

Timestamp	Name	Designation	Organization	Phone Number	Email ID	Choose your Category
2021/03/25 11:45:06 AM	MDP	AP	VRSEC	9493595814	mdprakash82@gmail.com	Faculty
2021/03/25 1:45:08 PM	Dr.Â N. SATYANARAYANA MURTHY	ASSOCIATE PROFESSOR	V R SIDDHARTHA ENGG COLLEGE	9.20E+11	nsmmit@gmail.com	Faculty
2021/03/25 2:12:57 PM	Gi Suneel Miriyala	Assistant professor	BAPATLA ENGINEERING COLLEGE	9959545193	suneel.miriyala@gmail.com	Faculty
2021/03/26 5:25:07 PM	Gi RAJ KUMAR JAISWAL	ASSISTANT PROFESSOR	DVR & Dr HS MIC COLLEGE OF TECHNOLOGY KAN	8555066938	jswalpondiuni@gmail.com	Faculty
2021/03/26 9:13:20 PM	Gi YARLAGADDA SRUTHI	Assistant professor	BAPATLA ENGINEERING COLLEGE	9030631990	ysruthi30@gmail.com	Faculty
2021/03/26 9:20:19 PM	Gi IDRISH SHAIK	Assistant professor	Bapatla Engineering College	9866600354	idrishshaik@gmail.com	Faculty
2021/03/26 11:48:25 PM	(Dr.I.Krishna Pavan	Assistant Professor	Bapatla Engineering College	8473995005	dr.kpinala@gmail.com	Faculty
2021/03/27 11:17:46 AM	(K. Sneha	Assistant Professor	Velagapudi Ramakrishna Siddhartha Engineering	9640028639	snehak@vrsiddhartha.ac.in	Faculty
2021/03/27 11:25:11 AM	(Chakravarthy Gunturu	Assistant professor	VRSEC	9032788152	chakri463@vrsiddhartha.ac.in	Faculty
2021/03/27 11:27:02 AM	(Sunitha munappa	Assistant professor	VR SIDDHARTHA ENGINEERING COLLEGE	8500721337	munappa.sunitha@gmail.com	Faculty
2021/03/27 11:27:14 AM	(Shaik Fayaz Ahamed	associate professor	V R Siddharth Engineering College	9866462333	fayaz@vrsiddhartha.ac.in	Faculty
2021/03/27 11:27:49 AM	(Dr. P. Sarah Suhasini	Associate Professor	V R Siddhartha Engineering College	9848143804	sarahsuhasini@vrsiddhartha.ac.in	Faculty
2021/03/27 11:28:05 AM	(Naga Sunanda	Assistant Professor	V R Siddhartha	7799165412	naga.sunanda5@gmail.com	Faculty
2021/03/27 11:38:29 AM	(Padarti Vijaya Kumar	Assistant Professor	Velagapudi Ramakrishna Siddhartha Engineering	9391297597	vijayakumar.padarti@vrsiddhartha.ac.in	Faculty
2021/03/27 11:45:01 AM	(BADATALA OOH	Assistant professor	DHANEKULA INSTITUTE OF ENGINEERING & TECI	8341727349	oohabadatala9@gmail.com	Faculty
2021/03/27 11:48:16 AM	(Dr. B LAKSHMI SIRISHA	Associate professor	V R Siddhartha engineering college	8099081212	suravarapuls@yahoo.co.in	Faculty
2021/03/27 11:48:29 AM	(Dr. K. Shri Ramtej	Assistant Professor	Velagapudi Ramakrishna Siddhartha Engineering	9441755455	shriramtej@gmail.com	Faculty
2021/03/27 11:58:26 AM	(Premchand	Assistant Professor	VRSEC	8179179596	pcpremechand109@gmail.com	Faculty
2021/03/27 12:03:53 PM	(A Ravi Raja	Assistant professor	Vrsec	9493149772	ravirajaakurathi@gmail.com	Faculty
2021/03/27 12:21:58 PM	(Nandigam Monika	Assistant professor	Gudlavalleru Engineering College	6300958581	monika.nandigam86@gmail.com	Faculty
2021/03/27 12:25:35 PM	(Dr Ananda Babu T	Assistant Professor	Gudlavalleru Engineering College	8885199753	anand.mits11@gmail.com	Faculty
2021/03/27 12:27:37 PM	(VENKATA RATNA PRABHA K	Assistant Professor	ECE	9908605198	ratnaprabhakv@gmail.com	Faculty
2021/03/27 12:30:15 PM	(Dr M Padmaja	Professor	VR Siddhartha Engineering College	9494049281	drpadmaja@vrsiddhartha.ac.in	Faculty
2021/03/27 12:40:20 PM	(P. Rama Krishna	Assistant Professor	Gudlavalleru Engineering College	8501991914	Rk9.mnnit@gmail.com	Faculty
2021/03/27 12:43:17 PM	(Ma V Hari Madhavi	Assistant professor	VR SIDDHARTHA ENGINEERING COLLEGE	8870281340	harisriramdas@gmail.com	Faculty
2021/03/27 2:17:26 PM	Gi Dr Venkata Sainath Gupta T	Assistant professor	VRSEC, VIJAYAWADA	8149215112	sainathgupta@vrsiddhartha.ac.in	Faculty
2021/03/27 2:34:39 PM	Gi Aare Gopal	Associate Professor	Nalla Narasimha Reddy Education Society's Group	9491330710	gopal2311.a@gmail.com	Faculty
2021/03/27 3:57:48 PM	Gi Sunitha mandava	Assistant professor	R.V.R&J.C.C.E	9573297310	msunitha@rvrc.ac.in	Faculty
2021/03/27 4:24:16 PM	Gi Ramesh babu sadineni	Assistant professor	Rvr&jc college of engineering	9.19E+11	srameshbabu@rvrc.ac.in	Faculty
2021/03/27 5:46:52 PM	Gi Koritala nagavardhani	Assistant Professor	RVR&JCCE	8186093055	Koritala.nagavardhani@gmail.com	Faculty
2021/03/27 8:09:52 PM	Gi Bandi Alekhya	Assistant professor	vrsec	9542735073	alekhya@vrsiddhartha.ac.in	Faculty
2021/03/28 12:33:39 PM	(Dr.Ch.V.M.S.N. Pavan Kumar	Assistant Professor	Bapatla Engineering College	9290573790	pavan4790@gmail.com	Faculty
2021/03/28 7:32:29 PM	Gi Dr. A. Vijayasankar	Associate Professor	V R SIDDHARTHA ENGINEERING COLLEGE	9573258456	vijayasankar.anumala@gmail.com	Faculty
2021/03/29 8:45:48 AM	G Khaleelahmed shaik	Assistant Professor	Velagapudi Ramakrishna Siddhartha Engineering	9985883438	khaleel786@vrsiddhartha.ac.in	Faculty
2021/03/29 9:33:43 AM	G A.Neeharika	Assistant professor	VRSEC	9059888368	neeha404@gmail.com	Faculty



Velagapudi RamaKrishna
SIDDHARTHA ENGINEERING COLLEGE

Department of
Electronics and Communication Engineering

INVITATION

Management, Principal, Staff and Students of

Department of Electronics & Communication Engineering
VELGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE
(Autonomous)
VIJAYAWADA

Request your gracious presence for the

Two-Day Workshop on

“MACHINE LEARNING AND IOT HARDWARE INTEGRATION USING MATLAB”

29-30 MARCH, 2021

Organized by ECE Department, VRSEC



Venue

Online Workshop

Chief Patron

Sri N. Venkateswarlu, President,

Siddhartha Academy of General & Technical Education (SAGTE), Vijayawada

Patrons

Sri P. Lakshmana Rao, Secretary, SAGTE

Sri S. Venkateshwara Rao, Treasurer, SAGTE

Sri M. Rajayya, Vice President, SAGTE & Convener, VRSEC

Coordinators

Dr. Khalim Amjad Meerja, Professor, Dept. of ECE

Dr. D. Venkata Rao

Convener

Professor & Head of ECE

REGISTRATION FORM

Two days Workshop
on
“Machine Learning and IOT Hardware Integration
using MATLAB”

29th -30th March 2021

Name: _____

Designation: _____

Institution/Organization: _____

Address: _____

Contact Number: _____

Email: _____

Qualifications: _____

Experience in years:

Teaching: Research: Industry:

**Signature of the
Participant**

Last date for Registration: 28th March 2021

Address for Communication:

Dr. Khalim Amjad Meerja,
Professor, ECE Dept.
V.R. Siddhartha Engg. College
Kanuru, Vijayawada-520007, AP
Mail id: kmeerja@vrsiddhartha.ac.in
Mobile. No: 9542548112

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Sri M. Rajayya, Vice-President, SAGTE &
Convener, VRSEC

College Advisory Committee

Dr. A. V. Ratna Prasad, Principal
Dr. N. N. Sastry, Prof. of ECE & Dean R & D
Dr. B. Panduranga Rao, Prof. of CE & Dean SA

Convener

Dr. D Venkata Rao
Professor & Head of ECE

Organizing Advisory Committee

Faculty members of ECE Department

Eligibility

The Workshop is open to faculty members of AICTE approved Institutions, Research scholars and persons from industry and R&D organizations from all over country.

Registration Fee: ***NIL***

Registration Link:

<https://forms.gle/Mqtcw5Ran8ekJf3Z9>

Schedule:

Monday, 29-03-2021 – 11:00 AM – 12:30 PM
Tuesday, 30-03-2021 – 10:00 AM – 11:30 PM

Two days workshop

on

**“Machine Learning and IOT
Hardware Integration using
MATLAB”**

29th -30th March,2021

Coordinator

Dr. Khalim Amjad Meerja, Prof. of ECE



Organized by

**Department of
Electronics & Communication Engineering**

**Velagapudi Ramakrishna
Siddhartha Engineering College**

(Autonomous)

(Sponsored by Siddhartha Academy of General &
Technical Education)

Kanuru, Vijayawada-520007

Andhra Pradesh

www.vrsiddhartha.ac.in

☎: **0866-2582333, 2584930**

About the College:

Velagapudi Ramakrishna Siddhartha Engineering College (VRSEC) was established in the year 1977 as the first Self-financing Engineering College in the state of A.P. It is located in a vast expanse of 24.05 acres of land on the outskirts of Vijayawada city at a distance of about 6Kms from the city centre. The college is offering 7 UG (B.Tech) Courses with intake of 1140, 9 PG- M.Tech with 180, MBA with 60 and MCA with 60. The college has been accredited four times by National Board of Accreditation (NBA) of All India Council for Technical Education (AICTE), New Delhi in respect of all Engineering disciplines and also certified for ISO 9001:2008. It is affiliated to Jawaharlal Nehru Technological University, Kakinada, AP. Autonomous status was conferred by UGC in the year 2006 and extended for 10 years upto 2027-28 without visit to the college, first in AP. It is one among the top 16 Engineering Colleges selected with Rs 6 crores funding under World Bank aid for R&D and PG enhancement programme called TEQIP –II (S.C.1.2) by MHRD, Govt. of India. The institute secured AAA ranking and all India 7th position for the participation by students and faculty in NPTEL/SWAYM. The College received Platinum Award in years 2017, 2018 & 2019 as a Best Industry Linked Technical Institute by AICTE-CII Survey. It is also recognized as “Scientific & Industrial Research Organization (SIRO)” by DSIR. MST, Govt. of India since August 2017.

