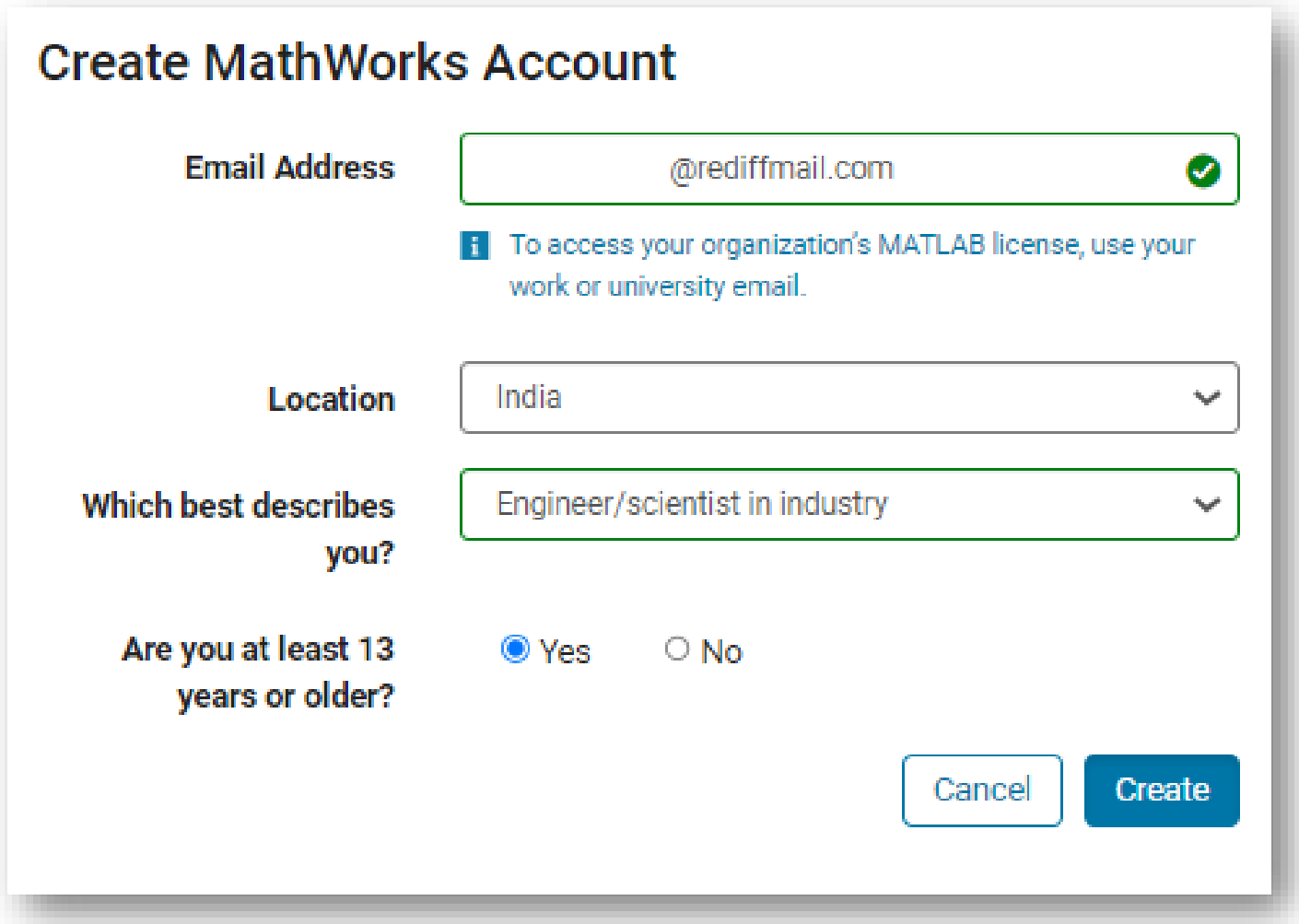


No Account, click on **"Create One!"**

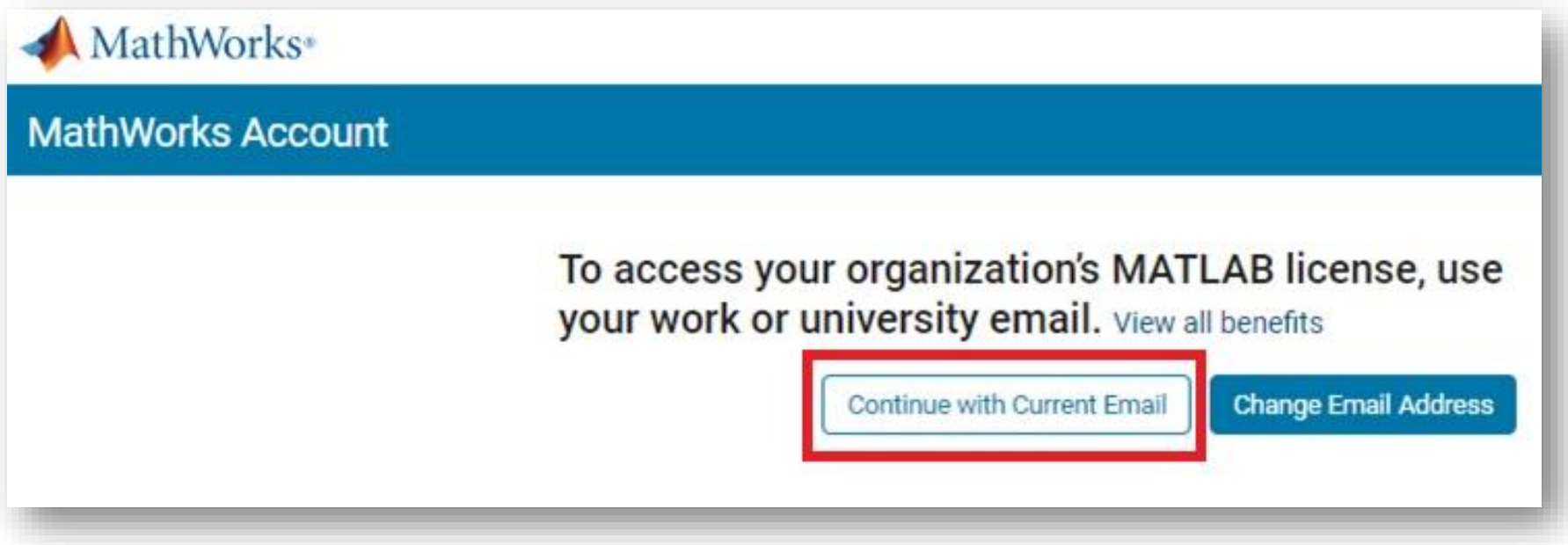
Step 3: Opens the below page



Enter the personal/ organization/institution **“email address, location, first name and last name”.**
Click **“Continue”.**



Step 4: If students are entering personal email ID. You will get a message **“To access your organization’s MATLAB license, use your work or university email.”.** Organizations here means professional organization or institutions/universities with Campus-Wide License access of MATLAB.
Note: If students do not have any idea, please click the “**Continue with Current Email**”.



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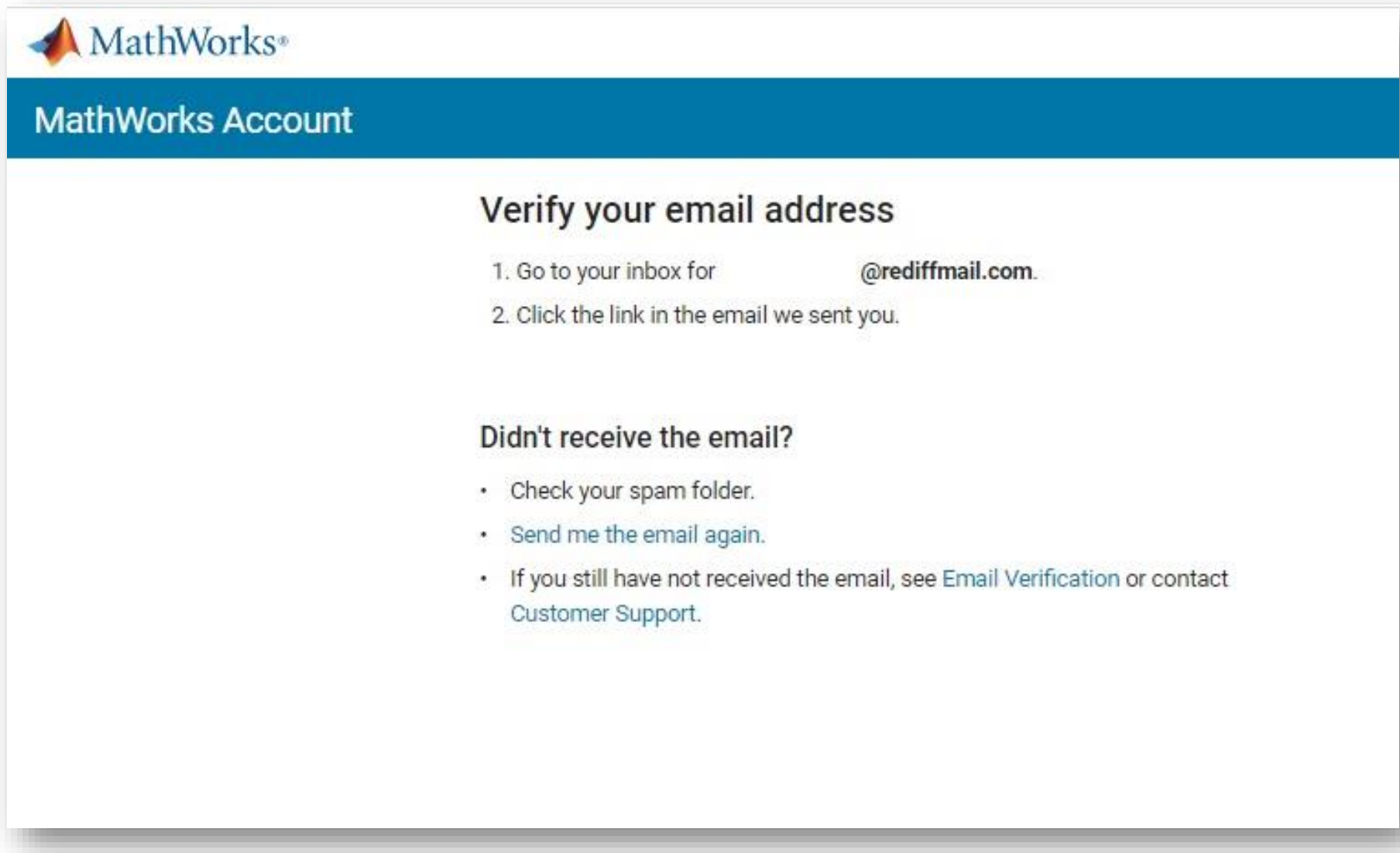
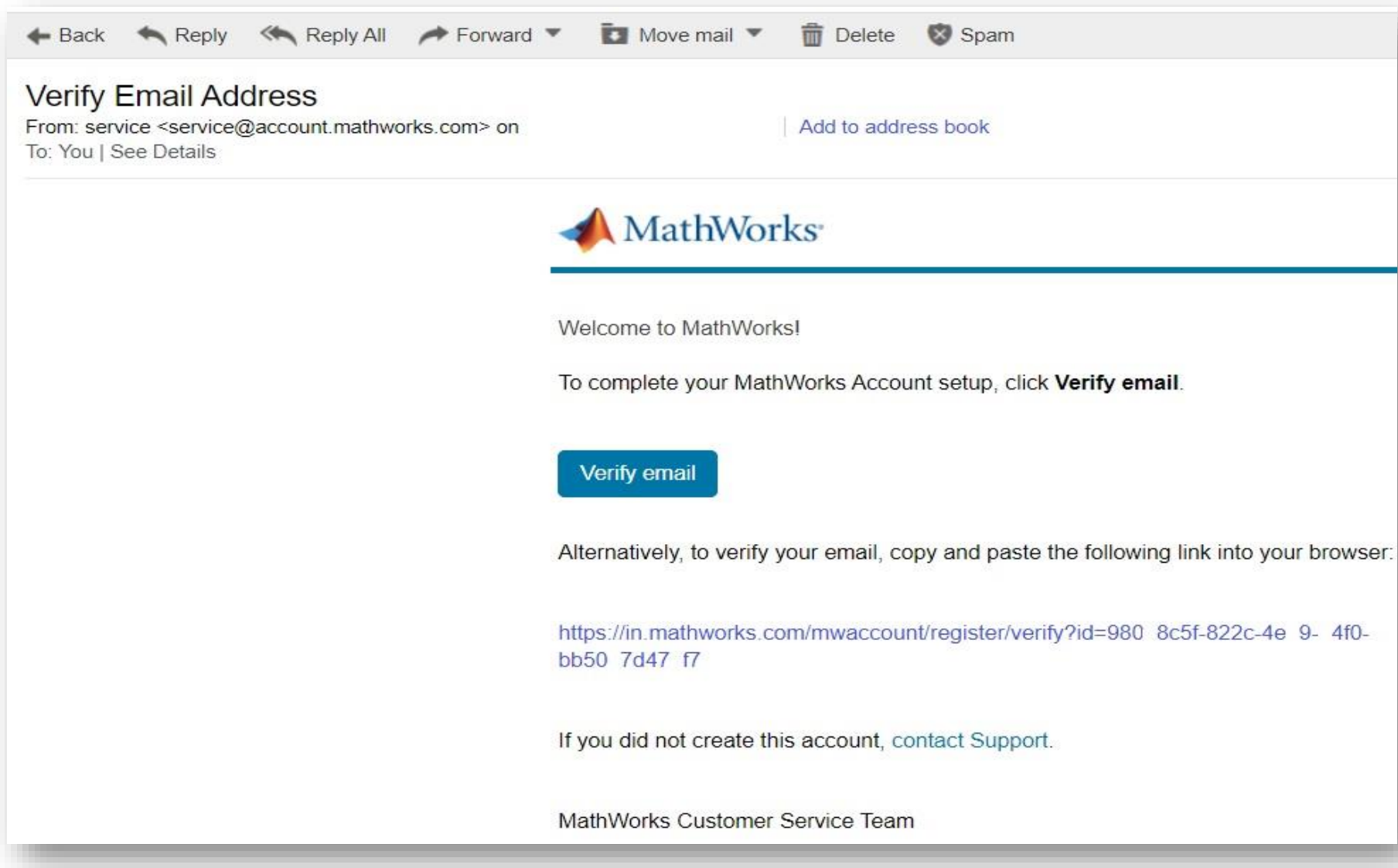
Step 5: Students get a message asking them to sign in into your personal email ID.



Step 6: Received an email as shown in the below image. Click on "**Verify your email**".