About ECE Department:

Established in the year 1977, the department of ECE offers B.Tech. Programme in Electronics & Communication Engineering with an intake of 240 and two M.Tech. Programmes in Communication Engineering & Signal Processing and VLSI Design & Embedded Systems with an intake of 18 each. The department has been accredited by NBA of AICTE four times. More than 40% faculties are with Ph.D. qualification. Led by a team of highly qualified experienced faculty with specializations such as RF & Microwave, Antennae, Digital Signal

Processing, Wireless Communications, Digital Image Processing, VLSI and Embedded systems etc, the department provides excellent academic and research environment to the UG, PG and research students. A centre of Excellence (TIFAC CORE- DST) in Telematics was established in the year 2009 with the state-of-the-art facilities. Having successfully completed many research projects funded by UGC, AICTE, NRSC-ISRO DLRL & ANURAG-DRDO etc., it is also recognized by JNTUK as "**Research Center.**" Faculty members extend guidance to research scholars, produce Ph.D.'s and publish their findings in peer reviewed national and international journals and conferences.

About Workshop:

The two days workshop on “Machine Learning and IOT Hardware Integration using MATLAB” is well structured, focused, and result oriented. The workshop focus on different aspects of MATLAB programming for Machine learning, Hardware integration and IOT. This workshop will bring good start in faculty to work on machine learning and IOT hardware integration using MATLAB.

Objectives of WORKSHOP:

The objective of the workshop is to provide exposure to the participants of the workshops on emerging practices in the field of Machine learning and IOT hardware design and integration using MATLAB. The participants will be learning directly from the experts in MathWorks, who can unleash technical knowledge, thereby enabling all of us to learn advanced knowledge in these areas.

Outcomes

Following are expected Outcomes.

- Learn from experts.
- Acquire hands on skills.
- Expand knowledge base for research.
- Develop efficient ways to do advanced research.

Course Contents:

- Overview of Machine Learning
- Machine Learning Workflow
- Human Activity Recognition demo
- Introduction to Model-Based Design using Simulink
- Hardware Integration Using Simulink
- Reading sensor data, Blinking LEDs
- Auto-code generation and deployment
- Reading & writing to and from cloud

Resource Persons:

Mr Nikhil Sonavane

Application Support Engineer in the Engineering Development Group, MathWorks

Mr Ramana Anchuri

Engineer from the Education Team at The MathWorks




Dr Deb Singdeo

Education Technical Evangelist,
MathWorks India Private Limited (Pune)

Schedule & speaker profiles for the sessions next week.

Date/Time	Session Agenda	Speakers	Meeting link
29 th March 2021 11:00 to 12:30PM	Title: Machine Learning with MATLAB <ol style="list-style-type: none"> 1. Introduction 2. Overview of Machine Learning 3. Machine Learning Workflow 4. Human Activity Recognition demo 1. Resources for academia 	Mr Nikhil Sonavane Mr Ramana Anchuri	https://mathworksmeeeting.webex.com/mathworksmeeeting/onstage/g.php?MTID=e1b857b65d76c29e10ebf96ffa5ce172b Event number: 129 907 2476 Event password: MathWorks2021
30 th March 2021 10:00 to 11:30AM	Title: Hardware Integration & IoT using MATLAB/Simulink <ol style="list-style-type: none"> 5. Introduction to Model-Based Design using Simulink 6. Hardware Integration Using Simulink 7. Reading sensor data, Blinking LEDs 8. Auto-code generation and deployment 9. Reading & writing to and from cloud 10. Resources 	Dr Deb Singdeo Mr Ramana Anchuri	https://mathworksmeeeting.webex.com/mathworksmeeeting/onstage/g.php?MTID=e8bf2ea3d8eae6683af1c8a346cd2b164 Event number: 129 372 4647 Event password: MathWorks2021

Speakers:

	<p>Nikhil Sonavane is an Application Support Engineer in the Engineering Development Group at MathWorks, based out of Hyderabad. He currently works with the Education Technical Evangelist Team and has worked with Technical Marketing and HDL Coder Teams as well. Nikhil holds a Bachelor's degree in Electronics and Telecommunications from Vishwakarma Institute of Technology, Pune and Master's degree in Biomedical Engineering from Indian Institute of Technology Bombay</p>
	<p>Debanand Singdeo works as an Education Technical Evangelist at MathWorks India Private Limited (Pune). In this role, he collaborates with researchers with the aim of accelerating the pace of innovation in science and engineering. Also, he works closely with academic institutions for effective utilization of MathWorks resources in education. He has a Bachelor's degree in physics from Visva Bharati, Santiniketan, followed by MSc-PhD degree from the Department of Energy Science and Engineering, IIT Bombay. His prior research experience is in the area of modelling and simulation of renewable energy systems. In previous roles, he has worked as a postdoctoral fellow in the Department of Energy Technology, Aalborg University, Denmark.</p>
	<p>Ramana Anchuri is an Engineer from the Education Team at The MathWorks, working with academia in India. He completed his undergraduate studies in Electrical and Electronics Engineering and Masters in Power Electronics form JNTU Hyderabad. Prior to joining The MathWorks, he worked for academia and in industry. He worked with KPIT Pune as senior software engineer where he is responsible for control design for automotive engine systems and with CYIENT limited as senior software engineer responsible for developing, verifying and validating aircraft engine control systems. He is passionate about teaching and learning, and his current interests include Power Electronics and Control Design, Model Based Design and Code Generation.</p>

VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

Approved by AICTE, New Delhi, Affiliated to JNTUK, Kakinada, ISO 9001:2015 Certified
Kanuru, Vijayawada, Andhra Pradesh - 520007



Department of Electronics & Communication Engineering Certificate of Participation

This is to certify that **Ms. Badatala Ooha** of **Dhanekula Institute of Engineering and Technology** has attended successfully *Two days workshop* on "**Machine Learning and IOT Hardware Integration using MATLAB**" during **29 - 30 March 2021**, Organized by Department of Electronics and Communication Engineering, Velagapudi RamaKrishna Siddhartha Engineering College, Vijayawada, Andhra Pradesh.

Dr. Khalim Amjad Meerja
Professor & Co-ordinator

Sample of the Certificate Issued for
the attendee of the Workshop
Conducted.

Dr. D. Venkata Rao
Professor & HOD



Information: Machine Learning with MATLAB

[English](#)

Not started

Monday, March 29, 2021 1:30 am
Eastern Daylight Time (New York, GMT-04:00)

[Change time zone](#)

1 hour 30 minutes

Machine Learning with MATLAB

- Introduction
- Overview of Machine Learning
- Machine Learning Workflow
- Human Activity Recognition demo
- Resources for academia

Join Event Now

You cannot join the event now because it has not started.

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Last name:

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Ramana Anchuri
Host

Nikhil Sonavane

Deb Singdeo

venkat Krishna



Introduction to Machine Learning with MATLAB

Nikhil Sonavane

sonavan@mathworks.com

Ramana Anchuri

ranchuri@mathworks.com

Deb Singdeo

dsingdeo@mathworks.com

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Participants (17)

Search

Panelist: 5

- KM Khalim Amjad Meerja Me
- RA Ramana An... Host
- NS Nikhil Sonavane
- DS Deb Singdeo
- VK venkat Krishna

Attendee: 12 (0 displayed)

[View all attendees...](#)

> Q & A

Mute

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Participants



nj... (Me)

Ramana Anchuri
Host



Nikhil Sonavane



Deb Singdeo



venkat Krishna



Layout

Viewing Nikhil Sonavane's sc...



Agenda

Introduction

Overview of Machine Learning

Demo: Classification using MATLAB

Demo: Regression Analysis Using MATLAB

Q&A

2

Participants (17)

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- RA Ramana An... Host
- NS Nikhil Sonavane
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Participants



Ramana Anchuri
Host



Nikhil Sonavane



Deb Singdeo



venkat Krishna



Layout



3 million+
users

more than 180
countries

4200+
staff

in 31 offices around
the world

\$1+
Billion

in 2018 revenues with
60% from outside the US

Privately held

and profitable every year

3

Participants (18)

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- NS Nikhil Sonavane
- DS Deb Singdeo
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Participants



Ramana Anchuri
Host

Nikhil Sonavane

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venkat Krishna



We Enable Innovation in Key Industries



Space and Defense



Automotive



Biological Sciences



Biotech and Pharmaceutical



Communications



Electronics



Energy Production



Financial Services



Industrial Machinery



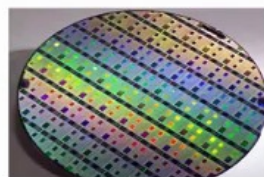
Medical Devices



Materials, Mining



Neuroscience



Semiconductors



Software and Internet



Transportation

6

Participants (20)

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Panelist: 5

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- RA Ramana A... Host
- NS Nikhil Sonavane

Chat

from YARLAGADDA SRUTHI to all panelists:
good morning sir..

To: Host

Enter chat message here

Q & A

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Participants



Ramana Anchuri
Host

Nikhil Sonavane

Deb Singdeo

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- RA Ramana A... Host
- NS Nikhil Sonavane

Chat

from YARLAGADDA SRUTHI to all panelists:
good morning sir..

from Khalim Amjad Meerja to all attendees:
Please fill in the attendance form in the

from Khalim Amjad Meerja to all attendees:
<https://docs.google.com/forms/d/e/1FA>

To: All Attendees

Enter chat message here

Q & A

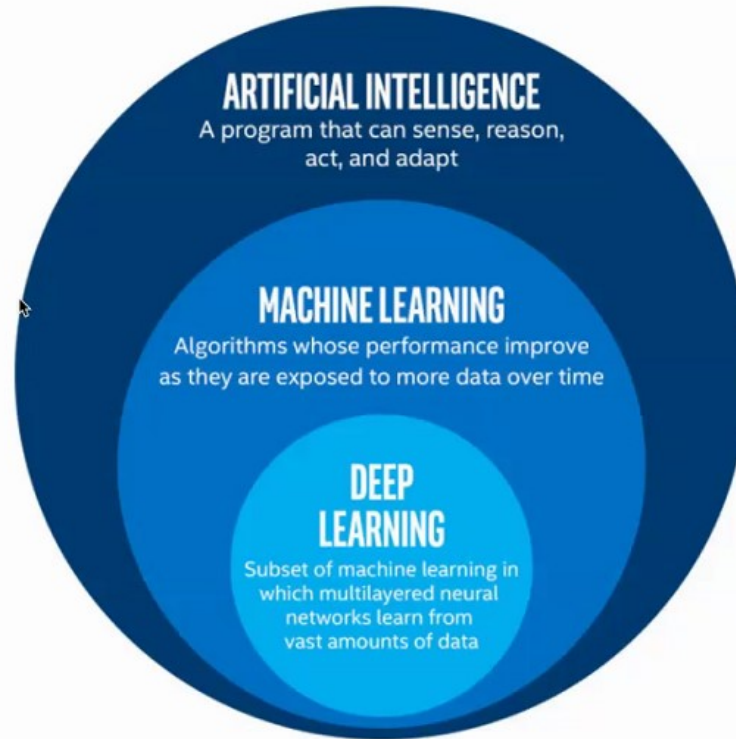
What is Machine Learning?



Subset of artificial intelligence

Automatically learn and improve from experience

Data driven modeling



Source: <https://towardsdatascience.com>

10

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...



Participants



Ramana Anchuri
Host



Nikhil Sonavane

Deb Singdeo

venkat Krishna

MathWorks

here are two ways to get a computer to do what you want

Traditional Programming

```

    graph LR
      Data[Data] --> Computer[COMPUTER]
      Program[Program] --> Computer
      Computer --> Output[Output]
  
```

The diagram illustrates the traditional programming process. On the left, two blue boxes labeled 'Data' (with a waveform icon) and 'Program' (with a flowchart icon) have arrows pointing to a central blue computer monitor icon labeled 'COMPUTER'. An arrow then points from the computer to a blue box on the right labeled 'Output' (with a starburst icon). The slide number '11' is visible in the bottom right corner.