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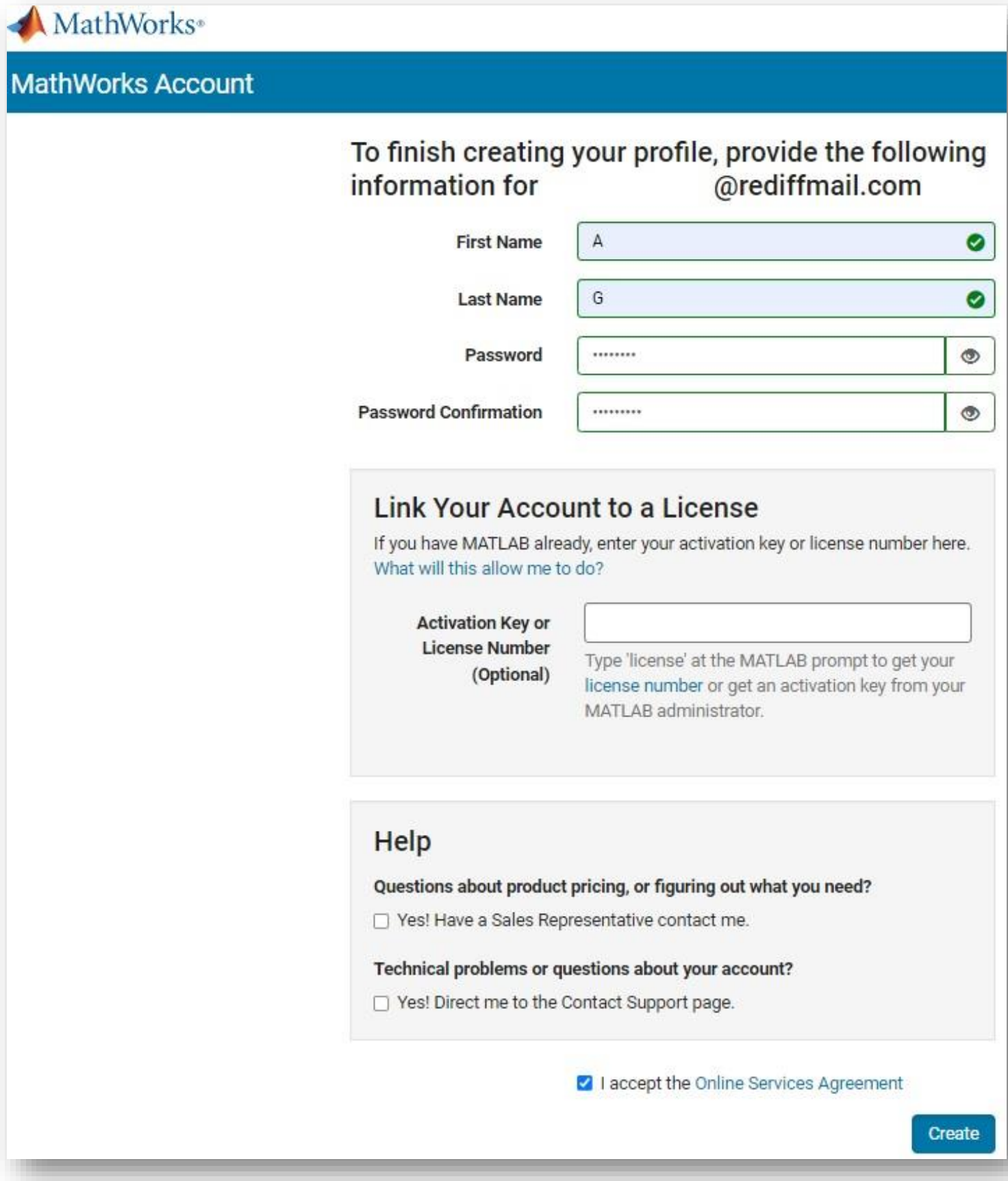
Step 7: Open a page conveying that **“To finish creating your profile, please provide the following information for <user student email ID>”**

- Please fill and the details like First Name, Last Name, Password and Password Confirmation
- Check if your campus has a MATLAB License. If not, move to the “Help”. If needed , enable the options otherwise skip.
- Finally, enable **“I accept the Online Service Agreement”** then click “**Create**”