Participants (20)

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Panelist: 5

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- VK venkat Krishna

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Chat

Q & A

Participants

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Ramana Anchuri
Host



Nikhil Sonavane



Deb Singdeo



venkat Krishna



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Viewing Nikhil Sonavane's sc...



Machine Learning is Everywhere



Speech Recognition



Object Recognition



Engine Health Monitoring



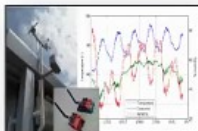
Weather Forecasting



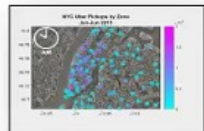
Energy Load Forecasting



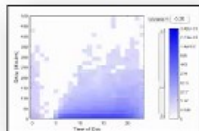
Stock Market Prediction



IoT Analytics



Taxi Availability



Airline Flight Delays

13

Participants (22)

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> Q & A

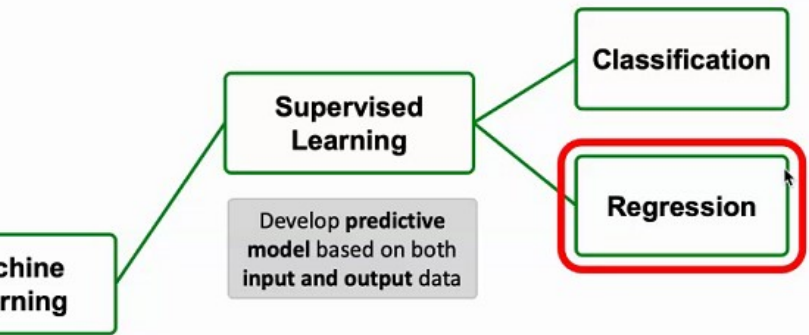
Participants

Types of Machine Learning



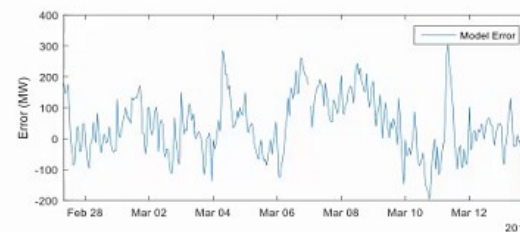
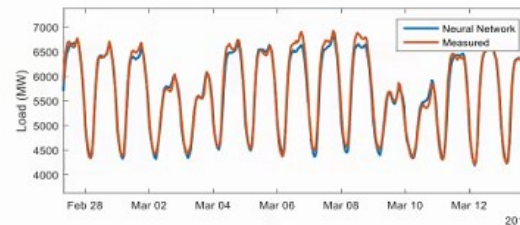
Type of Learning

Categories of Algorithms



Objective:

Easy and accurate computation of day-ahead system load forecast



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Participants



Ramana Anchuri
Host



Nikhil Sonavane



Deb Singdeo

venkat Krishna

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- DS Deb Singdeo
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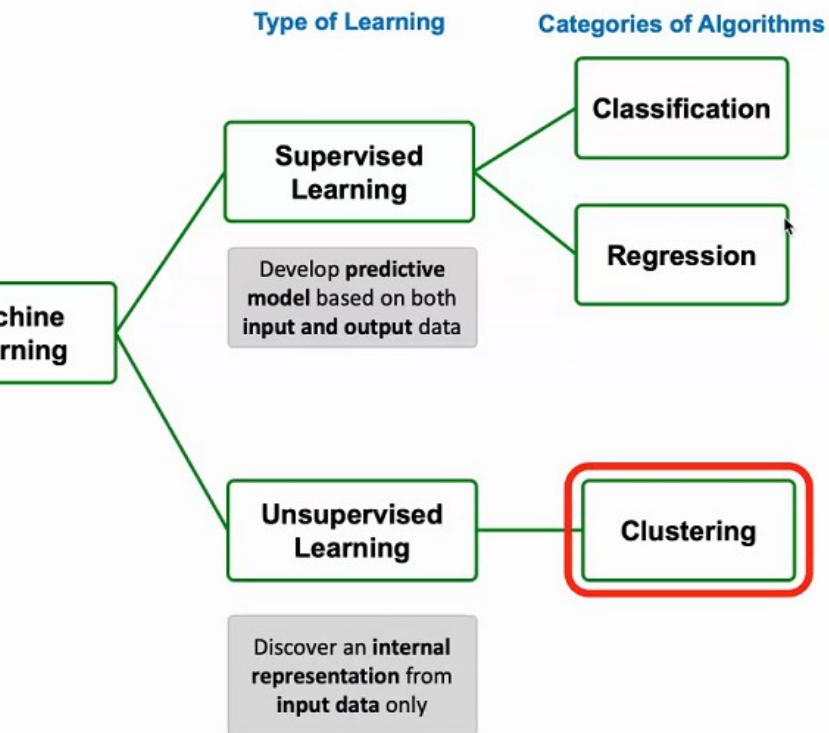
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Chat

Q & A

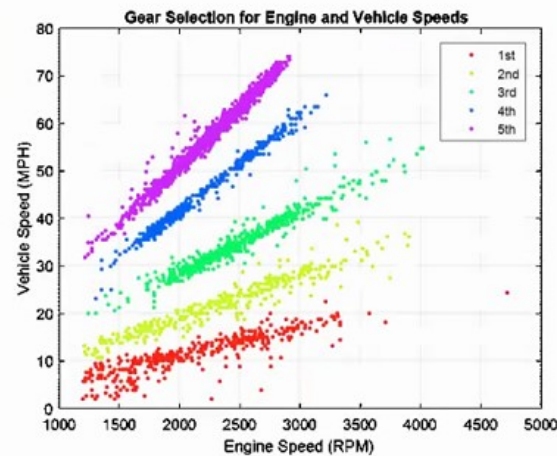
Participants

Types of Machine Learning



Objective:

Given data for engine speed and vehicle speed, identify clusters



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Ramana Anchuri
Host

Nikhil Sonavane

Deb Singdeo

venkat Krishna

Participants (24)

Search

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- RA Ramana A... Host
- NS Nikhil Sonavane

Chat

https://docs.google.com/forms/d/e/1F7LkWySm0kZfQeOIVjZSf3NaWpAubhH...form?usp=sf_link

from venkata sainath gupta T to all panelists:
no sir

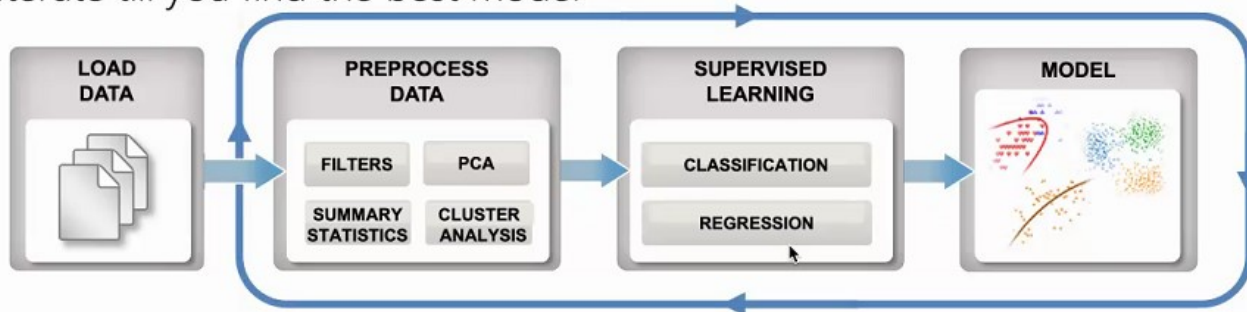
To: All Attendees

Enter chat message here

Q & A

Machine Learning Workflow

Goal: Iterate till you find the best model



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Ramana Anchuri
Host



Nikhil Sonavane

Deb Singdeo

venkat Krishna

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- RA Ramana A... Host
- NS Nikhil Sonavane

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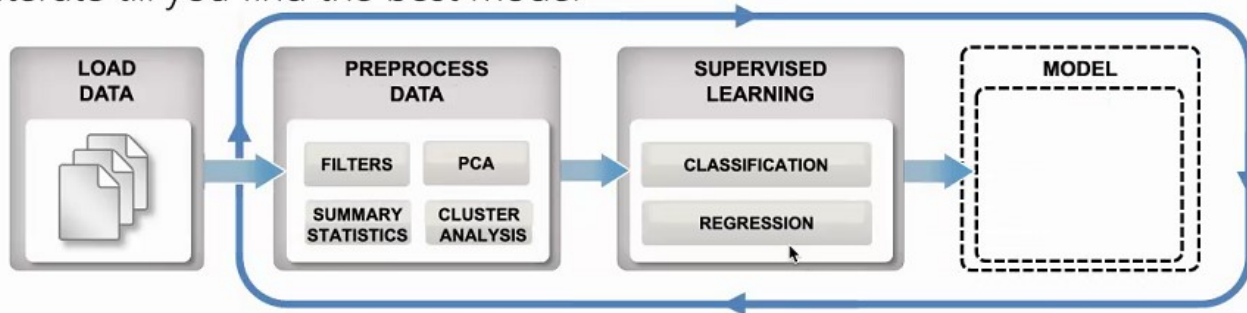
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Q & A

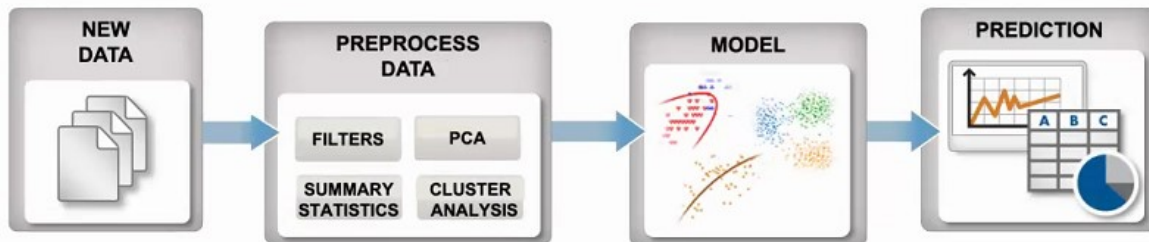
Machine Learning Workflow



Goal: Iterate till you find the best model



Predict: Integrate trained models into applications



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Participants



Ramana Anchuri
Host

Nikhil Sonavane

Deb Singdeo

venkat Krishna

Demo: Train a Classification Model using Human Activity Recognition Data

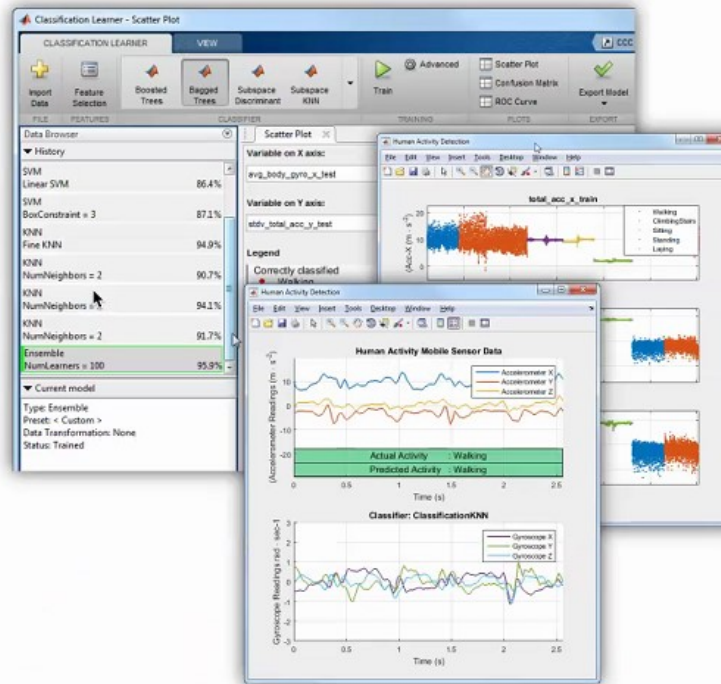
Objective: Train a classifier to classify human activity from sensor data

Data:

Predictors	3-axial Accelerometer and Gyroscope data
Response	Activity:

Approach:

- Extract features from raw sensor signals
- Train and compare classifiers
- Test results on new sensor data



20

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Participant avatars: Ramana Anchuri (Host), Nikhil Sonavane, Deb Singdeo, venkat Krishna

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form?usp=sf link](https://docs.google.com/forms/d/e/1FA...)
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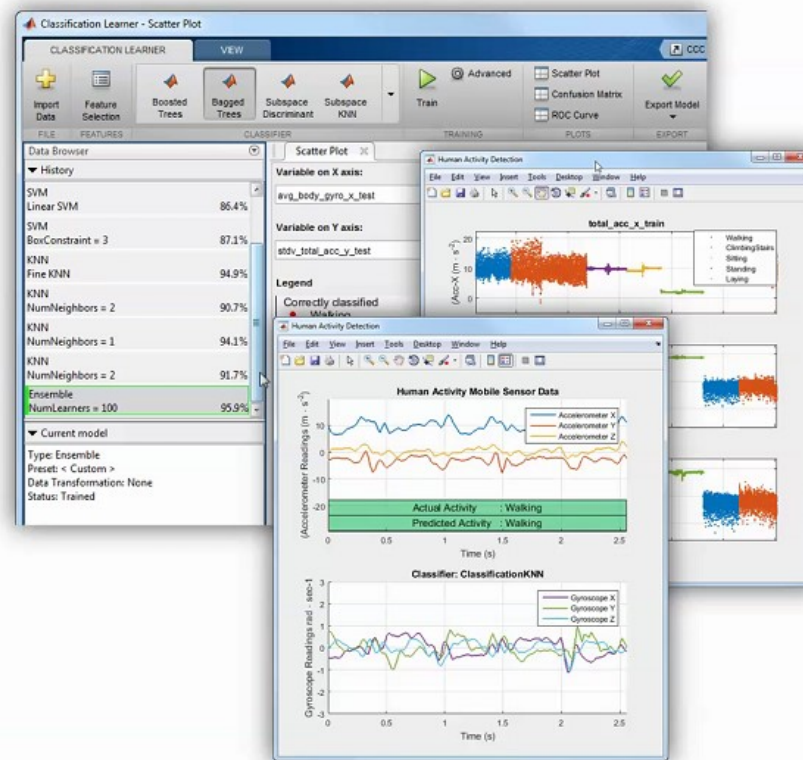
Q & A

o: Train a Classification Model using Human Activity Recognition Data

Objective: Train a classifier to classify human activity from sensor data

Factors	3-axis Accelerometer and Gyroscope data
Response	Activity:

- Each: Extract features from raw sensor signals
- Train and compare classifiers
- Test results on new sensor data



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Participant list:

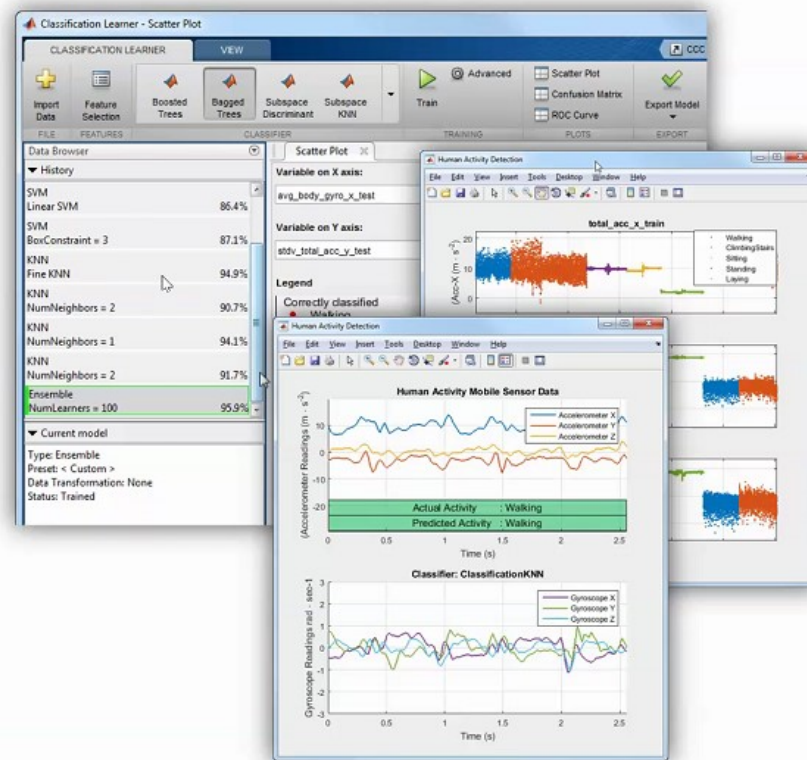
- Ramana Anchuri (Host) -
- Nikhil Sonavane
- Deb Singdeo
- venkat Krishna



o: Train a Classification Model using Human Activity Recognition Data

Objective: Train a classifier to classify human activity from sensor data

Inputs	3-axis Accelerometer and Gyroscope data	
Response	Activity:	



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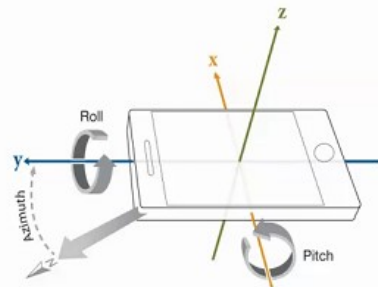
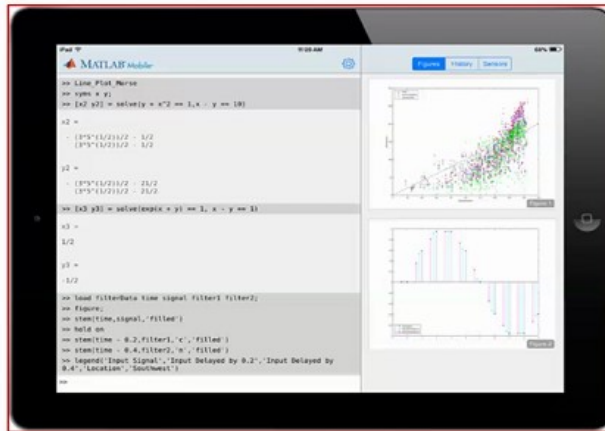
Acquire Accelerometer Sensor Data using MATLAB and Simulink

Acquire and log data from Android Device Sensors

Analyze Data

Implement Step counter algorithm

Key concepts – sampling, peak finding, descriptive statistics



Refer Model: Demo2aStepCounterLoggedSensorData

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Windows taskbar with icons for Start, File Explorer, Mail, Amazon, OneDrive, Edge, Chrome, and other background applications.

Participant avatars and names:

- Ramana Anchuri (Host) - highlighted with a blue border
- Nikhil Sonavane
- Deb Singdeo
- venkat Krishna

Webex browser window showing MATLAB Online R2021a interface:

Navigation Keyboard Shortcuts dialog box:

If you want to	Press
Move forward through the toolstrip and other tools	Ctrl + F6
Move backward through the toolstrip and other tools	Ctrl + Shift + F6
Move into a tool	Tab
Move between the controls within a tool	Up and Down Arrow, Left and Right Arrow
Show access keys for a toolstrip tab	ALT
Display this list of keyboard shortcuts	Ctrl + /

For more shortcuts, see the [Documentation](#)

Do not show again on session start

Close

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Participant avatars and names:

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- venkat Krishna



Acquire, Monitor and Tune Sensor data in Simulink using Android Sensors

Acquire and Tune (External Mode) to tune parameters and monitor a Simulink model running on your target hardware

Learning Outcomes:

Identify and implement real-world projects anytime and anywhere

Acquire new knowledge and skills by doing projects



Refer Model: Demo2bAccelerometerSensor

Participants (26)

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Panelist: 6

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Ramana Anchuri
Host

Deb Singdeo

Nikhil Sonavane

venkat Krishna

Android and ThingSpeak

Internal Mode

Fields

Accelerometer X

Accelerometer Y

Accelerometer Z

Predicted Activity

Sample ThingSpeak

APP INFO LOG

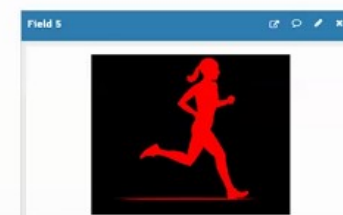
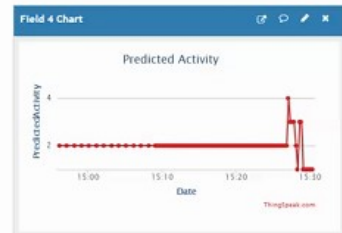
Acc X: 1.295741

Acc Y: -0.370498

Acc Z: -0.811346

Predicted Activity: 3.000000

Walking



MathWorks

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- DS Deb Singdeo
- NS Nikhil Sonavane

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from Khalim Amjad Meerja to all panelists: 1
 please add me to panelist
 from Khalim Amjad Meerja to host & presenter
 please add me to panelist