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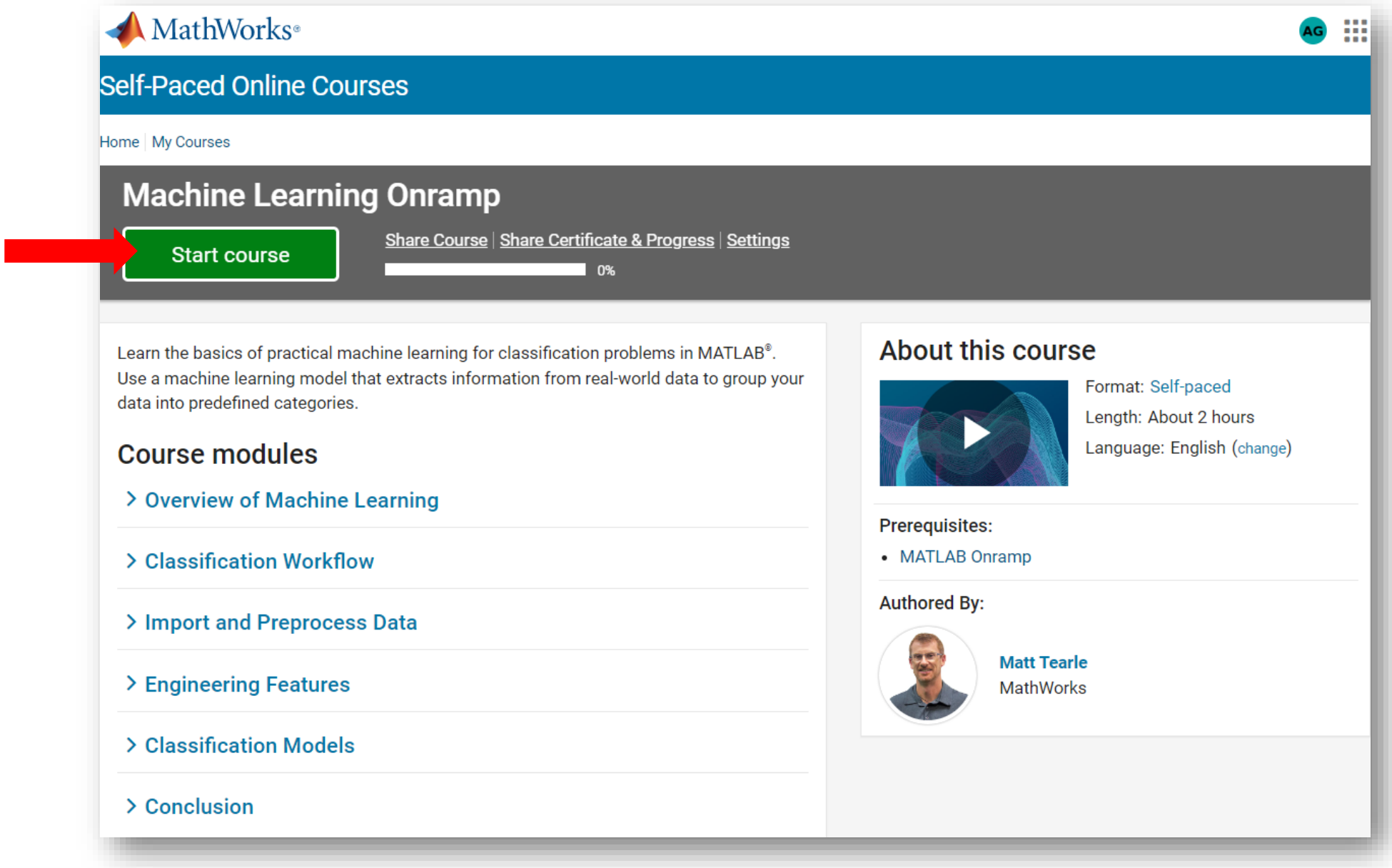
Step 8: The Machine Learning Onramp page appears and click '**Start Course**" to start learning Machine Learning Onramp Course.



Important points:

Students can use the same email ID and password that they have created now to access all the courses that is shared in the page 7.

Recommend to start learning in the below order:

1. **MATLAB® Onramp**
2. **Image Processing Onramp**
3. **Signal Processing Onramp**
4. **Machine Learning Onramp**
5. **Deep Learning Onramp**

Step 9: Finally, on completion of 100% of the Machine Learning Onramp course, please click on the Certificate tab to get your online certificate.