To: Host & Presenter

Q & A

Unmute

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Participants

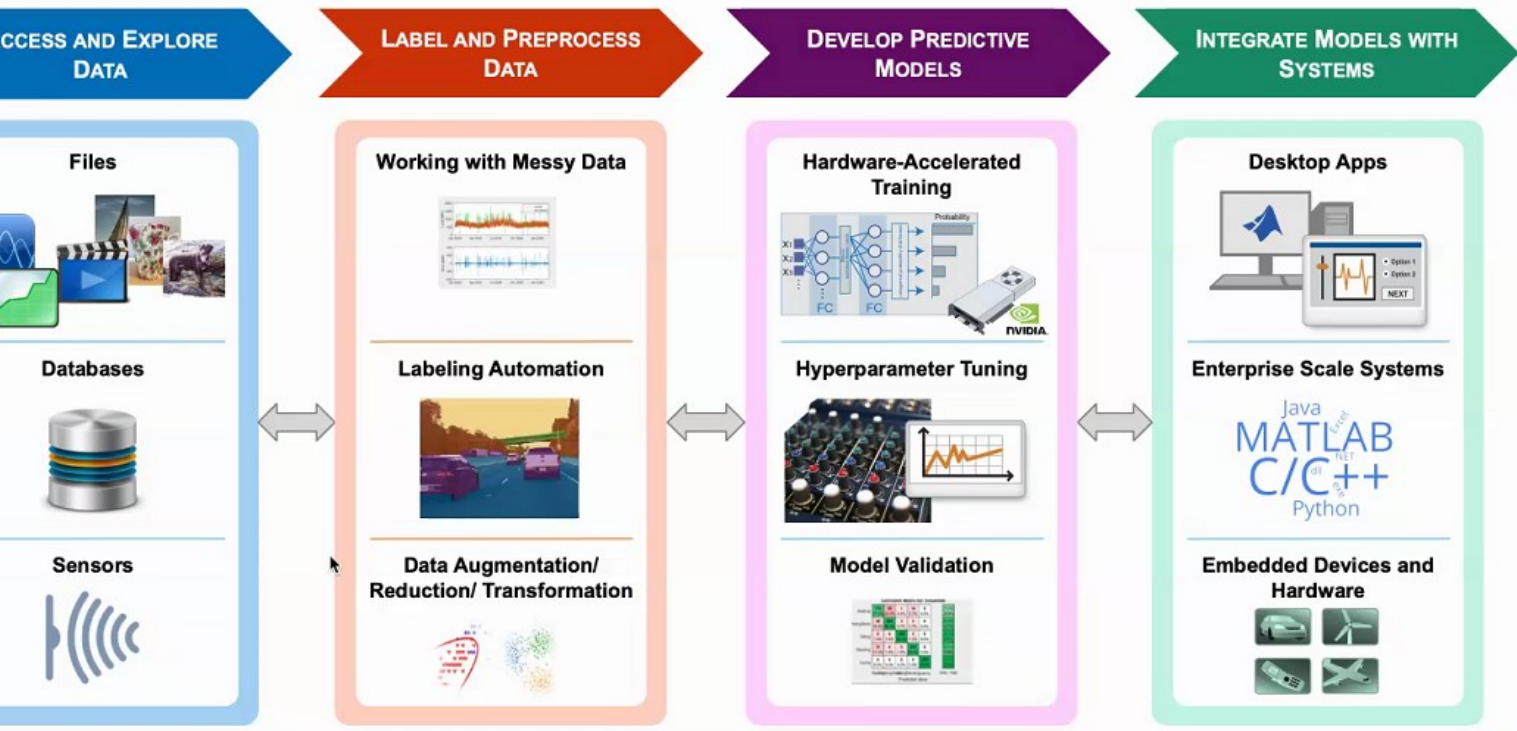
Khalim Amjad Meerja
 Ramana Anchuri Host
 Deb Singdeo
Nikhil Sonavane
 venkat Krishna

Layout

Viewing Nikhil Sonavane's screen



Machine Learning Workflow



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Nikhil Sonavane

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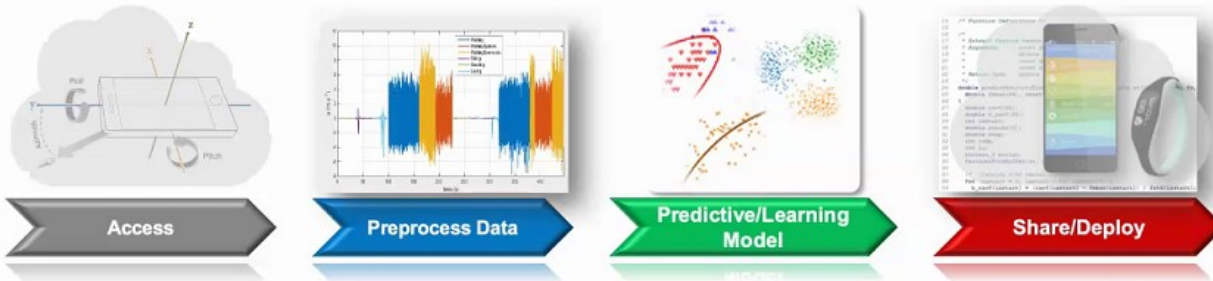
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> Q & A

Participants

Data Analytics tools with MATLAB



MATLAB

Parallel Computing Toolbox & MATLAB Distributed Computing Server		MATLAB Production Server	
Database Toolbox	Optimization Toolbox	Statistics & Machine Learning Toolbox	MATLAB Compiler
Datafeed Toolbox	Curve Fitting Toolbox	Neural Network Toolbox	MATLAB Compiler SDK
Data Acquisition Toolbox	Signal Processing/DSP Toolbox	Financial Toolbox	MATLAB Coder
Instruments Control Toolbox	Wavelet Toolbox	Econometrics Toolbox	
Mapping Toolbox	Image Processing Toolbox	Computer Vision Toolbox	

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Where do you go from here?



FREE



MATLAB Onramp

Get started quickly with the basics of MATLAB.

NEW

FREE



Machine Learning Onramp

Learn the basics of practical machine learning methods for classification problems.

FREE



Deep Learning Onramp

Get started quickly using deep learning methods to perform image recognition.


Online Resources

- [ML and DL Onramps](#)
 - Free of Charge | No License Req.
 - Available to all registered on MathWorks website
 - Access to a Course Completion Certificate
- MOOC
 - [Coursera Specialization](#)
- Video Series
 - [Introduction to Machine Learning](#)
 - [Applied Machine Learning](#)
- Documents
 - [Cheat Sheet](#) | [White Paper](#)
 - [Introduction to Machine Learning e-Book](#)
 - [Mastering Machine Learning e-Book](#)


Data Science > Data Analysis

Offered By  


Practical Data Science with MATLAB Specialization



[Cheat Sheet](#)



[Try Classification Learner in Browser](#)



E-Books: [Introductory ML](#) | [Mastering ML](#)

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Participant avatars and names: Khalim Amjad Meerja, Ramana Anchuri (Host), Deb Singdeo, **Nikhil Sonavane** (highlighted with a blue border), venkat Krishna.

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Call to action

Complete [Machine Learning Onramp](#)

Share your thoughts at [Distance Learning Community](#)

Reach out to us for further support

- nsonavan@mathworks.com,
- ranchuri@mathworks.com
- dsingdeo@mathworks.com

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Panelist: 6

- KM Khalim Amjad Meerja (Me)
- RA Ramana An... (Host)
- NS Nikhil Sonavane
- DS Deb Singdeo
- VK venkat Krishna
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Q & A

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Participants

Participant bar showing names and status icons:

- Khalim Amjad Meerja
- Ramana Anchuri (Host)
- Deb Singdeo
- Nikhil Sonavane** (highlighted with a blue border)
- venkat Krishna

Layout button is visible on the right side of the bar.

Viewing Nikhil Sonavane's screen:

MathWorks logo in the top right corner.

Thank You!

Q & A

Nikhil Sonavane
nsonavan@mathworks.com

Ramana Anchuri
ranchuri@mathworks.com

Dr Deb Singdeo
dsingdeo@mathworks.com

<https://matlabacademy.mathworks.com/>

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- KM Khalim Amjad Meerja Me
- RA Ramana An... Host
- NS Nikhil Sonavane
- DS Deb Singdeo
- VK venkat Krishna
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Q & A

Control bar with icons for:

- Mute
- Start video
- Share
- More options (three dots)
- Close (red X)

Participants

Khalim Amjad Meerja
Me

Deb Singdeo
Host

Nikhil Sonavane

Ramana Anchuri

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KM Khalim Amjad Meerja
Me

DS Deb Singdeo
Host

NS Nikhil Sonavane

RA Ramana An...

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Simulink



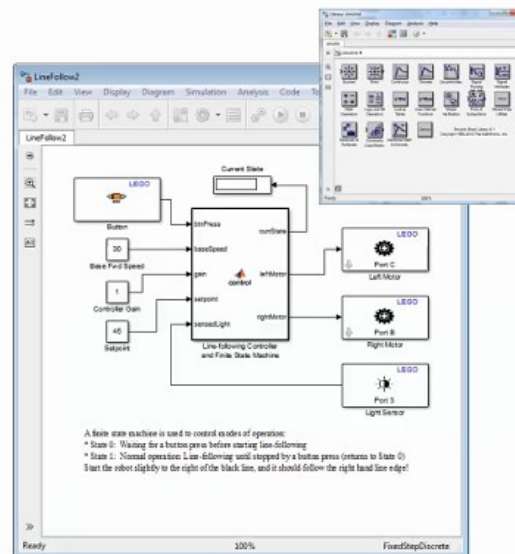
The leading environment for modeling, simulating, and implementing dynamic and embedded systems

Block-diagram environment

Model, simulate and analyze **multi-domain** systems

Accurately design, implement, and test:

- Control systems
- Signal & Image processing systems
- Communications systems
- And other **dynamic** systems



Q & A

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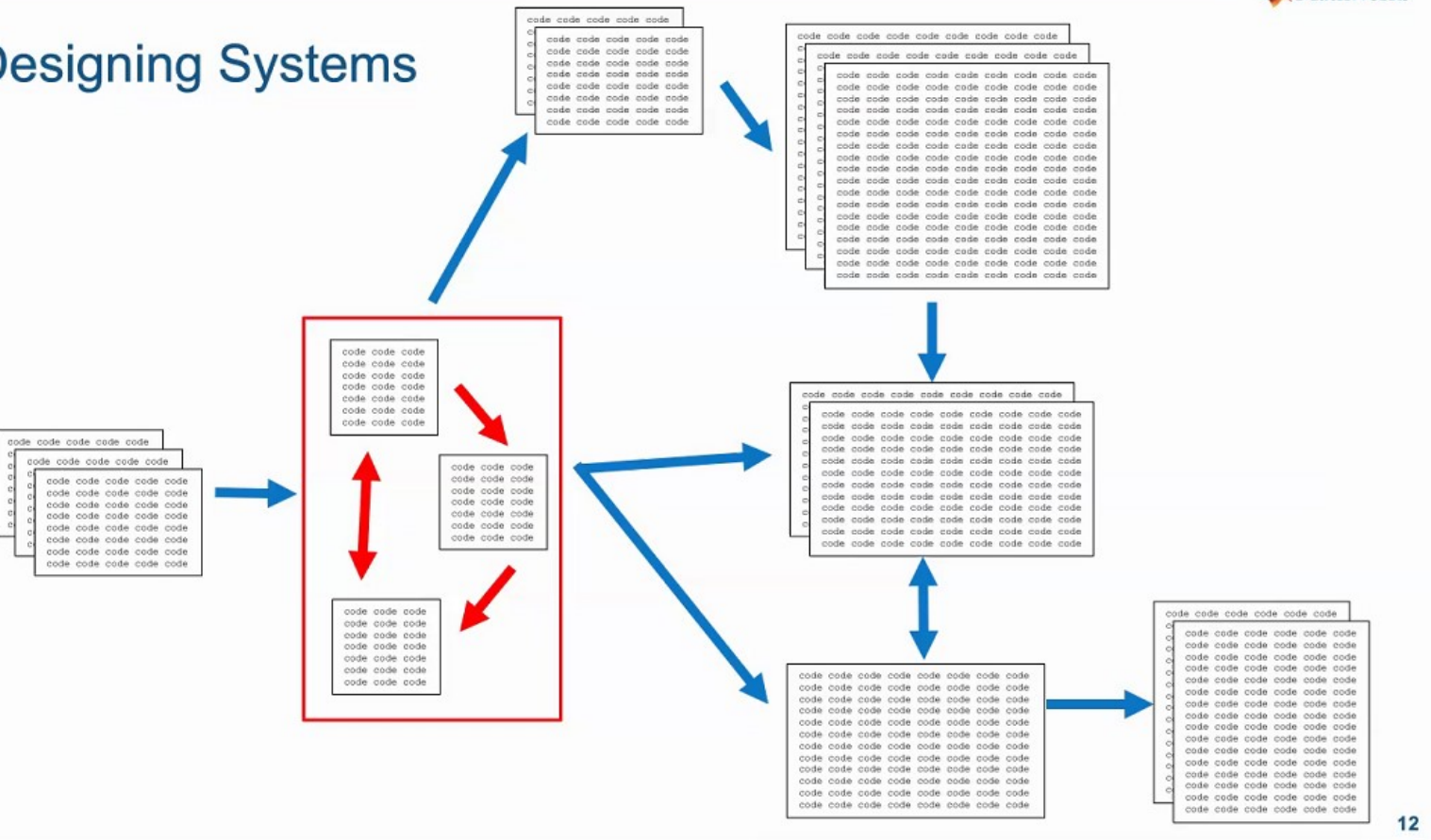
Khalim Amjad Meerja
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Deb Singdeo
Host

Nikhil Sonavane

Ramana Anchuri

Designing Systems



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- RA Ramana An...

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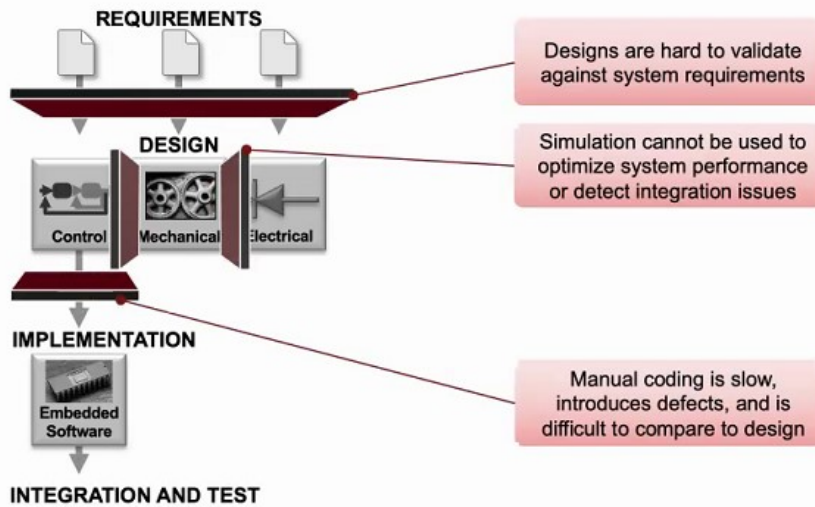
Deb Singdeo
Host

Nikhil Sonavane

Ramana Anchuri



Traditional Design Process



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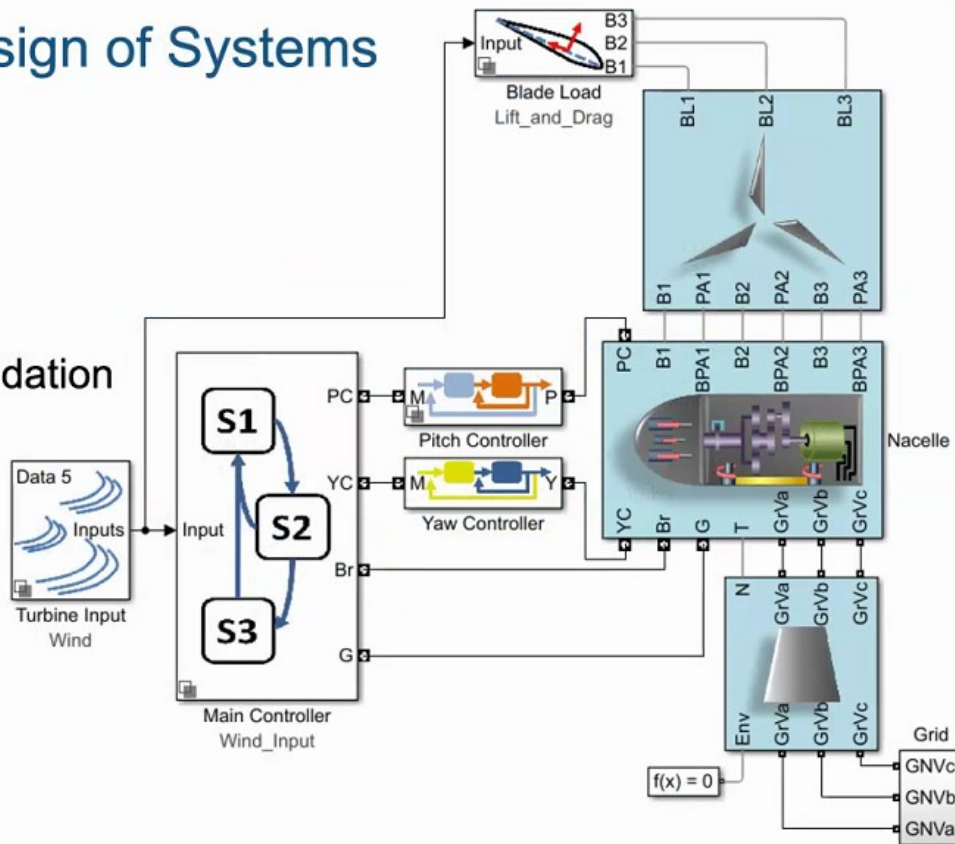
Nikhil Sonavane

Ramana Anchuri

Model-Based Design of Systems



- Modelling
- Simulation
- Code Generation
- Verification and Validation



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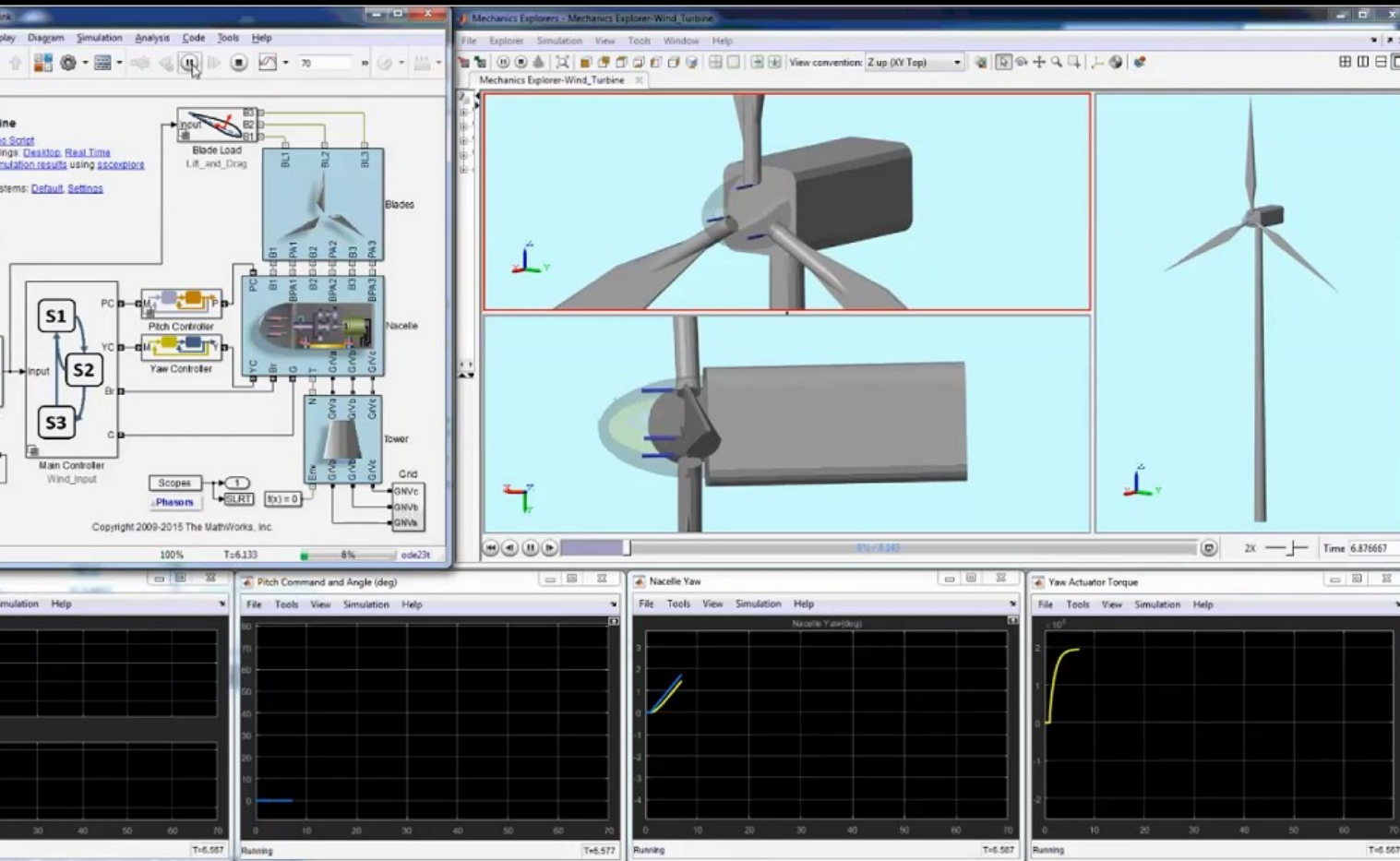
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Low-Cost Hardware

Explosion of new hardware platforms available for hobbyists and students



Increasingly used by educators for project-based learning



Hardware support packages enable programming these devices with MATLAB and Simulink



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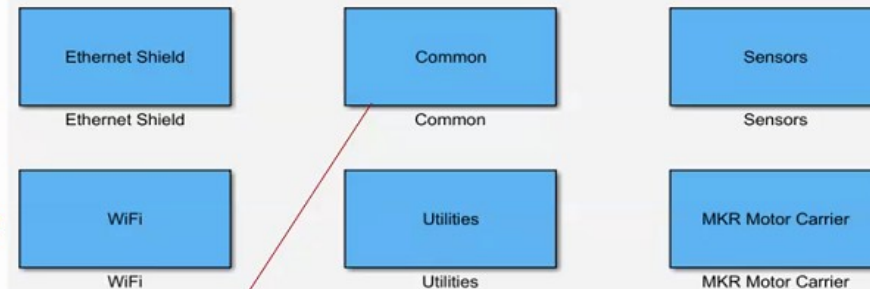
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Arduino Support

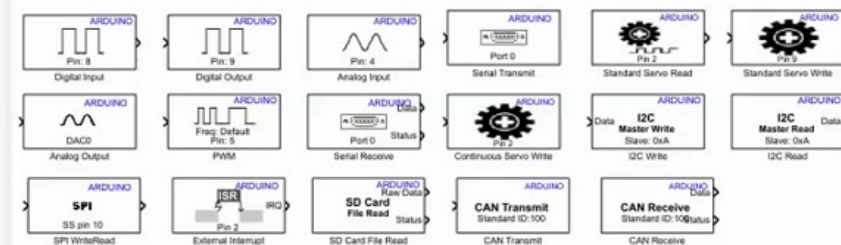


Simulink Library Blocks Arduino



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Arduino Common Blocks



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mlink

Leading environment for modeling, simulating, and implementing dynamic embedded systems

Block-diagram environment

Model, simulate and analyze multi-domain systems

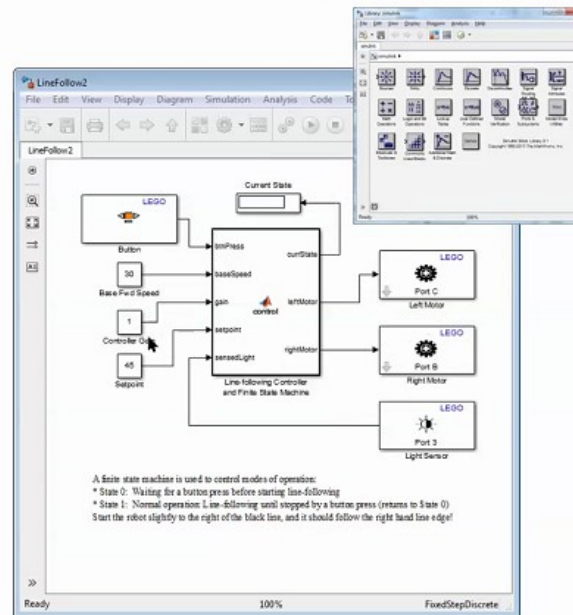
Accurately design, implement, and test:

Control systems

Signal & Image processing systems

Communications systems

And other dynamic systems



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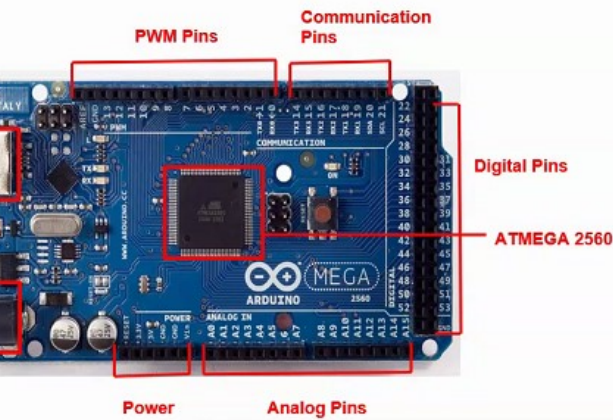
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Ramana Anchuri

Arduino Support



Simulink Library Blocks

Arduino

Ethernet Shield	Common	Sensors
WiFi	Utilities	MKR Motor Carrier

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Arduino Common Blocks

ARDUINO Pin: 8 Digital Input	ARDUINO Pin: 8 Digital Output	ARDUINO Pin: 4 Analog Input	ARDUINO Port 0 Serial Transmit	ARDUINO Pin 0 Standard Servo Read	ARDUINO Pin 0 Standard Servo Write
ARDUINO DAC0 Analog Output	ARDUINO Freq: Default Pin: 5 PWM	ARDUINO Port 0 Serial Receive	ARDUINO Pin 2 Continuous Servo Write	ARDUINO I2C Master Write Slave: 0xA I2C Write	ARDUINO I2C Master Read Slave: 0xA I2C Read
ARDUINO SS pin 10 SPI WriteRead	ARDUINO ISR Pin 2 External Interrupt	ARDUINO SD Card File Read	ARDUINO CAN Transmit Standard ID-100 CAN Transmit	ARDUINO CAN Receive Standard ID-100 CAN Receive	

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- RA Ramana An...

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Participants

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Me

Deb Singdeo
Host

Nikhil Sonavane

Ramana Anchuri



os and Activities

Blink an LED

Read sensor data into Simulink

Act on sensor data (Activate LEDs based on sensor input)

Introduction to ThingSpeak Cloud

Reading & writing data to ThingSpeak Cloud

Generate Twitter alerts using ThingTweet API

Building standalone application

Other protocols and capabilities

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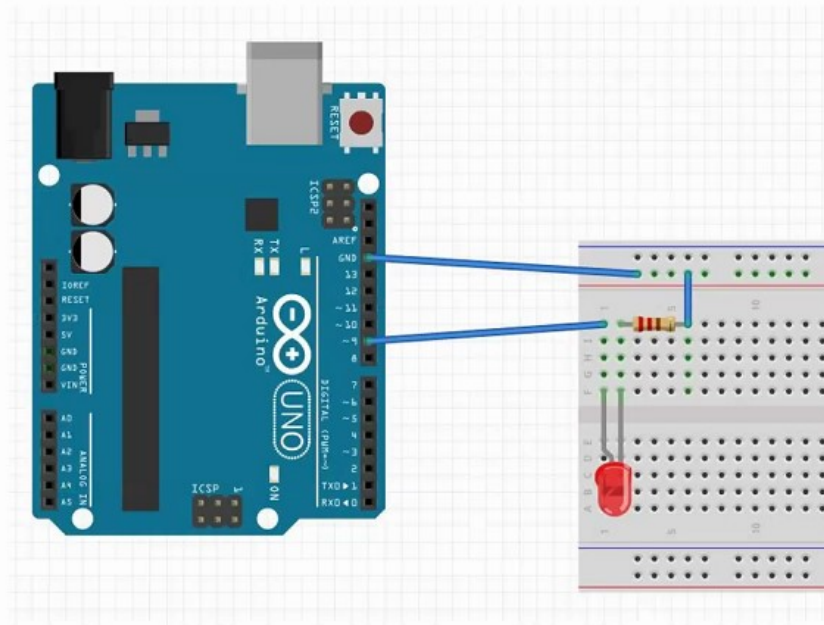
Ramana Anchuri



Connect an LED (Write to digital pin)

LED with series resistor

Write pin as high or low (0V or 5V)



```
void setup() {
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH);
  delay(1000);
  digitalWrite(13, LOW);
  delay(1000);
}
```

Refer model: Demos/D1_ArduinoBlink.slx

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- NS Nikhil Sonavane

Chat

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 Attendance link
[https://docs.google.com/forms/d/e/1FAIpQLS...
 _lpETEOMGs5xu8pPrf6W4vK9Yvmeho...
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To: All Attendees

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Nikhil Sonavane

Ramana Anchuri



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318 RESULTS

Hardware Support Packages (318)



Installed
MATLAB Support Package for Arduino Hardware

Acquire inputs and send outputs on Arduino boards

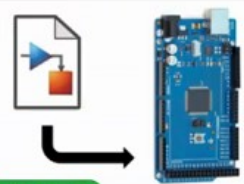
2030 Downloads 4.5 stars



Legacy MATLAB and Simulink Support for Arduino

MATLAB class and Simulink blocks for communicating with an Arduino microcontroller board

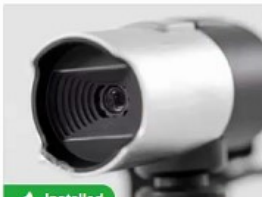
1128 Downloads 4.5 stars



Installed
Simulink Support Package for Arduino Hardware

Run models on Arduino boards.

973 Downloads 4.5 stars



Installed
MATLAB Support Package for USB Webcams

Acquire images and video from UVC compliant webcams.

642 Downloads 4.5 stars



Communications Toolbox Support Package for RTL-SDR Radio

Acquire RF data using RTL-SDR.

405 Downloads 4.5 stars



Installed
Image Acquisition Toolbox Support Package for OS Generic Video Interface

Acquire video and images from generic video capture devices.



Installed
MATLAB Support Package for Raspberry Pi Hardware

Acquire sensor and image data from your Raspberry Pi.



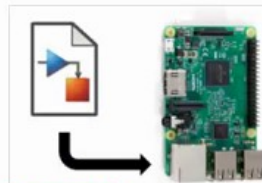
Embedded Coder Support Package for Texas Instruments C2000...

Generate code optimized for C2000 MCU.



Data Acquisition Toolbox Support Package for National Instruments...

Acquire and analyze data from NI-DAQmx devices.



Installed
Simulink Support Package for Raspberry Pi Hardware

Run models on Raspberry Pi.

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DS Deb Singdeo
Host

NS Nikhil Sonavane

RA Ramana An...

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Viewing Deb Singdeo's screen

Advanced	Audio & Video	Communication	Sensors	User Interface
Advanced	Audio & Video	Communication	Sensors	User Interface

for Android Devices

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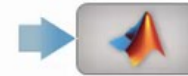
The screenshot shows a Zoom meeting interface. In the center, a video window displays an Arduino Uno board connected to a breadboard with various electronic components. The video player interface includes a play button, a progress bar, and a 'B525 HD Webcam' label. To the left of the video, a diagram shows a square wave signal labeled 'ARDUINO' with 'Pin: 9' indicated below it. The Zoom meeting controls at the bottom include 'Unmute', 'Start video', 'Share', and a red 'Close' button. The Windows taskbar at the very bottom shows the time as 10:41 AM and various system icons.

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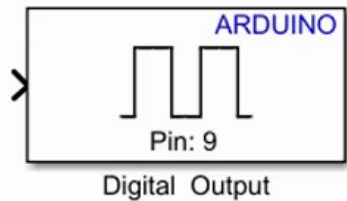
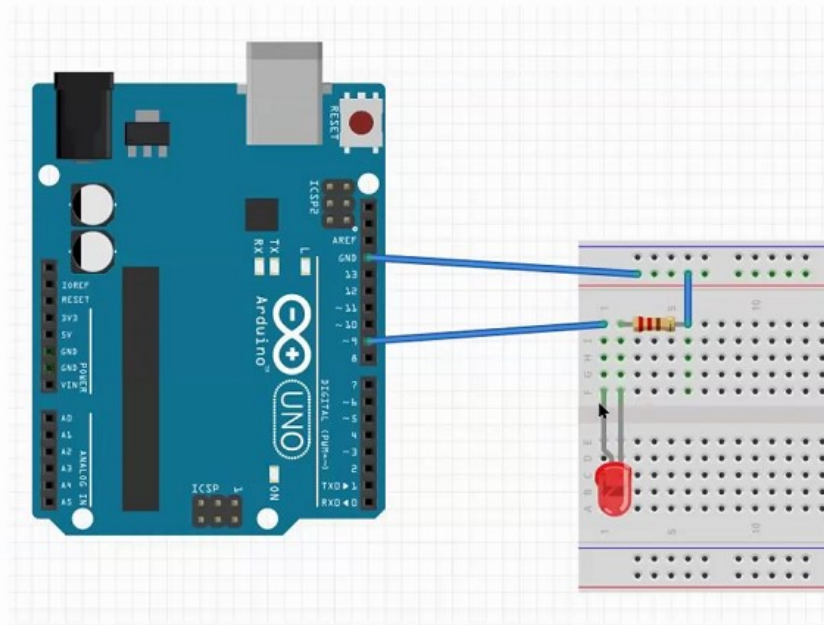


Connect an LED (Write to digital pin)

Connect LED with series resistor

Write pin as high or low (0V or 5V)

Install and link Arduino library
and upload the code



Refer model: Demos/D1_ArduinoBlink.slx

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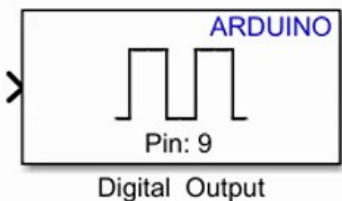
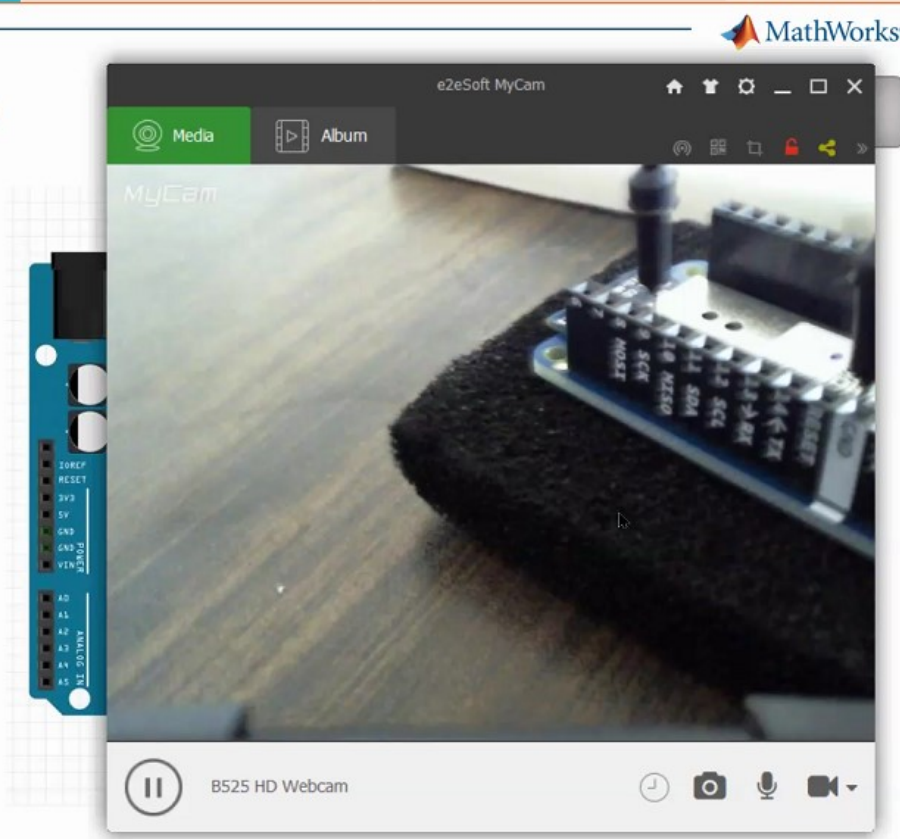
Participants