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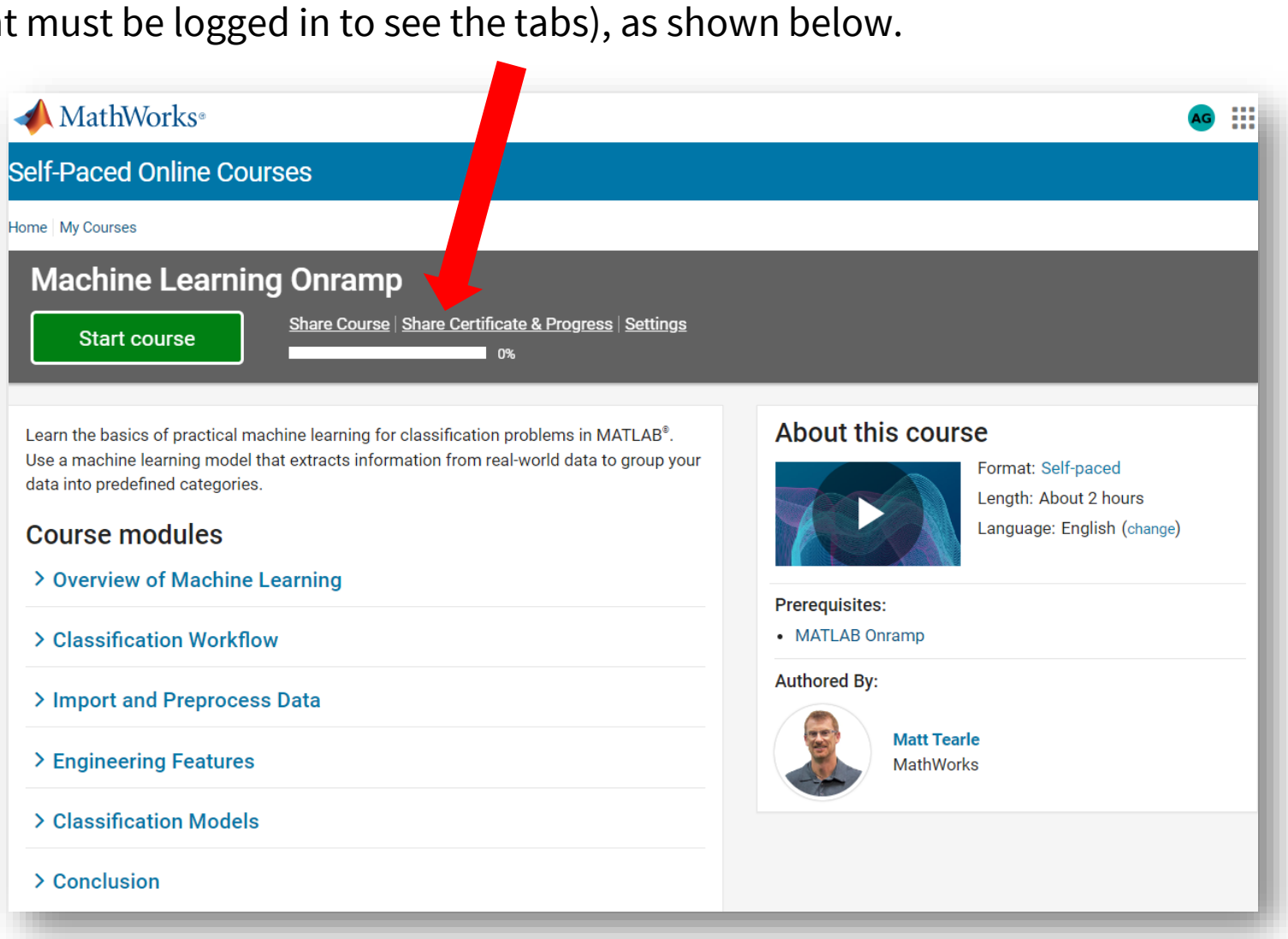
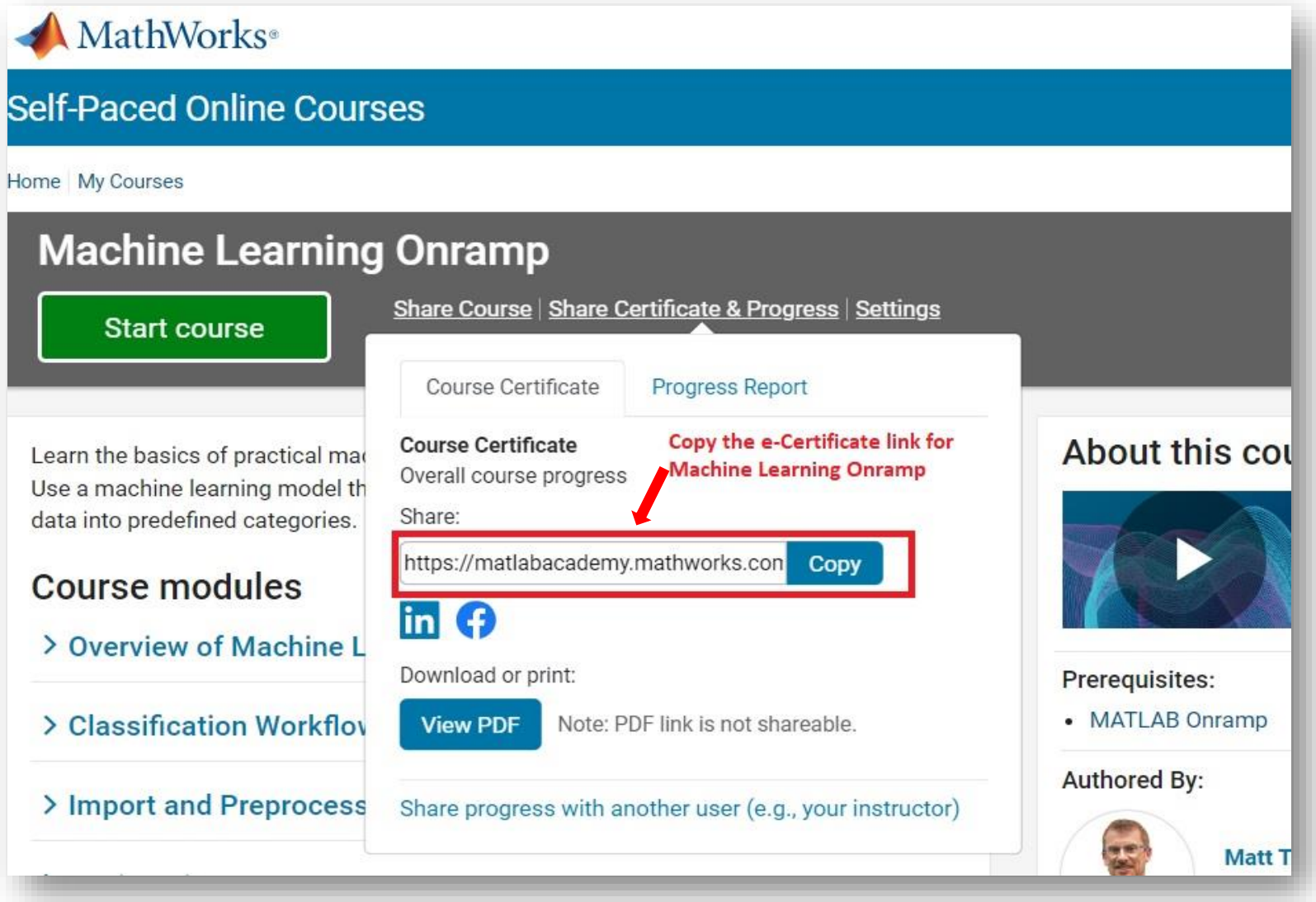
e-Certificate for the courses

Scenario, the student has completed the Machine Learning Course. Needs to get the e-certificate for Machine Learning Onramp course and the e-certificate link which needs to be submitted to AICTE and MathWorks.

Click on the "**Share Certificate & Progress**" tab on the Machine Learning Onramp course home page (student must be logged in to see the tabs), as shown below.



On completion of 100% of the Machine Learning Onramp course, please click on the "**Share Certificate & Progress"** tab to get your e-certificate and the **e-certificate link for this course**.



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Sample: 100% completion e-certificate and e-certificate link

100% course e-certificate

https://matlabacademy.mathworks.com/progress/share/certificate.html?id=2*-19-56-9a1*-48a2-b8-9-2*56e4e*195c6&

100% course e-certificate link

Note: Details on how to capture the 100% completion e-certificate and e-certificate link in page 19.

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Submission process

Students who have completed **ALL** the courses, follow the below steps:

1. To start the submission process, ensure that the **student completes 100% of all the five courses**

2. Follow the steps provided in page 14 to capture the 100% completion e-certificate links for all the courses

3. Open the google below form and fill the necessary details and submit

https://forms.gle/GxRrnFH12b6UcG5c7

Scan QR Code

4. AICTE and MathWorks will review these submission and joint e-certificate for the MathWorks Virtual Internship Program will be awarded. Request your patience and cooperation, while we review the submissions.

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Thank You
&
Best Wishes

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Appendix
Additional Information on these Courses

MATLAB Onramp

MATLAB Onramp is an online course offered by MathWorks that is designed to help students get started with the MATLAB programming language. MATLAB is a high-level programming language that is widely used in scientific and engineering applications, including Artificial Intelligence (AI).

The MATLAB Onramp course is divided into several modules and covers the fundamental concepts of MATLAB programming. Some of the key topics covered in the course include:

- MATLAB Environment: This module covers the basic features and user interface of the MATLAB software, including how to enter and execute commands, generate plots, and create scripts and functions.

- MATLAB Syntax: This module covers the syntax of MATLAB programming language, including data types, operators, arrays, and control structures.

- MATLAB Programming: This module covers how to use MATLAB programming to perform mathematical and scientific computations, including linear algebra operations, signal processing, and data analysis.

- MATLAB Graphics: This module covers how to create and customize graphics in MATLAB, including 2D and 3D plots, surface plots, and animations.

One of the unique features of the MATLAB Onramp course is that it provides a hands-on learning experience. Students will have access to a MATLAB environment in a web browser, where they can practice the concepts, you learn in the course by working through exercises and quizzes.

Overall, MATLAB Onramp is an excellent resource for anyone looking to get started with MATLAB programming, including those interested in AI. By completing the course, they will gain a strong foundation in MATLAB programming, which will be invaluable in your AI endeavors.

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Image Processing Onramp

The Image Processing Onramp is an online course offered by MathWorks that is designed to help students get started with image processing using MATLAB. Image processing is an essential part of many scientific and engineering applications, including computer vision, medical imaging, and remote sensing.

The Image Processing Onramp course consists of several modules that cover the fundamental concepts of image processing. Some of the key topics covered in the course include:

- Introduction to Image Processing: This module covers the basics of digital images, including image representation, pixel values, and color spaces.

- Image Processing with MATLAB: In this module, they will learn how to use MATLAB to load, manipulate, and display images.

- Image Enhancement: This module covers techniques for improving the appearance and quality of images, including filtering, contrast adjustment, and sharpening.

- Image Restoration: This module covers methods for restoring images that have been degraded by noise, blur, or other sources of distortion.

- Segmentation and Feature Extraction: This module covers techniques for dividing an image into regions and extracting features, such as edges, corners, and textures.