Connect an LED (Write to digital pin)

Connect LED with series resistor

Write pin as high or low (0V or 5V)

Install and link Arduino library
and compile and upload to the board



Refer model: [Demos/D1_ArduinoBlink.slx](#)

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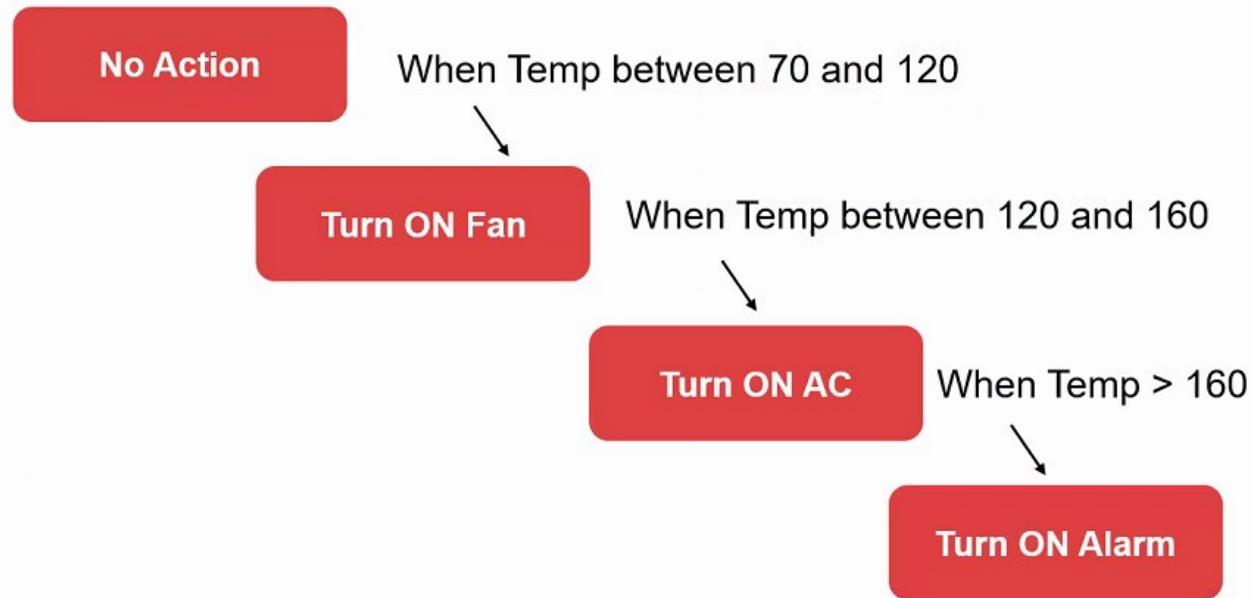
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Link Exercise: Design a Temperature Control System



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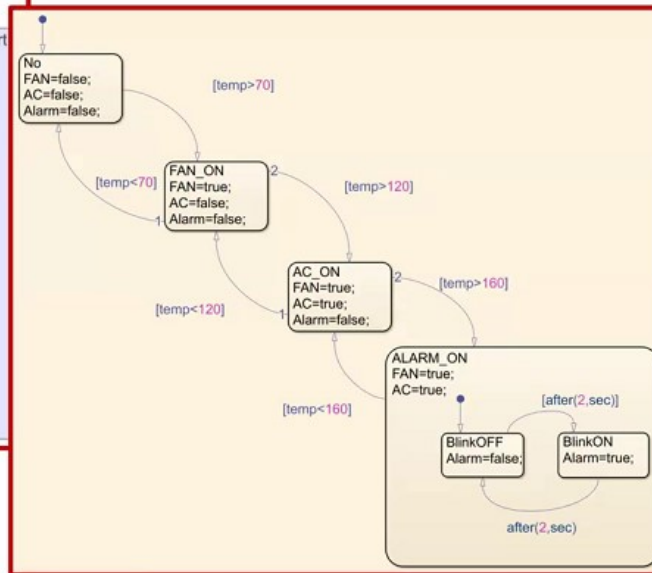
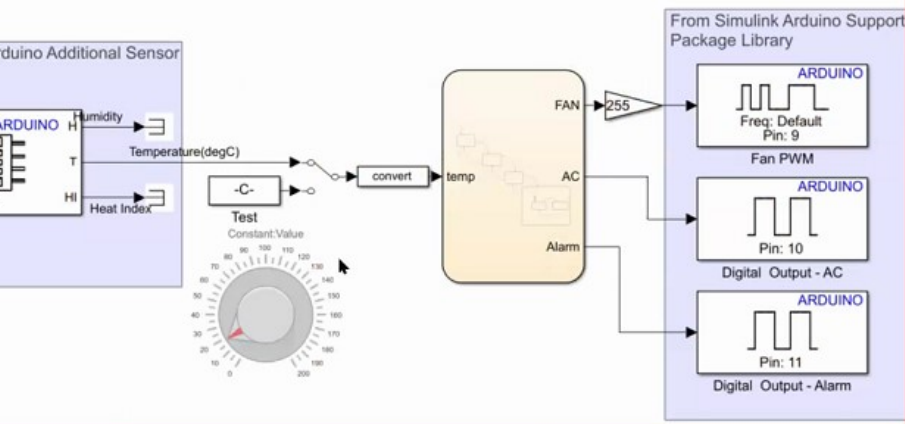
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Building Temperature Control System

Activate output devices using temperature data

Activate devices based on Temperature



Refer model: Demos/Arduino Hardware Interation/D7_ArduinoTempSensor.slx

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Internet of things (IoT)

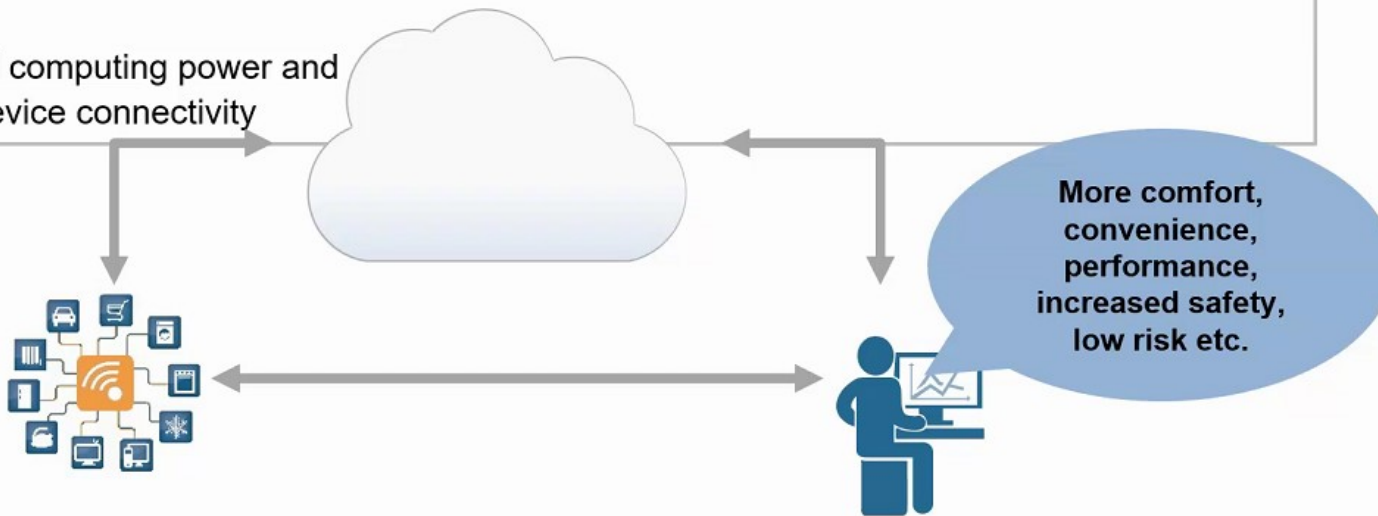
Viewing Deb Singdeo's screen



Internet of Things (IoT) is internetworking of a large number of **embedded devices** ("things") which **connected to the Internet**. These connected devices **communicate with people and other things** and often provide **sensor data to cloud storage and cloud computing resources** where the data is **processed and analyzed to gain important insights**.

Why now –

Cheap cloud computing power and
Increased device connectivity



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https://thingspeak.com/channels/1343468/private_show

Thingspeak™ Channels Apps Support Commercial Use How to Buy

Deb Singdeo

Channel ID: 1343468 Associated License: 40512190

Public View Channel Settings Sharing API Keys Data Import / Export

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MATLAB Analysis MATLAB Visualization

Channel 7 of 7

Channel Stats

Field 1 Chart (Temperature) Field 2 Chart (Humidity)

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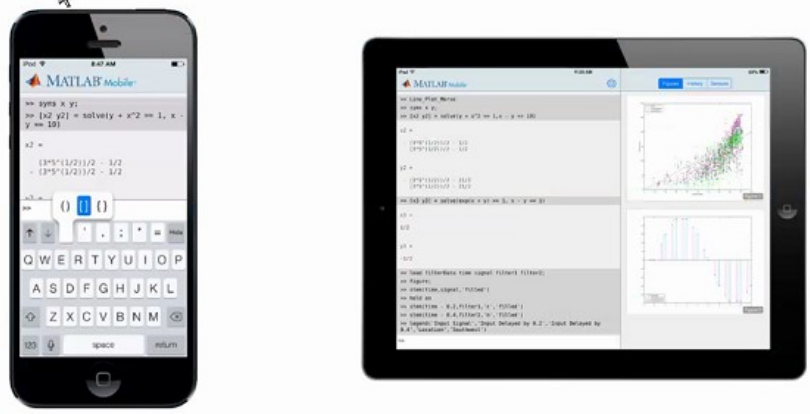
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MathWorks

MATLAB Mobile



35

MATLAB Mobile. MATLAB Mobile allows you to use your smartphone for running MATLAB code. You can interact with MATLAB Desktop and Drive. It also allows access to raw data from your smartphone sensors that can be leveraged for various applications.

Rather than consistently reminding students to put away their phones, imagine if you could use the phone as a tool! For example, you can use the sensor data from mobile phones to design projects such as steps counters. <click>


Notes | 69%

11:33 AM

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to action

ate a demo using Arduino support package and share it with us.

through the following resources to learn more

More on Simulink Support Packages for Arduino

<http://www.mathworks.com/hardware-support/arduino-simulink.html>

Discover other projects with Arduino, Raspberry Pi, and LEGO MINDSTORMS at the MakerZone

<http://makerzone.mathworks.com/>

To explore more hardware support

<http://www.mathworks.com/hardware>

For higher speed data acquisition

connect to a wide range of professional DAQ hardware with *Data Acquisition Toolbox*

<http://www.mathworks.com/products/daq/>

Learn more about ThingSpeak

<https://youtu.be/uvxx-kkjnvc>

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