One of the unique features of the Image Processing Onramp course is that it provides a hands-on learning experience. They will have access to a MATLAB environment in a web browser, where they can practice the concepts, you learn in the course by working through exercises and quizzes.

Overall, the Image Processing Onramp course is an excellent resource for anyone looking to get started with image processing using MATLAB. By completing the course, they will gain a strong foundation in the fundamental concepts and techniques of image processing, which will be invaluable in your scientific, engineering, or medical image processing endeavors.

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Signal Processing Onramp

MathWorks Signal Processing Onramp is an online course designed to help users get started with digital signal processing using MATLAB. Digital signal processing is a key technique used in numerous engineering and scientific applications such as audio processing, speech recognition, and image processing.

So how can the Signal Processing Onramp course help students get started with digital signal processing?

- Introduction to Digital Signal Processing: This module provides an introduction to the key concepts of digital signal processing, including sampling, quantization, filtering, and frequency analysis.

- Signal Processing with MATLAB: The course will provide them with a basic tutorial on using MATLAB for signal processing, including how to load signals, preprocess signals, create algorithms, and create relevant visualizations.

- Time and Frequency Domain Analysis: This module covers time domain analysis and frequency domain analysis techniques required in signal processing, including fast Fourier transform (FFT), short-time Fourier transforms (STFT), and time-frequency analysis.

- Filtering and Spectral Analysis: This module covers digital filter design techniques and various types of filters including FIR, IIR, low-pass filters and high-pass filters.

- Signal Processing Applications: This module focuses on MATLAB's DSP system toolbox with use cases that involve noise cancellation, echo cancellation, and audio processing.

By the end of this course, they'll have a solid understanding of the fundamental concepts of digital signal processing and how to apply them using MATLAB. The core concepts learned can be applied in various applications such as speech recognition, audio processing, robotics, and medical signal processing. Signal Processing Onramp provides a flexible, interactive learning experience to get them started with DSP fundamentals quickly and easily.

Machine Learning Onramp

MathWorks Machine Learning Onramp is an online course designed for beginners in machine learning. It provides an introduction to machine learning concepts and methods, as well as practical experience in applying these methods using MATLAB. Machine learning is a critical aspect of artificial intelligence (AI) and is used in various engineering and scientific applications, such as computer vision, natural language processing, and robotics.

Some of the keyways in which Machine Learning Onramp can help students get started with machine learning:

1.Introduction to Machine Learning: This module provides a broad overview of machine learning and its various types, such as supervised, unsupervised, and reinforcement learning.

2.Machine Learning Techniques: The course covers fundamental techniques used in machine learning, such as feature engineering, classification, regression, clustering, and dimensionality reduction.

3.Machine Learning with MATLAB: The course provides hands-on experience with MATLAB, which is a popular scientific computing tool in both academia and industry. They will learn how to use MATLAB to load data, preprocess data, build and evaluate machine learning models.

4.Practical Applications of Machine Learning: The course demonstrates practical use cases of machine learning, such as spam detection, image classification, sentiment analysis, and recommender systems.

By the end of the course, they will have gained a solid understanding of the various machine learning concepts and tools used in the field. You will also be able to apply these concepts to real-world use cases using MATLAB. Machine Learning Onramp provides an interactive learning experience with exercises, quizzes, and practical machine learning examples.

Overall, Machine Learning Onramp is an excellent resource for anyone looking to get started with machine learning. Whether you're an engineering student, industry professional, or someone interested in the latest AI technologies, this course will get you up to speed with the fundamentals of machine learning and set you on a path to becoming a machine learning expert.

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Deep Learning Onramp

The Deep Learning Onramp is an online course offered by MathWorks that is designed to help beginners get started with deep learning using MATLAB. Deep learning is an advanced part of machine learning and AI that involves training artificial neural networks to learn patterns from data.

The Deep Learning Onramp course consists of several modules that cover fundamental concepts in deep learning. Some of the key topics covered include:

1.Introduction to Deep Learning: This module covers the basics of deep learning, including artificial neural networks, activation functions, and training methods.

2.Neural Networks with MATLAB: In this module, students will learn how to use MATLAB to create, train and evaluate artificial neural networks.

3.Convolutional Neural Networks (CNNs): This module covers CNNs, a type of neural network commonly used in image processing and pattern recognition applications.

4.Recurrent Neural Networks (RNNs): This module covers RNNs, a type of neural network that can handle sequential data, making them useful for natural language processing and speech recognition.

5.Transfer Learning: This module teaches the concept of reusing pre-trained neural network models and adapting them for specific tasks.

One of the unique features of the Deep Learning Onramp course is that it provides a hands-on learning experience. They will have access to a MATLAB environment in a web browser, where they can practice the concepts, learn in the course by working through exercises and quizzes with provided solutions.

Overall, the Deep Learning Onramp course is an excellent resource for anyone looking to get started with deep learning using MATLAB. By completing the course, they will gain a strong foundation in the fundamental concepts and techniques of deep learning, which will be invaluable in your future artificial intelligence endeavors.

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